Dispositional Authenticity, Perceived Facilitativeness, Conditions of Worth, and Relational outcomes in Romantic Relationships: Empirical Tests of Carl Rogers' Theory of Personality and Interpersonal Relationships

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Abstract

Carl Rogers founded client-centred therapy in the 1940s and 1950s, which is a

revolutionary paradigm for conceptualising human experiences in psychotherapy and

counselling. Along with the extension of its applications to other fields, the term

'person-centred approach' was increasingly being used to replace the old term.

However, Rogers left academia two years after the person-centred approach began to

make an impact in social psychology. Little empirical attention has been paid to the

person-centred approach in the field of social psychology; some important hypotheses

remained untested. The person-centred psychology offers a systematic theory of

personality and interpersonal relationships, but its potential to integrate different

social psychological theories has not been fully realised. To expand the impact of the

person-centred approach in social psychology, the objectives of this thesis were:

examining the psychometric properties of an important psychometric tool in the

person-centred approach and promoting its utility; testing the person-centred theory in

opposite- and same-gender couples. Four independent but interrelated studies were

conducted to achieve these objectives.

The first study (N = 1,286) investigated measurement invariance between

English, Chinese, and Spanish language versions of the Barrett-Lennard Relationship

Inventory (B-L RI) that was designed to assess the extent to which a person

experiences unconditional positive regard, empathic understanding, and genuineness

in a relationship. Confirmatory factor analysis revealed that the B-L RI measures a

unidimensional construct representing facilitativeness in non-professional relationships. Partial scalar invariance was established for the B-L RI scores across the three language versions.

In the second study, a mini form of the B-L RI was developed in order to improve the utility of its original version. Twelve out of the full 64 items were selected to form the B-L RI:mini based on their discrimination, difficulty, information, and measurement invariance across the English (n = 298), Chinese (n = 658), and Spanish (n = 330) language versions of the inventory by using item response theory. The B-L RI:mini showed excellent total internal consistency, temporal stability, and construct validity.

The third study examined: (a) the mediating roles of Carl Rogers' facilitative interpersonal conditions (i.e., genuineness, empathic understanding, and unconditional positive regard) and (b) the moderating roles of femininity ideology in the association between dispositional authenticity and dyadic relationship functioning using a dyadic approach. Participants, 239 opposite-gender couples, completed the Authenticity Scale, Barrett-Lennard Relationship Inventory:mini, Femininity Ideology Scale, and Dyadic Adjustment Scale in two separate phases. Longitudinal data were analysed using the actor-partner interdependence (mediation/moderation) model (APIM, APIMeM, and APIMoM) within a structural equation modelling framework. The results of APIMeM showed that perceived facilitativeness mediated the positive associations from dispositional authenticity to dyadic relationship functioning both interpersonally and intrapersonally. The APIMoM revealed that men's femininity

ideology inhibited the positive impact of their own dispositional authenticity on their own dyadic relationship functioning. Interestingly, one's femininity ideology buffered the negative impact of one's own self-alienation on one's own dyadic relationship functioning.

The fourth study with 158 same-gender couples examined the relationships between dispositional authenticity / perceived facilitativeness / internalised homophobia and perceived relationship quality. Actor-partner interdependence models showed that one's dispositional authenticity / perceived facilitativeness was positively related to one's own and one's partner's perceived relationship quality. In contrast, one's internalised homophobia was negatively related to one's own and one's partner's perceived relationship quality. Moreover, individuals' dispositional authenticity partially mediated the positive relationship between their own perceived facilitativeness and perceived relationship quality. Internalised homophobia was found to moderate the relationships between external aspects of dispositional authenticity and perceived relationship quality within same-gender couples.

This thesis offers a new psychometric tool to assess the facilitative relationship conditions deemed important for constructive personality change, provides empirical support for the person-centred theory in combination with other psychological theories, and propose a new theory to understand psychological maladjustment in romantic relationships under the person-centred framework. This thesis may provide reference values for building bridges between the person-centred approach and mainstream psychology.

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Firstly, I would like to express my deepest gratitude to my supervisor, Professor David Murphy. I would never have realized my potential to become a psychologist and a life-long learner without his guidance, help, and support. You would know that Rogers' theory is true when you get to know him because he exemplifies genuineness, empathy, and unconditional positive regard in his relationships with others. I thought of giving up, but he always supported me. Sometimes I do not trust myself, but he always does. He stands in the students' shoes and genuinely cares for them. David, I am lucky to have you in my life as my supervisor. I would also like to thank my second supervisor Professor Stephen Joseph. I admire him for his extensive knowledge and deep insight of psychology. Stephen, I am grateful for all of your insightful and valuable comments. I am fortunate enough to facilitate the research methods class with you and I have learned a lot about how to be a facilitator by working with you. I appreciate all your guidance and support.

I would like to show respect to my external examiner, Professor Duncan Cramer. He is a pioneer in expanding the impact of the person-centred approach in social psychology. His research has inspired me to continue working and writing this thesis. I would also like to express sincere appreciation to all participants who kindly took part in the research.

Lastly, I am grateful to my family, partner, and friends for their different forms of support. Everything is easier with your company. I have experienced of unconditional love from my partner and friends, they have been a very important part of my development.

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List of Tables and Figures

List of Publications from This Thesis

This thesis includes four independent but interrelated research studies. Half of these studies have been published in peer-reviewed journals. Other parts of this thesis are planned to be published in the future. The studies that are published or in progress for publication are the following:

- **Chen, S.**, Liao, F., Murphy, D., & Joseph, S. (2021). Measurement Invariance of the English, Chinese and Spanish Versions of the Barrett-Lennard Relationship Inventory. *Measurement and Evaluation in Counselling and Development*. 55(1), 30-47. https://doi.org/10.1080/07481756.2021.1955212 [Impact factor: 1.512] - (CHAPTER 3)

- **Chen, S.**, Liao, F., Murphy, D., & Joseph, S. (2021). Development and Validation of a 12-item version of the Barrett-Lennard Relationship Inventory (B-L RI:mini) Using Item Response Theory. *Current Psychology*. Advance online publication. https://doi.org/10.1007/s12144-021-02348-5 [Impact factor: 4.297] - (CHAPTER 4)

Chapter 1: Introduction

1.1. Chapter overview

This chapter briefly summarises the background, objectives, and contributions of this thesis. This chapter also introduces the structure of this thesis and provide a general overview for each chapter.

1.2. Background to the thesis

Person-centred therapy is one of the most widely practised approaches to psychotherapy (Rogers, 1959). Meanwhile, person-centred theory and practice extend beyond psychotherapy into other fields, such as psychology (Cramer, 2006), education (Swan et al., 2020), medicine (Moghaddasian et al., 2013), and business (Janssen, 2012). The central focuses of the person-centred approach are relationships, one's relationship with oneself, others, and groups, which provide the basis of its broad application.

Carl Rogers (1959), the founder of the person-centred approach, theorised that psychological maladjustment results from incongruence between self-experience and self-concept. Self-experience is one's actual experience, and self-concept is one's view of oneself. We are born in a congruent state, which can be easily derailed by perceiving and introjecting significant others' conditions of worth in the process of growing up (Joseph, 2016). Some of self-experiences begin to be perceived as more or less worthy of positive regard than any other. Our need for positive regard may drive us to learn and internalise the conditions of worth coming from the external

world. Then experience and behaviour that are in accord with the conditions of worth are perceived and symbolised accurately in awareness, and those that are contrary to the conditions of worth are perceived selectively, distortedly, or denied to awareness. The self-concept incorporating conditions of worth inevitably create discrepancies between self-experience, awareness, and behaviour which, in turn, cause psychological maladjustment (Rogers, 1959). The congruences between self-experience, awareness, and behaviour, which are inalienable from external influence, were defined as authenticity (Wood et al., 2008). The more authentic an individual is, the better psychological adjustment and functioning will be achieved (Rogers, 1961).

Carl Rogers (1957) further proposed that there are six relationship conditions that are necessary and sufficient to restore congruence and to improve psychological adjustment. In short, as long as individuals perceive genuineness, empathic understanding, and unconditional positive regard in psychological contact with another person, continuously over time, they move towards authenticity and becoming fully functioning. Genuineness, empathic understanding, and unconditional positive regard are jointly referred to as the core conditions/facilitativeness (Cramer, 2003a). More detailed theory and definitions will be introduced in the next chapter.

In summary, authenticity, conditions of worth, and facilitativeness are the key concepts of the person-centred approach. Authenticity has been seen as the very essence of healthy functioning and good well-being. Perceived and internalised conditions of worth may hinder the maintenance and development of authenticity and perceived facilitativeness promotes the restoration of authenticity over time (Rogers,

1959, 1961). Their relationships with one another and with various domains of outcomes have been studied in previous empirical studies (e.g., Assor & Tal, 2012; Cramer, 2003; Wood et al., 2008); the relevant research literature will be presented in the following chapters. However, the underlying mechanism of how these constructs act jointly on the outcomes is still not fully understood.

Romantic relationships are an ideal interpersonal relationship that provides insights into the interpersonal effects of authenticity, facilitativeness, especially conditions of worth, on both parties' outcomes. Romantic relationships are considered to be strong mutual communal relationships. In such a relationship, both partners are highly motivated to be responsive to one another's welfare unconditionally (Mills & Clark, 2011). Although the person-centred approach has been applied in professional relationships, such as therapeutic relationships, teacher-student relationships, and doctor-patient relationships, these relationships are neither communal nor mutual. The parent-child relationship is communal but tends to be one-sided as well, especially when children are young. In romantic relationships, both partners' needs are assumed to be equally important, they are more likely to be both providers and receivers of facilitativeness. Friendships can also provide a robust basis to examine the mutuality of facilitativeness. However, romantic relationships are more suitable to investigate the impact of conditions of worth on relational outcomes compared to friendships. Because in a world generally dominated by sexism and heterosexism, we may perceive and internalise stereotypical values, attitudes, and beliefs around our own and others' sex, gender, and sexuality from the external environment (Szymanski &

Moffitt, 2012). Essentially, sexism and heterosexism are conditions of worth regarding gender and sexuality, which are highly relevant to romantic relationships. Therefore, the relationships between authenticity, facilitativeness, conditions of worth, and relational outcomes have been examined among romantic partners.

1.3. Aims of the thesis

The primary aim of this thesis is to provide empirical evidence for person-centred theory on both intrapersonal and interpersonal levels by testing more advanced statistical models. Measurement instruments to assess authenticity, facilitativeness, conditions of worth, and relational outcomes were reviewed to serve the research purpose. However, the psychometric tool that was designed to measure facilitativeness, the Barrett-Lennard Relationship Inventory (B-L RI; Barrett-Lennard, 2015), was not fully validated and was too lengthy. Thus, the first half of the research work presented in this thesis aimed to:

1. Examine psychometric properties of the B-L RI.

2. Develop and validate a shorter version of the B-L RI.

Then, the newly developed scale was used in the second half of the research work, which aimed to:

3. Examine the intrapersonal and interpersonal effects of authenticity, facilitativeness, and conditions of worth regarding gender on relational outcomes in opposite-gender couples.

4. Examine the intrapersonal and interpersonal effects of authenticity, facilitativeness, and conditions of worth regarding sexuality on relational

outcomes in same-gender couples.

1.4. Thesis contributions

The first study served the purpose to understand the psychometric properties of the original version of the B-L RI that is a very important assessment tool for investigation of person-centred theory. The second study provided a short instrument with adequate reliability and validity to measure facilitativeness that is essential for the person-centred approach. The third and fourth studies tested the person-centred theory in a more holistic manner, which contribute to a better understanding of the person-centred theory and other theories in social psychology. More detailed objectives and contributions of the studies will be discussed in the corresponding chapters.

1.5. Thesis outline

The first chapter provides a broad overview of the background and rationale of this thesis. The second chapter introduces the details of the person-centred approach and discusses the development of person-centred research in social psychology. The third chapter describes the history and important theories of social psychology and discusses the potential significance of person-centred approach for social psychology. The fourth chapter describes research paradigm of this thesis and study design. Chapters five to eight present a series of independent but interrelated studies conducted to address the aim of examining the person-centred theory, and the appropriate methodologies to achieve the research objectives were discussed. The last chapter summarises the evidence obtained from the studies, illustrates the

contributions of this thesis, and discusses the implications and limitations. The thesis

outline is presented in Figure 1.1 to depict the structure of this thesis.
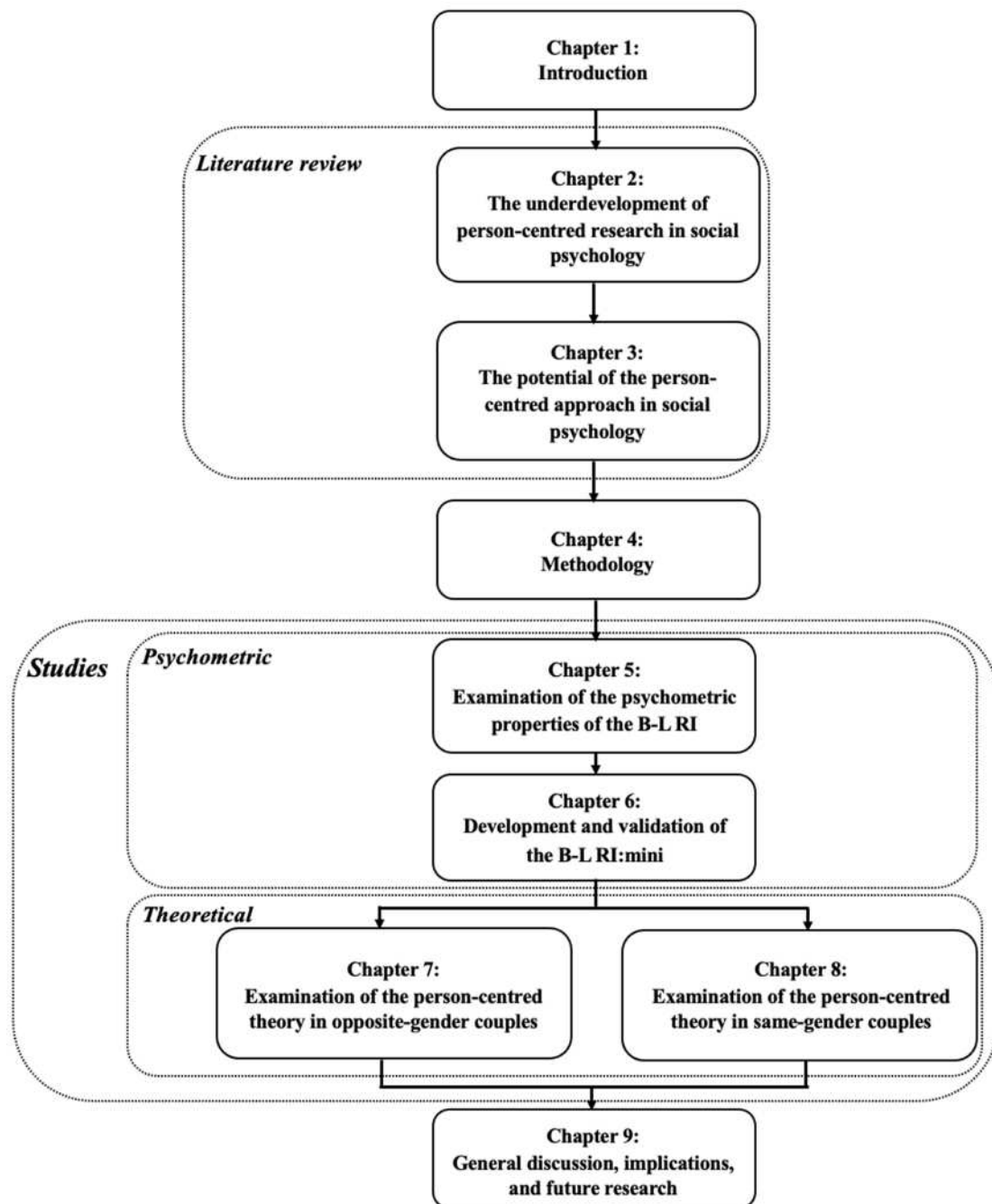
Figure 1.1 Thesis outline.

1.6. Chapter summary and conclusions

This chapter contextualised the background of the research, identified the major

purposes of this thesis, summarised the contributions of the research, and outlined the

structure of this thesis. The next chapter moves on to introduce the person-centred

approach in more detail and describe studies and theories related to person-centred

theory. The potential research gaps are identified, and the objectives of the empirical

studies of this thesis are illustrated.

Chapter 2: The underdevelopment of person-centred research in social psychology

2.1. Introduction

This thesis aims to contribute empirical evidence towards the person-centred theory of personality development and interpersonal relationships. This chapter provides a context for the research work carried out by describing the person-centred theory and depicting the development of the person-centred approach in the field of social psychology. This chapter concludes with the suggestion that the influence of the person-centred approach in the field of social psychology could be expanded by extending the person-centred theory of negative functioning and conducting studies combining concepts of the person-centred theory and other theories in the field.

2.2. Person-centred theory

On 11 December 1940, for the first time, client-centred therapy was introduced by Carl Rogers as a revolutionary new approach to psychotherapy to the public (Thorne, 2007). The new approach is different from all the older methods of therapy. Instead of solving problems, client-centred therapy focuses on the holistic growth and development of individuals. Client-centred therapy emphasises on emotions and feelings rather than on cognition, and the present rather than the past. The experience of the therapeutic relationship is seen as the main determining factor affecting the growth of the client, and clients are considered as the best experts on themselves instead of therapists. Rogers and his colleagues had conducted numerous research

studies into the therapeutic process, which were supportive of client-centred

hypotheses. Rogers' personal and professional experiences led him to formulate an

innovative theory of human personality and developed six relationship conditions that

are necessary and sufficient for therapeutic personality change in the 1950s (Rogers,

1957, 1959). *On Becoming a Person*, one of the most popular books by Rogers, was

published in 1961. The book broke the boundaries of client-centred principles

between the professional world of psychology and day-to-day living. The approach

can be applied not only to the therapeutic relationship, but also to other interpersonal

relationships (Rogers, 1961). Two years later, Rogers resigned his professorship and

left academic research. Then, the term 'person-centred' was increasingly used when

the Rogerian approach was employed outside the field of counselling and

psychotherapy (Thorne, 2007).

In 1973, the American Psychological Association selected Carl Rogers as the

first recipient of the Distinguished Professional Contribution Award (Thorne, 2007).

Carl Rogers' work challenged and guided the practice of psychology in a broader

context. He has inspired all psychotherapists to have a fresh look at their work with

their clients through practice, research, and teaching of an approach to psychotherapy

and counselling which digs deeper into human individuality and potentiality. His

contributions also include spearheading encounter movement, bringing person-centred

principles to solve a range of social issues in international settings, and promoting

cross-cultural communications, self-empowerment, and social change. His innovative

theory of personality had a significant impact on psychology, and he is considered as

one of the most influential psychologists in the 20th century. The person-centred

theory has been criticised mainly for the inflated trust in the individual, the belief in

the subjectivity of the human personality, and the effectiveness of the facilitative

relationship conditions. Additionally, the hypotheses Rogers originally formulated are

considered to lack convincing empirical evidence (Cooper, 2013). In this section, the

person-centred theory is introduced in a general context.

2.2.1. The Actualising Tendency and the organismic valuing process

The concept of the actualising tendency is the cornerstone of the person-centred

approach. In the person-centred approach, it is held that the human being, just like all

other living beings, has a basic and innate tendency and strives to survive, maintain,

and grow (Rogers, 1959). For the human species, to grow means to differentiate

organs and functions, to increase complexity, to become autonomous and free from

external controls, to fulfil their full potential, and to become socially constructive.

Additionally, the inherently social nature of human beings underlies the tendency

towards developing mutual and equal relationships (Wilkins, 2016). The actualising

tendency directs the human organism towards the accomplishment of the best possible

form of 'human-beingness', and which is only manifested by 'the organism as a

whole' (Rogers, 1959; Thorne, 2007). The organism as a whole "is the sum total of

the biochemical, physiological, perceptual, cognitive, and interpersonal behavioural

subsystems constituting the person" (Wilkins, 2016, p. 31).

The ongoing process that reflects the actualising tendency at every moment is

described as the organismic valuing process. The organism weights, selects or rejects

each element, each moment of what is being experienced according to whether it makes for purposes of maintaining or enhancing the organism and the self at that moment. It is worthy to emphasise that the organismic valuing process is flexible and changing; it is not a fixed evaluation criterion (Rogers, 1964).

2.2.2. Self-experience and self-concept

In the first stage of human development, children experience their world as an integrated and undifferentiated whole. Development towards differentiation as part of the actualising tendency leads children to differentiate experiences into 'me' and 'not-me' (Cooper, 2013; Rogers, 1959). Those experiences discriminated by the individual as 'me', 'self', 'I' or things like that are termed as self-experience (Rogers, 1959).

Through interaction with the environment, particularly significant others, the self-experience includes "perceptions of the characteristics of the "I" or "me" and the perceptions of the relationships of the "I" or "me" to others and to various aspects of life, together with the values attached to these perceptions" (Rogers, 1959, p. 200) develops into the self-concept. Self-concept is an organised and consistent conceptual gestalt based on the composition of self-experiences. And, at the same time, it can be a fluid and changing process (Rogers, 1959).

2.2.3. Psychological maladjustment and defensive mechanism

Self-concept, as the "portion of the experience of the organism which is symbolised in the self" (Rogers, 1959, p. 196), is maintained and enhanced under the propulsion of the actualising tendency. The tendency towards self-actualisation is a sub-part of the actualising tendency. If the self-concept and the total experience of the organism are

relatively congruent, the self-actualising tendency is harmonious with the actualising tendency. However, if the self-concept and the total experience of the organism are incongruent, the self-actualising tendency diverges from the unification of the actualising tendency and becomes a hindrance that can stunt or even stop the actualising tendency (Rogers, 1959; Thorne, 2007). Especially when the self-concept is not fluid and does not assimilate new experiences, a discrepancy between the firm self-concept and changing organismic experience is inevitable.

The discrepancy between the self-concept and actual experience generates the divergence between the actualising tendency and its subset, the self-actualising tendency, which in turn produces divisive or paradoxical behaviours of the individual. Consequently, a significant new experience that is incongruent with the individual's self-concept affects the individual differently depending on the level of the awareness of the discrepancy. From unaware to aware, the individual may view themselves as adjusted, anxious, threatened, or disorganised. However, from an external point of view, the individual who is completely unaware of the discrepancy is still considered as in a state of vulnerability because the existence of the incongruence exposes the individual to a potential state of tension and internal confusion (Rogers, 1959).

If the self-concept remains unadjusted in face of significant experiences revealing its incongruence from the self-concept, the organism adopts defensive mechanisms, including denying the experiences to awareness or distorting the experiences in the awareness, to maintain the current self-concept (Rogers, 1959). Meanwhile, the defensive mechanism keeps the individual in a state of psychological

maladjustment for actualising a self that is incongruent with experience.

2.2.4. Need for positive regard and conditions of worth

The individual clings to a self-concept that does not match reality, which stems from the need for positive (self-)regard that is not satisfied unconditionally. Rogers (1959) adopted Standal's perspective that the need for positive regard is learned commonly during early infancy. Attitudes, such as respect, acceptance, sympathy, warmth, and liking, are defined as positive regard. In the early stages of life, an individual emerges the need for positive regard from other individuals, particularly from significant others. Unfortunately, in most cases, the degree of positive regard the individual experiences varies depending on the differential values placed on their specific behaviours by the significant others. In other words, the individual receives conditional positive regard.

Following the formation of the self-concept, the need for positive self-regard is developed allying to the need for positive regard (Rogers, 1959). If the individual discriminates a self-experience or group of related self-experiences as being more or less worthy of positive self-regard, that means the individual has acquired conditions of worth. As mentioned earlier, the values that attach to different self-experiences become part of the self-concept. The need for positive self-regard drives the individual to perceive experiences that match the conditions of worth accurately and to defend themselves against the experiences that do not match the conditions of worth (Wilkins, 2016). Conditions of worth are introjected values from others but are adopted as the results of one's own valuation. The organismic valuing process is

disturbed by conditions of worth; the individual no longer values experiences based on whether they maintain or enhance the organism and the self. Instead, the individual avoids or seek a specific self-experience or set of related self-experiences based on whether they are in accordance with the self-concept characterised by conditions of worth.

2.2.5. Psychological adjustment and congruence between self and experience

The incongruence between the self-concept and the total experience of the organism indicates psychological maladjustment, whereas optimal psychological adjustment exists when the self-concept is completely congruent with the total experience, and the self-actualising tendency is harmonious with the actualising tendency. The individual with optimal psychological adjustment is termed as the fully functioning person in the person-centred theory. A fully functioning person is open to experience, lives moment-by-moment, experiences unconditional positive self-regard, and trusts their organismic valuing process, which allow them to keep their self-concept as a gestalt in a flowing and changing process. A fully functioning person is capable of adapting or adjusting their behaviour to changing reality with uniqueness and creativity because their awareness is open to 'the full information', old and new, experiential and intellectual-conceptual, internal and external, without defensiveness (Bohart, 2013; Rogers, 1961).

2.2.6. Person-centred theory of interpersonal relationship

In interpersonal relationships, there is another level of congruence is involved in addition to the congruence between experience and awareness, which is the

congruence between awareness and expression/behaviour. The discrepancy between experience vs. awareness, expression/behaviour is considered as psychological maladjustment, and the discrepancy between experience, awareness vs. expression/behaviour is labelled as deceit. These two discrepancies affect individuals with personal and social consequences, respectively (Rogers, 1959). Following the development of the person-centred theory, the inside-out congruence that is not swayed by external influence is termed as authenticity (Wood et al., 2008).

Rogers' (1959) theory of interpersonal relationships described conditions, processes, and outcomes of two different types of relationships: deteriorating relationship and improving relationship. These two relationships share a common condition that both individuals desire to and be in contact with each other. But the level of authenticity of an individual lead their relationship in different directions. There is at least one inauthentic individual in a deteriorating relationship, whereas there is at least one authentic individual in an improving relationship.

In a deteriorating relationship, it is hypothesised that the communication of an inauthentic individual to another person is contradictory and/or ambiguous due to some of their expressive behaviour affected by the incongruence between experience and awareness. Then, another person experiences these contradictions and ambiguities and tends to respond in a contradictory and/or ambiguous manner as well. In turn, the inauthentic individual tends to perceive the contradictory and/or ambiguous response from another person as a potential threat to the self, and tends not to understand another person accurately and accept another person unconditionally. The experiences

of selective positive regard and lack of understanding make another person less likely to express themselves genuinely in the relationship. As a result, the defensive mechanism of the inauthentic individual is more likely to be activated. If another person is also inauthentic, they tend to be threatened and become defensive in the process as well. The communication ends up becoming superficial and reserved. And to some degree, a deteriorating relationship facilitates psychological maladjustment in both individuals (Rogers, 1959).

In an improving relationship, the congruence between experience, awareness, and expression of an authentic individual can be perceived by another person. And the authentic individual is able to communicate their experiences clearly due to their accurate symbolisation of experience in awareness. Clear communication encourages another person to express the congruence of their own experience and awareness. In turn, the more genuine expression of another person enables the authentic individual to understand or feel what is being experienced from another person's point of view. Consequently, that person experiences themselves being understood empathically. The authentic individual does not have conditions of worth; they feel positive regard for another person unconditionally, like how they treat themselves. The unconditional positive regard, empathy, and congruence another person perceives facilitate them to communicate in a less defensive and more congruent manner. An improving relationship facilitates both parties' congruence, mutual understanding, and reciprocal positive regard (Rogers, 1959).

One of the most well-known Rogerian theories, the six necessary and

sufficient conditions of personality change (Rogers, 1961), was developed based upon

the theory of an improving relationship. Rogers hypothesised that an individual in a

state of incongruence will experience constructive personality change if they perceive

a minimal degree of congruence, empathy, and unconditional positive regard through

psychological contact with another person over time. Congruence (genuineness),

empathy, and unconditional positive regard were jointly referred to as the core

conditions or facilitativeness (Cramer, 2003a; Davis et al., 2015).

2.2.7. Summary

The person-centred theories of personality development and interpersonal

relationships systematically illustrate the development of an individual's self-concept

and how their level of authenticity/inauthenticity affects one's own and other's

psychological adjustment, their relationship experience, relationship functioning, and

relationship quality. Next, the current development of the person-centred approach in

the field of social psychology will be reviewed, and the solution to further expand its

influence in the field will be discussed.

2.3. Person-centred research in social psychology

In the last chapter of *A Way of Being*, Rogers (1995) described a more human and

humane world of tomorrow constituted by fully functioning individuals. The

transformation from the present world to the world of tomorrow requires the wider

population to move towards authenticity. The development of authenticity is

facilitated by the six necessary and sufficient relationship conditions, which is

commonly experienced in an effective therapeutic relationship (Bozarth & Motomasa,

2017; McAleavey & Castonguay, 2015), but it is far from common in daily life. The unbalanced research development of the person-centred approach in the field of counselling psychology and social psychology can be seen as a sign that 'the world of tomorrow' has not yet arrived. Rogers offered a revolutionary paradigm for psychology (Joseph, 2018), but it does not seem well assimilated by the mainstream. This thesis is an attempt to bring the attention of contemporary social psychologists to the original Rogerian theory, which may potentially systematise different theories in the field, promote the social practice of the person-centred approach, and facilitate the flourishing development of society.

2.3.1. Current person-centred research in social psychology

Person-centred psychology offers systematic theories of personality development and interpersonal relationships, which could have been more influential within mainstream psychology. Joseph and Murphy (2013) suggested person-centred psychologists to build bridges to other areas of psychology, which could enhance the impact of the person-centred approach in other fields. This section reviews the previous studies that adopt the conceptual framework or concepts of the person-centred approach and discuss the current development of the person-centred ideas in social psychology. The development of psychometric assessments marks the turning point in the expansion of person-centred research into other fields of psychology. And the application of the scales reflects the development of person-centred research in the fields.

The application of B-L RI still tend to focus on professional relationships,

such as student-teacher relationship (e.g., Bockmier-Sommers et al., 2017; Drevets et al., 1996), coach-athlete relationship (e.g., Rutten et al., 2007; Vealey et al., 1998), nurse-patient relationship (e.g., Moghaddasian et al., 2013; Olson, 1995), mentor-mentee relationship (Clifford, 1999). In the study of non-professional relationships, the B-L RI has been used to investigate the relationships of the perceived core conditions to marital satisfaction (Wampler & Powell, 1982) and indicate the effectiveness of marriage and family therapy (Epstein & Jackson, 1978; Gurman, 1975). However, the B-L RI is just like other self-report instruments that may be contaminated by social desirability response bias (Schumm et al., 1980a). In the person-centred approach, social desirability response bias can be understood as an expression that is incongruent with one's self-experiences and/or symbolised awareness resulting from conditions of worth and/or social expectations. For example, women who conforms to traditional gender norms may associate the success of their marital communication with their positive self-regard. As women, they may distort or deny self-experiences that reveal the reality that their marriages are not as good as they think they are, or intentionally present that their marriages are happy and satisfying in order to meet the social expectations. Thus, their responses to questions related to marriage and relationships can be biased. However, the core conditions are recommended to be assessed through self-report (Cramer, 2003a) since one's perception of genuineness, empathy, and unconditional positive regard are one of the necessary and sufficient conditions for constructive change in psychological adjustment (Rogers, 1957). The marital conventionalisation was suggested to be

accounted for when self-report instruments are used to assess marital quality

(Schumm et al., 1980a). Similarly, the more authentic individuals are, the less

conditions of worth they hold, and their expression are more congruent with their

awareness and self-experiences. This means that responses of authentic individuals to

self-report instruments are less likely to be biased, whereas inauthentic individuals'

responses are more likely to be biased. Thus, socially desirable response bias in the

use of self-report instruments could be controlled when authenticity or conditions of

worth are accounted for in the analysis.

Duncan Cramer has published numerous research papers on the relationships

of the perceived core conditions to self-esteem, psychological adjustment, and

relationship satisfaction in friendships and romantic relationships. Providing empirical

support for a positive association between perceived facilitativeness and relationship

satisfaction in romantic relationships was one of the key contributions of Cramer

(2003a) to the development of the person-centred theory in social psychology. Cramer

suggested a reciprocal influence between facilitativeness and relationship satisfaction.

Individuals who perceive greater facilitativeness in their relationships tend to increase

in feeling of facilitativenss for the other party, which lead to mutual satisfaction

(Rogers, 1959). The mutuality of facilitativeness was confirmed a later study in which

both clients and therapists perceived increased levels of facilitativeness over time and

the mutuality of faclitativeness was positively associated with therapy outcome

(Murphy & Cramer, 2014). The mutuality of facilitativeness has not been examined in

romantic relationships by using dyadic data analysis. In the same study (Cramer,

2003a), perceived level of regard and empathy mediated the association between negative conflict and relationship satisfaction. The result was interpreted that experiencing negative conflict leads to lower levels of positive regard and empathy perceived from the other party, which in turn reduce relationship satisfaction. Generally, individuals who were satisfied with their romantic relationships perceived higher levels of facilitativeness and barely experienced negative conflict in the relationships. These findings remain to be confirmed in longitudinal prospective investigations.

In another study, Cramer (1985) found that females who are currently in a close relationship that is facilitative tend to report higher levels of self-acceptance and lower levels of psychological maladjustment than females who are not in such relationships. These associations were not found in males, which may be due to the small size of the male samples. These findings partially support the hypothesis that perceived facilitativeness improves relationship experience and promotes psychological functioning in a relationship over time. However, the cross-sectional nature of the study did not allow to establish casual relations among perceived facilitativeness and psychological adjustment. Therefore, Cramer has conducted a series of studies to explore the relationship between perceived facilitativeness and self-esteem by using cross-lagged panel correlation analysis. Studies found that perceived core conditions have a positive impact on self-esteem separately and jointly (Cramer, 1988, 1990). Self-esteem can be seen as equivalent to self-regard in the person-centred approach. Furthermore, Cramer compared the contrary hypotheses in

the person-centred theory of interpersonal relationships and rational emotive behaviour theory (Abrams & Ellis, 1994) by the examination of the role of need for approval in the relationship between perceived core conditions and self-esteem in romantic relationships and close friendships. Cramer found that the need for approval does not moderate the relationship between self-esteem and perceived facilitativeness neither in romantic relationships (Cramer, 2009) nor in close friendships (Cramer, 1993), which support the hypothesis of the person-centred theory that individuals' perceived facilitativeness promotes the development of unconditional positive self-regard and free them from the need for positive regard from others. Need for approval has been found to be associated with perceived facilitativeness and self-esteem negatively (Cramer, 2003b, 2009), which are also consistent with the hypothesis. The studies reported above are cross-sectional and/or correlational, and future studies were recommended to use longitudinal and dyadic designs to examine the casual direction of the relationship between facilitativeness and psychological adjustment in non-professional relationships (Cramer, 1985). Structural equation modelling was considered as an ideal statistical technique as it provides measures of casual effect size, can be used to test mediating effects, and distinguish spurious effects from reciprocal effects (Cramer, 1988).

The authenticity scale is another psychometric scale that was developed based on Rogerian theory (Wood et al., 2008), which has been cited over 1200 times since its publication in 2008. Authenticity has been considered as a crucial indicator of psychological adjustment in the person-centred theory, which has been supported by

empirical evidence from large studies. For example, researchers have reported

positive associations of authenticity to psychological well-being, emotional

intelligence, secure self-esteem, and mindfulness. (Chen & Murphy, 2019; Heppner &

Kernis, 2007; Lakey et al., 2008; Tohme & Joseph, 2020). However, there were only a

few studies that discussed their findings under the framework of the person-centred

theory. Some researchers define a true self as a fixed system "that coordinates all of a

person's disparate psychological characteristics in a unified, coherent, and consistent

fashion" (Jongman-Sereno & Leary, 2019, p. 135). However, in the person-centred

approach, the 'true self' is the organism/organismic self that naturally strives to

maintain, grow, actualise, and enhance the experience of the organism (Rogers, 2003).

The person-centred approach does not view the 'true self' as a coordinating entity of

disparate psychological characteristics, not to mention in a unified, coherent, and

consistent way. Jongman-Sereno and Leary (2019) forcefully criticised the

conceptualisation of authenticity without differentiating Rogerian conceptualisation of

authenticity from other conceptualisations. The development of person-centred

research cannot be promoted by simply using the terms or the scales that are

developed based on the approach; the research design and findings need to be

discussed and interpreted under the framework of the approach.

The uses for the unconditional positive self-regard scale (Patterson & Joseph,

2006) have been limited within person-centred psychology and positive psychology.

Two studies have reported a positive relationship between unconditional positive self-

regard and posttraumatic growth, and the association was partially mediated by

intrinsic aspirations (Flanagan et al., 2015; Murphy et al., 2015). Another two studies

found a positive association between unconditional positive regard and authenticity

(Kim et al., 2020; Murphy et al., 2020), which is consistent with the person-centred

theory that individuals move towards authenticity when positive self-regard is

associated with all of their self-experience (Rogers, 1959). Unconditional self-

acceptance has a similar concept to unconditional positive self-regard, but have

received more attention and research effort. Albert Ellis, the founder of relational

emotive behaviour therapy, suggested that the existence of human beings is an

ongoing process, therefore, any self-judgement would only be meaningful at a single

point in time (Ellis, 1976). Ellis emphasized unconditional self-acceptance over self-

esteem since both high and low self-esteem are based on a static sense of self that is

against the ongoingness of self-experiences. Existing research related to unconditional

self-acceptance can enrich understanding of unconditional positive self-regard and

inspire future investigations on unconditional positive self-regard. For example,

individuals tend to engage with compulsive exercise behaviour that may lead to an

increased risk of psychological and physical harm when they seek to meet

appearance- or health-related expectations they perceive from significant others. It

was found that unconditional self-acceptance was negatively linked to perceived

expectations of significant others and compulsive exercise behaviour, and fully

mediated the relationship between the perceived expectations of significant others and

compulsive exercise behaviour (Hall et al., 2009). These findings suggest that

unconditional self-acceptance may reinforce a shift away from a belief that the

fulfilment of others' expectations related to appearance and health is necessary to gain their acceptance, which in turn reduces the risk for experiencing compulsive exercise behaviour. Under the person-centred theoretical framework, this finding can be interpreted that when individuals' self-experience of doing an exercise is discriminated by significant others as being more worthy of positive regard, the need for positive regard may drive the individuals to develop similar conditions of worth. The conditions of worth put the individuals under pressure to exercise, and the individuals fail to adjust their compulsive exercise behaviours since the fulfilment of the conditions of worth and expression of positive regard by a significant other are more compelling than the organismic valuing process.

Noteworthy, the unconditional self-acceptance questionnaire (Chamberlain & Haaga, 2001) as a measure of unconditional self-acceptance assesses a single factor, whereas the unconditional positive self-regard scale (Patterson & Joseph, 2006) measures unconditionality of regard and level of regard separately. The unconditional positive self-regard scale has the potential to provide more information on how conditionality of self-regard may affect psychological adjustment compared to the unconditional self-acceptance questionnaire and other measures of self-esteem.

All the previous empirical findings shown above can be integrated into the person-centred theory. Individuals who remain in need of positive regard judge the value of an object or experience from others' points of view in order to get external approval. As a result, their expression, behaviour, and awareness become incongruent from their actual experience, they lose the connection to their organismic valuing

process. In such state, individuals cannot access to the important internal resource for positive functioning and their self-esteem is vulnerable to the discrepancy between self-experiences and self-concept. However, individuals become more and more able to reconnect with their internal valuing process when they perceive facilitativeness in a relationship over time. In such relationship, individuals do not need to worry about disapproval, because the other party experience positive regard to the individuals unconditionally. The genuine and clear communication of the other party encourages the individuals to express their feelings and thoughts freely. Feelings and thoughts expressed are empathised, which promotes the expression and exploration of the internal process. The need for positive regard is met unconditionally, the individuals increasingly experience an unconditional positive self-regard. External judgements become less of a focus; the individuals increasingly put themselves in the centre of the valuing process. Defensiveness becomes less necessary as the discrepancy between self-experiences and self-concept reduces. Overall, perceived facilitativeness enables all the positive changes, such as less need for approval, higher self-esteem, and self-acceptance, which promoting the development of authenticity. The congruence between experience, awareness, and expression/behaviour leads to better psychological adjustment. However, the relationships between perceived facilitativeness and dispositional authenticity have not been examined in non-professional relationships yet. Based on the person-centred theory (Rogers, 1959), greater perceived facilitativeness should be related to greater dispositional authenticity, and individuals who are more authentic are more able to feel of

facilitativeness for others. Considering the mutuality of facilitativeness, authentic individuals are also more likely to perceive facilitativeness in their relationships.

Overall, some hypotheses in the person-centred theory have been tested separately. The relationships between some of the key concepts of the person-centred approach remained untested in non-professional relationships (e.g., the relationship between authenticity and perceived facilitativeness). Among the key concepts, authenticity has received the most research attention in recent years. However, some researchers have not studied authenticity under the framework of the person-centred approach, which may cause confusion between different conceptualisations of authenticity. Some psychological theory and research that have similar ideas (e.g., unconditional self-acceptance vs. unconditional positive self-regard) to the person-centred psychology, but the person-centred community is not fully aware of the existence of the overlaps (Joseph & Murphy, 2013). The potential cooperation between person-centred theory and other social psychological theories has been poorly achieved.

2.3.2. Causes of underdevelopment of the person-centred research

The causes of underdevelopment of person-centred research in social psychology are analysed to find solutions to change the situation. First, Carl Rogers had quit academia two years after he extended his theory outside of the field of counselling psychology (Thorne, 2007). Rogers provided several hypotheses for testing, but he was not intended to do it by himself, at least in the field of social psychology. And the person-centred approach is well-known as a therapeutic approach, the person-centred

theory has received relatively little empirical attention in other fields.

Second, the impact of the medical model has expanded hugely in the past fifty years (Conrad, 2007); medical concepts have a strong influence on our understanding of human experience and functioning. Medicalisation did not only occur in the field of psychotherapy, but also in other fields, such as education (Petrina, 2006), morality (Rimke & Hunt, 2002), cyberspace (Miah & Rich, 2008), and interpersonal relationships (Earp et al., 2015). Many psychologists devoted their academic careers to rendering human personality and behaviours into distinct categories, whereas Rogers saw human experience and functioning on a continuum "from fixity to changingness, from rigid structure to flow, from stasis to process" (Rogers, 1961, p. 131). Maybe individuals whose expression and behaviour are congruent with their rigid self-concept can be fitted in those predetermined labels, but the labels cannot define an individual who has a flowing and changing self-concept that is congruent with their moment-by-moment self-experience. The continuum model of human functioning determines that the person-centred approach is growth-oriented instead of problem-oriented (Joseph & Linley, 2006). For example, attachment theory, one of the most popular theories of child development, has been widely criticised for its medicalisation of motherhood and maternal emotion and ignorance of the influence of gender, culture, and power in relationships between parents (Knudson-Martin, 2012; Símonardóttir, 2016). The medicalisation of human experience and functioning may prevent psychologists to understand and research personality and interpersonal relationships in the context of the person-centred approach. The expansion of impact

of the person-centred approach is resisted by the dominance of the medical model

paradigm within mainstream psychology; Joseph and Murphy (2013) called on

person-centred researchers and practitioners to realise the situation, to take a firm

stance, and to vigorously promote person-centred theoretical ideas.

Third, Carl Rogers and his group believe that research in social sciences

should be conducted more and more by using creative research methods, even though

the person-centred theory was built on logical positivism (Rogers, 1959). The

inclination to qualitative and creative research methods can still be seen among

person-centred practitioners and researchers today, and most of them are in the field

of counselling psychology. The person-centred approach emphasises subjectivity and

individual experiences, which are the focus of qualitative and creative research

methods. However, they are not applicable to prove, disprove, or lend credence to

existing theories, which are the purposes of the quantitative research method (Leavy,

2017). Logical positivism does not conflict with the person-centred approach, which

can help to foster and "find more room for the existing subjective person who is at the

heart and base of our system of science (Rogers, 1959, p. 251)". The emphasis on

qualitative and creative research methods might distract the attention of person-

centred researchers from testing the hypotheses that are the basis of the approach.

Fourth, hypothesis testing and theory development require reliable and valid

psychometric tools to measure psychological qualities. Assessment scales for

authenticity was developed in 2008 (The Authenticity Scale; Wood et al., 2008),

unconditional positive self-regard in 2006 (The Unconditional Positive Self-Regard

Scale; Patterson & Joseph, 2006), and facilitativeness in 1962 (The Barrett-Lennard Relationship Inventory; Barrett-Lennard, 1962). The Barrett-Lennard Relationship Inventory (B-L RI) has been developed for 60 years, and the current versions of the B-L RI are 64- and 40-item. Many researchers have suggested reducing the length of the B-L RI (Cramer, 1986; Gurman, 1977; Wiebe & Barnett Pearce, 1973), but no abbreviated version of the B-L RI has been developed and validated yet. The length of the scale might hinder its wider application. Therefore, the development of research on facilitativeness in social psychology and other fields might be discouraged.

2.3.3. Solutions to underdevelopment of the person-centred research

To expand the impact of the person-centred approach in social psychology, several solutions are listed. From a psychometric perspective, a more convenient assessment scale that measures relationship facilitativeness is needed. Assessment time and cost can be saved by using a short psychometric measurement.

From a theoretical perspective, Rogerian hypotheses need to be tested more systematically and dyadically outside of therapeutic relationships. Furthermore, some social psychological theories can be integrated into the conceptual framework of the person-centred approach. There are similar theory and research with the person-centred ideas in social psychology, but which have received little attention from the person-centred community and the overlaps between the person-centred theory and other theory and research is not well acknowledged (Joseph & Murphy, 2013). The overall goal of this thesis is to implement these three solutions, which would consequently expand the impact of Rogerian theories and concepts in social

psychology.

The ultimate concern of the person-centred approach is optimal functioning, in which Rogers provided detailed descriptions of positive functioning and proposed the necessary and sufficient relationship conditions to facilitate the development of positive functioning. The existing theory of the person-centred approach is informative enough to support the practice, but the understatement of negative functioning and the lack of research in negative functioning may be the reason why the person-centred approach was marginalised from mainstream practice and research. The medical model is still dominant in a variety of fields, and people are generally concerned about negative functioning rather than positive functioning, even as more and more researchers and practitioners began taking an interest in positive functioning in human beings and the promotion of optimal functioning. The person-centred approach does not put the focus on negative functioning, which does not mean its theory cannot be used to understand and interpret negative functioning. Positive and negative functioning are considered as two ends of a continuum in the person-centred theory; the awareness of promoting optimal functioning would be raised among mainstream researchers and practitioners when the person-centred concepts and theories of negative functioning draws their attention to the person-centred approach. Hence, the person-centred concepts and theories of negative functioning are where the bridge that connects the person-centred psychology and other research areas can be built on. The further development of the person-centred theories of negative functioning is critical for expanding the impact of the person-centred approach in

contemporary research in psychology and other fields, which may potentially accelerate the arrival of 'the world of tomorrow' envisaged by Rogers.

Specifically, the concepts related to negative functioning in the person-centred theory include inauthenticity, partial congruence, conditional self-regard, conditions of worth, and conditional regard. Inauthenticity and partial congruence can be assessed by using the authenticity scale (Wood et al., 2008). Recent studies focused on the impact of incongruence on negative functioning (e.g., Bryan et al., 2017), the relationship between incongruence and negative personality traits (e.g., Haraldsen et al., 2021), and how negative personality traits affect the relationship between partial congruence and relationship functioning (e.g., Seto & Davis, 2021). For example, elite junior performers possessing higher levels of socially derived perfectionism reported relatively high levels of self-alienation (Haraldsen et al., 2021), which confirmed Rogers' hypothesis that individuals lose contact with their self-experiences when they tend to seek positive regard from others (Rogers, 1959). Rogers has never addressed perfectionism directly in his books, but it can be understood as a type of conditions of worth that compels individuals to strive for flawlessness.

Since the unconditional positive self-regard scale (Patterson & Joseph, 2006) measures level of regard and unconditionality of self-regard separately, which allows researchers to study the unique impact of conditionality on psychological adjustment in combination with a longitudinal research design. Individuals who have conditional self-regard must experience highs and lows. More research attention needs to be given to unconditional positive self-regard, especially conditionality of self-regard.

Conditional regard is a general term for positive regard shown towards others is dependent on whether they fulfil certain expectations. The specifics of conditional regard vary between different individuals, relationships, and cultures. For example, parental conditional regard involves providing positive/negative regard when the child does/does not enact desired behaviours. The domain-specific perceptions of parental conditional regard scale (Assor et al., 2004) was developed to measure parental conditional regard, and researchers modified it to measure conditional regard in relationships between teacher and student (Kaplan, 2018), community and individual (Itzhaki et al., 2018), and romantic partners (Kanat-Maymon et al., 2016). These measures of conditional regard can be used directly to study the impact of perceived conditional regard on psychological maladjustment and how authenticity and unconditional positive self-regard may affect the relationship.

Conditions of worth are internalised conditional regard. Conditions of worth are a wide concept of the varieties of standards and expectations individuals believe they must meet to gain positive regard. Essentially, gender norms are sets of conditions of worth relating to gender which commonly affect human beings. The gender role strain paradigm (Levant & Powell, 2017) is a theory about internalised gender norms which is in concordance with the person-centred theory to some extent. Pleck (1995) hypothesised that individuals experience discrepancy strain when they fail to live up to their internalised gender norms. In the person-centred theory, discrepancy strain can be interpreted as threats individuals experience when they are aware of their self-experiences are incongruent with their self-concept that is

characterised by gendered conditions of worth. For example, a man who acquired the traditional attitudes about men in society like "a man should avoid crying", whose tears would be a threat to his self-concept. Men who experience gender role discrepancy stress tend to engage in risky sexual behaviours and perpetrate psychological, physical, and sexual violence against their female intimate partners (Reidy et al., 2016). Men's gender role stress was found to be related to various psychological maladjustment (Levant & Powell, 2017), which is also consistent with Rogers' hypotheses. Psychological scales that were designed to assess one's conditions of worth include, for example, the femininity ideology scale (Levant et al., 2007) and the internalised homonegativity scale (Herek et al., 2009). Liu and colleagues (2005) developed a method to assess the discrepancy between individuals' self-concept and ideal self (the self-concept which they would most like to possess) regarding gender roles. Noteworthy, a man who endorses the traditional gender role ideals and views his self-concept as consistent with his ideal self reported the highest distress, even compared to men whose self-concept is inconsistent with ideal self. The discrepancy between self-experiences and self-concept is seen as the indicator of psychological maladjustment in the person-centred approach. When individuals' self-concept is consistent with the rigid gender-role ideals, their awareness is disconnected from the organismic valuing process, and there must be a discrepancy between their self-concept and actual experiences that leads to distress. The congruence between self-concept and ideal self may suggest the fulfilment of all the conditions of worth, which results in the incongruence between self-experiences and self-concept. Liu and

colleagues (2005) provided a method to investigate the discrepancy between self-concept and ideal self by assessing how much individuals fulfil and endorse specific conditions of worth separately. While there are existing psychometric tools to assess various conditions of worth and conditional regard, the cooperation between the person-centred theory and other social psychological theories are feasible and may promote the interest of social psychologists in the person-centred approach.

Given the major influence of social psychology on a wide variety of practical domains addressing a broad range of real-world problems (Kruglanski & Stroebe, 2012), the expansion of the impact of the person-centred approach in the field is bound to promote and stimulate social change in the direction of more humanness. Rogers (1995) depicted the new world in which individuals explore and develop the capacities and richness of their minds and spirits, sense their power and freedom, and become more integrated, more whole, and more creative.

2.4. Summary

This chapter has provided a systematic introduction to the person-centred theory of personality development and interpersonal relationships, reviewed previous studies that provided evidence for the hypotheses in the person-centred theory, discussed potential causes and solutions to the underdevelopment of person-centred research in social psychology. The person-centred theory needs to be empirically tested, and research focused on the person-centred concepts and theories of negative functioning especially enriches the existing theory and may help the person-centred approach to attract wider attention of researchers and practitioners from different disciplines.

Previous studies have recommended the use of longitudinal and dyadic designs to identify the interdependently causal influence between two individuals, and structural equation modelling was considered an appropriate method for testing the person-centred theory. The person-centred community is encouraged to adhere to the forward-looking nature of the person-centred approach but also to build bridges to contemporary mainstream psychology.

Chapter 3: The potential of the person-centred approach in social psychology

The person-centred concepts and theory can be assimilated into the mainstream understanding of individuals and societies through the influence of social psychology. Meanwhile, the person-centred approach can make a special contribution to the development of social psychology. The following sections introduced the history of social psychology, explored major conceptual developments in social psychology through the lens of person-centred theory, and discussed the potential significance of the person-centred approach to social psychology. This chapter aims to examine the almost non-intersecting development of person-centred psychology and social psychology and exemplify how the person-centred theory can be used to interpret findings of social psychological experiments. The potential links between the person-centred theory and other social psychological theories may guide future research and theoretical development in the intersection of person-centred psychology and social psychology.

3.1. The history of social psychology

This section describes the history of modern social psychology which may explain why person-centred psychology rarely seem to intersect with mainstream social psychology. The non-intersecting development of person-centred psychology and social psychology is discussed at the end of this section.

The term' 'social psychology'' was coined in 1864 by Carlo Cattaneo, an

Italian journalist and politician, and became widely adopted after being used in the

book, *Ideen zur Psychologie der Gesellschaft als Grundlage der Sozialwissenschaft*

(*Ideas for a Psychology of Society as Foundation of Social Science*) by Gustav

Adolph Lindner in 1871, who was a professor at Prague University (Kruglanski &

Stroebe, 2012). The publication of the first two textbooks of social psychology

marked the beginning of scientific social psychology, one was written by a sociologist

named Edward Alsworth Ross (1908), and the other was written by a psychologist

named William McDougall (1908). These textbooks defined the field of social

psychology and categorised certain issue and certain research as belonging to the

field. Floyd Henry Allport published a seminar textbook for social psychology in

1924, which marked the emergence of scientific social psychology. In his textbook,

Allport set the basis for the domain of social psychology as a legitimate field of

behavioural science and defined the field as the scientific study of the way in which

people's feelings, thoughts, and behaviours are influenced by the real, imagined, or

symbolically represented presence of other people. Allport's conception of social

psychology is considered to originate from his experimental research on social

facilitation. Social facilitation had been suggested as a topic for Allport's doctoral

research by his supervisor, Hugo Münsterberg, a professor of psychology at Harvard

University (Allport, 1924). The details of the important theories in social psychology

are introduced, and the key findings of related studies are discussed in the next

section.

　　　The Second World War provided a substantial boost to the development of

social psychology. Empirical work in social psychology has exploded since then (Fiske et al., 2010). The Research Branch of Information and Education Division of the United States of Army hired a group of social scientists to explore ways to increase the morale of their soldiers. The results of their research activities were published in a series of books called *American Soldier* (Stouffer et al., 1949), which explored topics such as how soldiers adjust to life in the army, participate in combat and deal with its aftermath. The volumes in the series have contributed to a better understanding of the attitudes of the American soldier in the Second World War and provided techniques (e.g., the measurement of attitudes and social surveys) to study these attitudes. Furthermore, the interdisciplinary nature of this research programme provided a model to develop interdisciplinary doctoral programmes in social psychology and fostered sustained collaboration among psychology, sociology, and anthropology (Farr, 1996). Carl Iver Hovland, a social psychologist, directed one of the most important research teams in the wartime and founded the nucleus of the post-war programme of research on communication and attitude change at Yale University. The Yale Communication and Attitude Change Programme produced a series of collaborative studies that had a profound impact on the research of attitude change, which concerned the determinants of persuasion and attitude change. Several highly influential volumes on these studies were published during the 1950s and 1960s (Hovland, 1957; Hovland et al., 1953; Hovland & Janis, 1959; Rosenberg et al., 1960; Sherif & Hovland, 1961). Hovland and colleagues proposed an approach to studying persuasive communication, namely the Yale Attitude Change approach. The approach

can be captured in just a few words—— "who says what to whom": the source of the communication (e.g., how attractive the speaker is; Eagly & Chaiken, 1975; Khan & Sutcliffe, 2014), the nature of the communication (e.g., does the message seem to be designed to influence the audience; Petty & Cacioppo, 1986; Walster & Festinger, 1962), and the nature of the audience (e.g., whether the audience is between the impressionable age of 18 and 25; Krosnick & Alwin, 1989).

The post-war generation of doctoral students in social psychology, as in many other academic disciplines, was exceptionally talented. The Research Centre for Group Dynamics at the Massachusetts Institute of Technology was established by Kurt Lewin in 1945, which attracted that cohort of graduate students who nearly all became leaders in the field of social psychology during the second half of the twentieth century (Farr, 1996). Lewin was a refugee in the second world war who moved from Berlin to the United States between 1933 and 1935, and there were many other refugees like him who made a significant contribution to the development of social psychology. Shortly after Lewin's premature death in 1947 (aged 57 years), the research centre was moved to the University of Michigan under the direction of Dorwin Philip Cartwright, who was one of Lewin's graduate students. Kurt Lewin (1946), the founder of empirical social psychology, insisted that social psychological questions are best studied with the experimental method and in a laboratory setting; social psychological studies can result in a greater understanding of fundamental psychological processes and development of theories of social influence; social psychological theories and methods can be applied to address real-world problems.

Lewin pioneered research on group dynamics which is now called intra-group and intergroup processes. Leon Festinger was unquestionably Lewin's most influential student, whose theory of cognitive dissonance (Festinger, 1957) was one of the most famous theories in social psychology and shaped the research agenda in the field for several decades following the end of the war. Social comparison theory is another important theory that was originally formulated by Festinger (1954), and was further refined by many others (Buunk, 2013; Hoorens & Damme, 2012; Suls & Wheeler, 2000; Swencionis & Fiske, 2014).

Lewin pioneered the application of Gestalt principles beyond the perception of objects to social perception, and Heider further extended the principles into areas such as attitude organisation, person perception, and interpersonal relations (Goethals, 2003). Fritz Heider, another key figure in social psychology, moved from Austria to the United States in 1930 to work with Kurt Koffka, who was one of the founders of Gestalt school of psychology (Farr, 1996). Heider had originally intended to stay for only one year, but he fell in love with Grace Moore, an assistant to Koffa, shortly after his arrival in the United States. Heider and Moore married in the same year, and Heider decided to settle in the United States. Heider is considered by many to be the founder of attribution theory and consistency theory, which dominated research in social psychology in the second half of the twentieth century (Kruglanski & Stroebe, 2012). Attribution theory explains how individuals infer the causes of events or behaviours. Heider (1958) proposed two types of attribution: internal and external. The over mechanical and reductionist view of causal attributions was criticised since

it assumes that people are always rational or logical when making judgements about others (Aronson et al., 2016). As Rogers (1959) proposed in the person-centred theory of personality, the symbolic representation of experience is not always accurate and sharp, especially for experiences that threaten self-concept. Attribution theory also fails to take the social, cultural, and historical factors into account.

The history and agenda of social psychology are inextricably linked to major social trends or events in history. The Second World War and holocaust clearly stimulated interest in topics such as authoritarian personality, propaganda, group morale, aggression, obedience, and conformity (Ross et al., 2010). In the late 1940s, Soloman Asch began his extremely famous and influential studies of conformity, which has attracted a great deal of research on this topic. The issues of conformity and blind social influence were again given prominence by Milgram's (Milgram, 1963, 1965) experimental studies of obedience to authority in the early 1960s. Milgram recruited participants to take part in a study on memory and learning by advertising in the newspaper. He actually intended to test if an experimenter could influence the participants to commit immoral acts. Milgram's research stirred wide debate on the ethics of the use of deception in social psychological experiments (Baumrind, 1964). The overreliance on laboratory in social psychology was criticised for undermining the face validity of results. The laboratory setting, an overrepresentation of undergraduate participants, and short-lasting interventions made the development of social psychology in the public relations domain less satisfactory than other social sciences (Cook & Groom, 2004). The controversies (Kelman, 1967) led to the

publication of the American Psychological Association's ethical principles in the conduct of research with human subjects (American Psychological Association, 1973) and regulations for the protection of human subjects included in the National Research Act of 1974. New review procedures were designed to strictly protect human participants in psychological research, but which had a chilling effect on the whole research enterprise (Festinger, 1980).

Research interest in prejudice and racism was heightened in the context of the American civil rights movement (Tajfel, 1974). Tajfel and colleagues developed the minimal group paradigm to investigate the minimal conditions for group biases in which individuals tend to favour their own group and discriminate against other groups. They also offered a simple and cheap procedure for the study of intergroup behaviour (Tajfel, 1970; Tajfel et al., 1971a). The research findings (Tajfel, 1974; Tajfel & Turner, 1986; Turner, 1975) on intergroup behaviour led to the establishment of the social identity theory that was fully developed and was very influential in the 1980s. Social identity is the portion of self-concept that is developed based on the groups individuals belong to, including nationality, gender, religion, occupation (Turner & Oakes, 1986). John Turner (2010), a member of Tajfel's team, developed the self-categorisation theory that is closely related to social identity theory in 1985. The self-categorisation theory specifies the process by which the self and others are perceived as a group and describes the consequences of perceiving collections of people as a group.

Tajfel was one of the outstanding representatives of European social

psychologist. Other non-American social psychologists, including Moscovici (social representation theory; 2001) and Argyle (theory of the communication cycle; 1994), have had a great influence on social psychology on the eve of the twenty-first century. Since then, the field of social psychology has started moving towards internationalisation (Goethals, 2003).

While conventional social psychology is concerned with changes in the behaviour and attitudes of individuals in different social situations, social psychologists seem to be more interested in those individuals who are subject to external influences. Through person-centred theories, those who would be influenced by the external environment are inauthentic, and their inauthenticity also leads to a variety of negative functioning. In other words, social psychologists used to focus on understanding and predicting how inauthentic individuals are influenced by different social situations, person-centred psychology focuses on authentic individuals who are free from introjected values and perceived external influence and social environments that facilitates the development of authenticity. The parallel development of person-centred psychology and social psychology is caused by two main reasons: first, person-centred approach could be incorrectly considered just an approach to counselling and psychotherapy, which might have restricted its application in social psychology; second, the different emphases might have led social psychologists to overlook the potential significance of the person-centred psychology in the field.

3.2. Major conceptual developments in social psychology

This section gives details of some major social psychological theories and discusses

how they can be related to the person-centred theory.

3.2.1. Social facilitation

Allport (1924) defined social facilitation as the tendency for people to perform better when they hear or see others doing the same task. The first social psychological experiment was about social facilitation, which was carried out by Norman Triplett and published in 1898. Triplett (1898) described his observation of bicycle racing in a naturalistic observational study, in which he reported that cyclists performed better when they were racing against others than when they were trying to beat their own times. In a controlled experiment, children were asked to do a fishing reel task either in pairs or alone. Each participant did the task three times with another child and three times alone. Most children completed the task faster when competing with other children, half of the rest of the children worked more slowly, and another half were unaffected. Allport (1920) designed his studies on social facilitation with the intention to minimise competition effects. Participants were asked to do mental tasks and not to compare their results with other people. In a word association task, participants were asked to write down every word that came to mind in response to a given word. In an argument-generation task, participants were asked to write down any argument they could produce after reading a classic literature selection. Besides, participants performed the tasks both in groups and alone. For both tasks, participants performed better in groups in terms of quantity. However, participants created higher quality of arguments when they were alone.

Over the past century, the theory of social facilitation has been developed

through extensive studies, but there has not been a unified theory to explain this phenomenon effectively and parsimoniously (Aiello & Douthitt, 2001). In the person-centred perspective, social facilitation can be interpreted as the result of the conditions of worth about 'the winner is more worthy of positive (self-)regard'. An authentic individual values self-experiences of performing better and worse than others equally because of the unconditional positive self-regard. The presence of competitor or audience would not make any difference to the performance of an authentic individual since they have no conditions of worth and do not need for positive regard from others.

3.2.2. Cognitive dissonance

Festinger (1957) defined cognition as "any knowledge, opinion, or belief about the environment, about oneself, or about one's behaviour" (p. 3). Pairs of cognitive elements can be irrelevant, dissonant, and consonant with one another. He theorised that the existence of dissonance causes an uncomfortable psychological tension, leading the person to reduce the dissonance and avoid situations and information likely to increase the dissonance. Festinger's (1957) cognitive dissonance theory is similar to Rogers' (1959) theory of personality that psychological discomfort is caused by the incongruence between two mental elements, which gives rise to pressures to reduce or eliminate the incongruence. The cognitive dissonance theory differs from the person-centred theory in that the former concerns only what is already cognised, whereas the latter concerns both experiences in awareness and below the surface of conscious awareness.

In Festinger and Carlsmith's (1959) groundbreaking study, male participants performed a series of boring tasks (e.g., turning spools on a board) for 1 hour. Participants were told that the purpose of the study was to investigate the impact of expectancies on task performance after the task. They were further informed that they were in the control group receiving no information before beginning the tasks. Participants were also deceived that there is an experimental group, which was told that the tasks were interesting by a person who had just completed them. Then the experimenter offered participants 1 or 20 US dollars to tell the next person in the experimental group (actually an experimenter's accomplice) that the tasks were enjoyable and to remain on call in the future. Almost all of the participants accepted their offer and provided a positive evaluation of the task to the accomplice. In the end, participants were asked about their actual experiences in performing the tasks by an interviewer who seemingly had nothing to do with the experiment. Results indicated that the participants who were paid only 1 US dollar for describing the tedious tasks as enjoyable rated the tasks as more enjoyable than did participants who were paid 20 US dollars or who were not asked to describe the tasks to another person after they completed the tasks. Festinger and Carlsmith (1959) argued that participants who lied experienced cognitive dissonance between their experience (felt bored with the tasks) and behaviour (told someone the tasks were enjoyable). But participants who were paid 1 US dollar could not believe that they lied to others for too little money; therefore, they distorted the experience as they really enjoyed the tasks and found the tasks interesting. Participants who were paid 20 US dollars had an important

cognition to make the cognitions more consonant, which was getting paid a lot of money to lie. When individuals receive less incentive to engage in counterattitudinal behaviour, they tend to reverse their attitudes, which has been labelled as the negative-incentive effect. In subsequent research, Linder and colleagues (1967) found that the negative-incentive effect only occurs when the person is free to choose whether to engage in the counterattitudinal behaviour. If individuals perceive that they have no freedom to decide whether to engage in the counterattitudinal behaviour, they show minimal attitude change. The condition that 'I was forced to do it' made the actual attitude and the counterattitudinal behaviour consonant; there was no need to change attitude.

The person-centred theory can be used to explain the impact of freedom of choice on the relationship between the amount of incentive and the amount of attitude change. Dishonesty and duplicity are widely discriminated as less worthy of positive regard. Individuals who hold such conditions of worth do not want to be perceived as dishonest and duplicitous since such self-experiences are associated with negative regard. However, if individuals are paid a lot of money or forced to engage in the counterattitudinal behaviour, the experiences of being dishonest and duplicitous are not related to the self anymore, which cannot be a threat to their self-concept. Therefore, there is no need to create distortion of the experience in awareness. When individuals receive little money to engage in counterattitudinal behaviour, it is difficult to convince themselves that 'it was only about money'. The experiences of dishonesty and duplicity are more likely to be related to the self, causing threats to the

self-concept. The experience in awareness is distorted to reduce the incongruence between the experience and the self-concept.

3.2.3. Social comparison

Festinger (1954) theorised that people have the drive to evaluate their own opinions and abilities. People tend to evaluate their opinions and abilities by comparing themselves to others when they cannot make these evaluations through objective, non-social means. People tend to engage in social comparison when the other person whose ability or opinion is close to their own. People are unlikely to compare them with someone who is very divergent; social comparison like that will produce imprecise and unstable evaluations. Comparisons with others whose opinions and abilities are moderately different from one's own, however, will produce changes in one's evaluation of one's own or the others' opinions or abilities. One of the earliest studies on social comparison carried out by Festinger (1942) was under the supervision of Kurt Lewin. This research showed that participants tend to lower their aspirations if they found themselves above the average of the group and tend to raise their aspirations if they scored below the average of the group. The action to reduce the discrepancy between one's opinion or ability and that of most of the others in the group was considered as the result of pressures toward uniformity. From a person-centred perspective, divergent expressions and behaviours may put individuals under the threat of losing positive regard or receiving negative regard from the group. Therefore, individuals who have the need for positive regard from others may sacrifice their authenticity to fit in with the group. Festinger (1942) suggested that the

societal expectation on individuals to be better and better may prompt those who perform below the average to improve and achieve comparability with the group average. Such tendency was called the unidirectional drive upwards for abilities. The unidirectional drive upwards can be seen as a product of conditions of worth about 'better performance is more worthy of positive (self-)regard'. The need for positive regard drives individuals to compare themselves with others who are somewhat better than them and learn to become as good as those people.

Festinger (1942) theorised that the pressures towards uniformity and the unidirectional drive upwards cease simultaneously when the individual is just slightly better than the others in the group. Sometimes, people compare themselves to those who are worse than they are with respect to some particular ability when they are intended to boost positive self-regard. Festinger (1942) believed that social comparison is a basic human tendency, but I would argue that it is only true for individuals who are experiencing conditional positive self-regard. Individuals who engage in upward social comparison are desired to achieve a better level of ability that is considered more worthy of positive regard, whereas individuals who engage in downward social comparison boost their positive self-regard immediately by selectively perceiving certain experiences. Conditions of worth are the foundation of social comparison; self-concept determines whether an individual engages in upward or downward social comparison. Competitions and comparisons are ubiquitous. For example, in much of the world, education is more or less competitive in nature. The success of one student is based on the failure of others. If an individual has a self-

concept involving 'I am good and I am better than others', the self-actualising tendency would motivate them to avoid upward social comparison and seek for downward social comparison. And vice versa with an individual who views themselves as bad and worse than others with respect to some specific abilities.

3.2.4. The Asch conformity experiments

The Asch conformity experiments (Asch, 1951, 1955, 1956) were a series of now-classic studies conducted by Solomon Asch studying the power of normative social influence. Asch expected that people would stand firm against social pressures when what the group said or did is in contradiction with obvious truth. In his study (Asch, 1951), each participant was asked to judge the length of lines with seven confederates. Participants believed that other people in the room were also real participants like themselves. Each person viewed two cards, one with a target line on it and the other with three comparison lines. Everyone was asked to say aloud which of the three comparison lines is closest in length to the target line. The three comparison lines were clearly different in length, so participants were expected to respond one hundred per cent correctly. The confederates had been instructed to give the wrong answer on 12 of the 18 trials before the experiment. The real participant was always the last to respond. Surprisingly, 76% of the participants conformed to the incorrect answer on at least one trial. Five per cent of participants conformed to the group's incorrect answer every single time, and 24 per cent of participants never conformed at all.

Some participants revealed that they believed that the confederates' answers were correct during the interview after the experiment. One participant who

conformed to the group's incorrect answer explained, "Here was a group; they had a definite idea; my idea disagreed; this might arouse anger … I was standing out [like] a sore thumb … I didn't want particularly to make a fool of myself … I felt I was definitely right … [but] they might think I was peculiar" (Asch, 1956, p. 228). Participants who stuck with the correct answers were suspicious but still went against the majority. These three types of reactions are great examples of how external influence affects one's internal and external aspects of congruence (Rogers, 1959). External influence can alienate individuals' awareness from their actual experiences, leading to a distortion of perception. Self-alienated participants were unaware that others were giving incorrect answers and adopted the incorrect answers as their own judgements. External influence can also inhibit individuals from acting in accordance with their cognitions. Even though many participants knew the majority was wrong, their fear of negative regard stopped them to speak aloud the correct answers. Only people who do not accept external influence held firmly to those they had considered being right. If Asch had assessed participants' level of authenticity in his studies, he might have found the relationship between authenticity and conformity.

3.2.5. Social identity

Rogers (1959) made an explicit distinction between personal self-views and relational self-views in his definition of self-concept. Tajfel and Turner were the first social psychologists to propose the concept of social self-knowledge, which is different from personal and relational self-knowledge (Tajfel & Turner, 1986, 2004). Social self-views refer to people's knowledge of social groups or categories to which they

belong, together with the feelings attached to those groups (Tajfel & Turner, 1986, 2004). Some theorists further proposed the three levels of representation of self-knowledge: individual, interpersonal, and collective (e.g., Brewer & Gardner, 1996). Personal self-views consist of the "perceptions of the characteristics of the "I" or "me" (Rogers, 1959, p. 201); relational self-views refer to personal qualities that are associated with people's social roles and relationships (Andersen & Chen, 2002); collective self-views describe personal qualities that are relevant to people's group memberships. The distinction between personal and collective self-views enables the recognition that individuals can derive positive self-regard not only from their personal qualities but also from their membership of valued groups (e.g., Luhtanen & Crocker, 1992; Tajfel & Turner, 2004).

Social identity theory (Tajfel & Turner, 1986, 2004) states that to the extent that an individual's self-concept is bound up with their group membership, they tend to favour their own group relative to outgroups in order to maintain or achieve a positive social identity. This hypothesis has received strong empirical support (Brewer & Kramer, 1985; Tajfel et al., 1971b). In the absence of competition for resources or material outcomes, social categorisation can be sufficient to trigger intergroup conflict and intergroup discrimination. In-group members tend to perceive individuals in the outgroup to be more alike than they really are, as well as more similar to each other than individuals in the in-group. The outgroup homogeneity effect promotes the dehumanisation of individuals in outgroups by perceiving them as less than human. There is a clear relationship between mutual reinforcement between dehumanisation

and the justification and maintenance of intergroup prejudice and conflict (Cortes et al., 2005; Vaes et al., 2003).

I would argue that group memberships cannot be internalised as a meaningful aspect of self-concept for authentic individuals since they are aware that the fixed knowledge of the groups does not fit with their fluid and changing self-concept. When individuals place great importance on the collective self, they will show high levels of conformity to group norms that result in the incongruence between self-experiences and the collective aspect of self-concept. Meanwhile, people's self-regard is under the threat of being evaluated as a representation of their group instead of as an individual. Social identity threat influences people's ability to perform well by depleting their cognitive resources to focus on the task that they are doing (Schmader & Johns, 2003). However, placing a lot of stock in collective self-views has a positive impact on psychological adjustment for members of negatively stereotyped social groups. It was found that Black college students do not relate the racial stereotypes they perceive from others to their private views of the group (Crocker et al., 1994). A recent study found that perceived discrimination has an indirect impact on discrimination-related posttraumatic growth via discrimination-related posttraumatic stress disorder symptoms among Muslim Americans (Tineo et al., 2021). Ethnic minorities may find the meaning of collective self-views in the shared racial trauma, and positive psychological change can be a result of the struggle with traumatic events. Members of negatively stereotyped social groups are resilient to prejudice and discrimination when they do not internalise negative societal attitudes towards the

social groups and develop an authentic sense of self (Thomas et al., 2004).

3.3. Potential significance of the person-centred approach to social psychology

The history and agenda of social psychology are tightly intertwined with the major social events, and the impact of social psychological theories and findings on addressing major real-world societal problems is incontrovertible and vast across various practical domains, such as culture, political behaviour, health concerns, consumer psychology, organisational behaviour, and international security (Kruglanski & Stroebe, 2012). Most of the classical studies in social psychology have been conducted in experimental settings. There have been strong critiques of social psychology's laboratory experiments from the 1960s to the present. Cook and Campbell (1979) argued that the over-reliance on the experiment makes an if-then kind of description for causal relationships. Shamay-Tsoory and Mendelsohn (2019, p. 1) criticised the narrow focus of conventional experimental psychological approaches on "investigating behaviour of individuals as isolated agents situated in artificial, sensory, and socially deprived environments, limiting our understanding of naturalistic cognitive, emotional, and social phenomena." At the beginning of the rise of behavioural science, Rogers (1961) expressed his concern over its tendency to become an "if-then" science, he stated that, "the behavioural sciences are making rapid strides in the understanding, prediction, and control of behaviour. In important ways we know how to select individuals who will exhibit certain behaviours; to establish conditions in groups which will lead to various predictable group

behaviours; to establish conditions which, in an individual, will lead to specified behavioural results; and in animals our ability to understand, predict and control goes even further, possibly foreshadowing future steps in relation to man" (Rogers, 1961, p. 378).

According to the person-centred theory of personality (1959), authentic individuals' behaviours are relatively unpredictable and independent from external influences since they adapt to each new situation and each new problem in a unique and creative manner, and fully express their own purposes and values. Generally, the behaviours of authentic individuals are characterised as autonomous, genuine, creative, and socially constructive (Rogers, 1961). The emphasis on prediction and control of behaviours would lead social psychology to become a study of inauthenticity and psychological maladjustment, which in turn would further reinforce a negative view of human nature. The person-centred approach has concentrated on positive functioning and facilitative relationship, which may inspire social psychologists to accommodate a new way of studying positive social functioning and facilitative social influence. Examination of participants' levels of authenticity and conditions of worth will provide social psychologists insights into the behavioural differences among them.

Individuals lose the connection to their organismic valuing process, behave in accordance with introjected values, and accept external influence. The behaviours of inauthentic individuals can be successfully predicted and controlled by discovering the conditions of worth they hold, the self-views they acquire from others and society,

and the need for positive regard by others. For example, individuals are prompted to perform better when they are aware of the presence of others doing the same task by the conditions of worth about being better than others (social facilitation). The same conditions of worth drive individuals to compare their abilities with others whose abilities are moderately better than their own in order to improve their abilities, but only when their self-concept is not threatened by the fact that they are no better than others, at least some of the time (upward social comparison). When the individual believes that they are better than others in the group, they will tend to engage in downward social comparison in order to maintain or boost positive self-regard. Inauthentic individuals tend to conform and follow the majority, even when the majority is obviously wrong (the Asch conformity experiment). The person-centred approach has the potential to provide a meta-theory to integrate the discrete social psychological theories, an interpretation of inconsistent findings, and an alternative paradigm to guide future research in social psychology. For example, if Asch assessed participants' levels of authenticity in his conformity experiments, he might find the relationship between inauthenticity and conformity.

The person-centred approach is not an island that is isolated from the continent of psychology, which can be compatible with, and complementary to other psychological theories. Rogers (1959) theorised that authentic individuals are flexible to adjust their self-concept in accordance with their actual experiences. Authentic individuals have no conditions of worth and open to their experiences. But to what extent they are able to identify prejudices against social groups they do not belong to?

Especially when those prejudices are benevolent. Benevolent prejudices sound

positive and like a complement, which are not readily identifiable because they tend

to "fly under society's constant antibias radar" (Czopp et al., 2015, p. 453). For

example, women are lauded as 'the better sex' since they tend to be warm and caring

compared to men. Cognitive dissonance theory, social identity theory, and other social

psychological theories may assist person-centred psychologists to better understand

how authentic individuals process positive stereotypes of outgroup members. Indeed,

the integration of the person-centred theory and some social psychological theories

opens up new directions for research that extend our knowledge about positive human

functioning and flourishing at the societal level.

3.4. The urge to stop the expansion of medicalisation

The medical model has been dominant in psychotherapy and a variety of other fields,

and its impact has expanded enormously in the past half-decade (Conrad, 2007).

Medicalisation is defined as the process of a problem being "defined in medical terms,

described using medical languages, understood through the adoption of a medical

framework, or "treated" with a medical intervention" (Conrad, 2007, p. 5).

Medicalisation's influence is all-pervasive; even many person-centred practitioners do

not realise that they have become aligned with the medical model (Joseph & Murphy,

2013). Social psychology has not been spared the impact of medicalisation. There has

long been a group of social psychologists keen on categorising individuals into

different personality types and labelling those who show extreme behaviours as

having pathological personalities. For example, the authoritarian personality (Adorno

et al., 2019) and the Dark Triad of personality (Paulhus & Williams, 2002). Some

psychiatrists have even medicalised romantic relationships; certain experiences of

romantic relationships were labelled as pathological love (Stravogiannis et al., 2018).

It seems that all human experiences can be transformed into pathologies. Even normal

life events, such as childbirth, menopause, and ageing, have long been turned into

medical events (Conrad, 2007). Through a half-century of research, Conard (2007)

identified that the major forces behind medicalisation have gone from physicians,

interest groups, social movements, organisational and interprofessional activities to

managed care, biotechnology, and consumers. Individuals who collaborate with each

other to promote and shape their diagnoses have always been the main players in

medicalisation. For example, the Vietnam veterans movement had a critical role to

play in the medicalisation of posttraumatic stress disorder (Scott, 1990).

Medicalisation can be a strategy to alienate certain self-experiences from self-concept

in order to maintain positive self-regard. For example, ageing is a common life

process, but ageing female bodies have been medicalised, and ageing male bodies

have been increasingly medicalised. Negative images of ageing are pervasive in all

societies without being recognised and challenged, which lead people to resist or fear

the ageing process. Medicalisation can provide people with a sense of control

(Gullette, 1994; Katz & Marshall, 2003; Marshall & Katz, 2002). Ageing causes a

series of changes in men's bodies that may threaten their self-concept, especially

when they hold conditions of worth about capacities, embodiments, presentations, and

masculine identities. Men's anxiety about ageing and masculinity conspired with the

medical and pharmaceutical enterprise in the medicalisation of their ageing-related body changes, such as baldness and a decline in sexual function (Conrad, 2007).

Medicalisation is almost unimpeded and can occur readily. Once certain human experiences become medicalised, the price of demedicalisation can be decades of collective efforts. Masturbation and homosexuality had been considered diseases that needed to be treated and later were demedicalised (De Block & Adriaens, 2013; Engelhardt, 1974). The first edition of the Diagnostic and Statistical Manual (DSM-I; American Psychiatric Association, 1952) was created in 1952, in which homosexuality was mentioned as a sexual deviation. Homosexuality was officially defined as a medical pathology in the DSM-II (American Psychiatric Association, 1968). After more than two decades of unremitting efforts by lesbian-feminists and gay activists, homosexuality was finally declassified as a mental disorder in December 1973 with the support of some professionals (Bayer, 1987; Stevens & Hall, 1991). To this day, the DSM (American Psychiatric Association, 2013) has preserved the diagnosis of 'gender identity disorder' since its third edition (Spitzer et al., 1980). Members of the transsexual community oppose dropping 'gender identity disorder' from DSM since the linkage between the diagnosis and insurance reimbursement for sex-reassignment surgery (Conrad, 2007). Many activists have claimed that the emergence of 'gender identity disorder' could potentially lead to the remedicalisation of homosexual conduct (Conrad & Angell, 2004).

The widespread medicalisation of society can lead to devastating social consequences. Many human differences have been transformed into pathologies,

which potentially make people become less tolerant and appreciative of the diversity

of human life (Conrad, 2007). Because medicalisation designations continually define

what is 'normal', acceptable, and expected in every aspect of life, and meantime, the

processes of medicalisation lead to changes in social norms. Medicalisation breeds

judgments and control over bodies, behaviour, health, and well-being in the social

environment. Moreover, defining behaviour as a medical problem provides

individuals with an excuse to avoid responsibility, which then differentiates

individuals who are deemed not responsible for their actions from those who are. The

former will inevitably become 'second-class citizens' in society (Conrad & Schneider,

1992). The medical model puts a narrow focus on individuals rather than the social

environment; medicalisation misattributes social problems to individuals. The optimal

social environment is an essential prerequisite to constructive change in individuals.

People will naturally change when their social environment changes (Joseph, 2021).

Neuroscience and genetics, the cutting-edge of fields of scientific medicine, are not

exempt from medicalisation. The individual-focused mode of medicalisation is

undoubtedly disregarding the real sources of the problem while creating new

problems in broader fields.

It is important and urgent to stop the expansion of medicalisation, and actions

need to be taken to change the social environment instead of fabricating illness and

disease that is not ipso facto a medical problem. Maybe one day, humans will be able

to design babies who are free from characteristics they disfavour. If people cannot

appreciate the diversity of human life, discrimination and medicalisation are never

going to end as long as there are human differences. Person-centred psychology is considered as a truly credible alternative to the medical model paradigm on a theoretical level (Joseph & Murphy, 2013). Person-centred approach values and facilitates individual diversity. Rogers depicted an optimal social environment in which individuals are prized for what they are, regardless of age, sex, race, status, or all other characteristics. Social psychology is an important field for influencing the ways in which people view, understand, and talk about individuals and societies (Kruglanski & Stroebe, 2012). And many social psychologists are committed to solving social problems. Enhancing the visibility and the impact of person-centred psychology in social psychology is a promising strategy to contain the expansion of medicalisation and promote positive social change.

3.5. Summary

This chapter briefly introduced the history and some major conceptual developments of modern social psychology and discussed the potential significance of the person-centred approach in this field.

The person-centred psychology has the potential to provide a meta-theory to integrate various social psychological theories and to stop the expansion of medicalisation; in turn, social psychological theory and research may inspire person-centred psychologists to further develop the person-centred theory into the social dimension of human functioning.

Chapter 4: Methodology

4.1. Chapter overview

This chapter describes epistemological and methodological issues regarding research methods used in the studies. The first section of this chapter discusses the researcher's research paradigm, including ontology, epistemology, and research methodology, and the second section introduces the research methods for each study.

4.2. Research paradigm

Research paradigm comprises research philosophy and research methodology. It is necessary to determine a research philosophy for researchers to undertake a research project. The research philosophy will guide every decision we make in our research project. Research philosophy was defined as "a system of beliefs and assumptions about the development of knowledge" (Saunders, Lewis, & Thornhill, 2015, p. 124). It is noteworthy that self-reflexivity is required for researchers to define their research philosophy, which helps them to question their own thinking and actions and to examine their beliefs and assumptions.

Ontology is the nature of the known. Crotty (1998, p. 10) suggested that ontological assumptions are concerned with 'what is' - what constitutes reality. Researchers need to take a position regarding how they perceive and what they believe. The research is identified with the positivist approach. Positivist believes in a single tangible reality that is independent from the research process and can be understood, identified, and measured using the objective application of the scientific

method (Leavy, 2017). The person-centred theory (Rogers, 1959) reveals human nature and the laws of human development. I believe that the theory can be studied objectively with minimal interaction with research participants. Rogers proposed the theories based on his and his colleagues' practical experience, observation, and research (Rogers, 1959; Thorne, 2007). This dissertation aims to test the hypotheses proposed by Rogers (1957, 1959) and extend our understanding of the theory. A scientific hypothesis is a tentative explanation for a phenomenon which can be tested using the objective application of the scientific method. Research provides evidence to support the hypothesis, promotes the evolution of the theory. So new theories emerge from research.

Epistemology includes the relationship between the knower and the known, and how this relationship is connected to knowledge generation. Basically, epistemology deals with how we know things (Crotty, 1998). The present research is the positivist epistemological tradition. Positivist believes in total objectivity; it is believed that reality can be measured by standardised measuring instruments. The hypothesis predicts the relationship between a set of variables. Variables refer to characteristics (e.g., quality, quantity, intensity) of something that can be measured and can change over time. Variables that cannot be simply or straightforwardly measured are called constructs, such as emotional states, attitudes, and abilities. Psychological constructs often involve internal process and represent tendencies to feel, think, or act in certain ways, so they cannot be observed directly. Instead, psychological constructs can be assessed by measurement instruments designed by

psychometricians. Psychological measurement quantifies psychological qualities

(Price, 2017).

Quantitative designs reflect positivist philosophical assumptions. Quantitative

research refers to the systematic empirical investigation of social phenomena via

statistical, mathematical, or computational techniques (Sarantakos, 2012).

Quantitative research aims to prove, disprove, or lend credence to existing theories by

measuring variables and testing relationships between variables (Leavy, 2017). For

example, Rogers (1957) hypothesised a causal relationship between the perceived

facilitativeness and constructive personality change.

4.3. Study design

The data collection method of the four studies is online surveys. Table 4.1 maps the

study aims, research design, and data analysis techniques used in each study.

Longitudinal and cross-sectional designs are discussed. The specific study designs,

measures, and related statistical techniques are introduced in the corresponding

chapters.

Table 4.1. Study designs

Study	Aims	Design	Data analysis
1	a. Examining the construct validity of the B-L RI: OS-64 b. Examining the measurement invariance of the B-LRI: OS-64 across the three language versions	Cross-sectional	Confirmatory factor analysis
2	a. Developing a shorter version of the B-L RI, namely B-L RI:mini b. Validating the B-L RI:mini	Longitudinal	Item response theory and confirmatory factor analysis

| 3 | a. | Testing the person-centred theory among opposite-gender couples | Longitudinal | Structural equation modelling |
| 4 | a. | Testing the person-centred theory among same-gender couples | Cross-sectional | Structural equation modelling |

Cross-sectional and longitudinal designs are two primary methodological designs in survey research (Ruel et al., 2016). In the former, variables are measured at one point in time, whereas variables are measured at multiple times in order to detect any changes that might occur over time in the latter. Researchers are unable to specify which variable is the cause and which is the effect using cross-sectional designs. But participants tend to drop out in longitudinal designs, resulting in a decrease of sample size. Sexual minorities are hard-to-reach populations for survey research (Guillory et al., 2018). Cross-sectional designs are adopted in the fourth study in order to avoid small sample size. Participants are required to be couples who have been together three months or more. I assume that the partners would have enough time to make psychological contact that enables the perception of facilitativeness in their relationships. The correlation between perceived facilitativeness and outcomes can be captured by cross-sectional designs.

4.4. Ethical considerations

Ethical approval had been obtained from the ethics committee in the school of education, University of Nottingham, before the four studies were undertaken (see Appendix 1 for the approval documents). The project information and relevant documents (e.g., participant information sheet, consent form, participant recruitment

message) were provided to the ethics committee. The potential risks raised by the studies were identified and the solutions to the possible ethical issues were discussed.

There is a general risk for data protection and security. All recorded data is only accessible by the researchers and supervisors and is used for the purposes of the study. A foreseeable risk from this research project is the safe management of the personal data provided. Data collection was anonymous, name or identifying information of the participants were not obtained. All data is stored in compliance with GDPR and the Code of Research Conduct and Research Ethics at the University of Nottingham. Data will be stored securely within the One Drive system of The University of Nottingham for 7 years. After this time data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain participant's confidentiality.

Some questions in the survey may cause participants to become uncomfortable, although this is unlikely as the survey is to be anonymised. And participation was voluntary. Participants can choose to quit the survey at any time before submitting their response. However, if any participant does feel emotionally upset after taking the survey, they would be advised to contact a general practitioner or other professional that can help with psychological distress. In the survey, we also provided a list of useful organizations and their contacts.

The next four chapters proceed to present the four studies that were conducted to expand the impact of the person-centred approach in social psychology at the psychometric and theoretical levels.

Chapter 5: Construct Validity and Measurement Invariance of the English, Chinese, and Spanish Versions of the Barrett-Lennard Relationship Inventory

5.1. Introduction

Humans are social animals. Interpersonal relationships not only supply materials and protection for survival, but also can foster a facilitative social environment for the development of psychological maturity. In one of the most influential papers in the field of counselling, Carl Rogers (1957) proposed an integrative theoretical view that when six conditions persistently exist in a therapeutic relationship, they are necessary and sufficient to initiate the process of constructive personality change. First, there must be psychological contact between two persons. Second, one of the persons must be in a state of incongruence, which is the initial state before the change. The third, fourth, and fifth conditions are attitudes expressed by another person, which are also known as the core conditions: congruence, unconditional positive regard, and empathic understanding. The sixth condition is a minimal degree of the core conditions that need to be perceived by the person who was mentioned in the second condition. Rogers was interested in finding the common variables related to successful outcome for all therapies. Although the necessity and sufficiency of these conditions remains a topic for discussion and research, it is widely accepted that these relationship qualities of congruence, unconditional positive regard, and empathic understanding are basic therapeutic ingredients for effectiveness in all therapies

(see, Bozarth & Motomasa, 2017). Indeed, Rogers' theory remains the foundation for the person-centred approach to counselling in the humanistic tradition today (Murphy & Joseph, 2016).

Furthermore, the conditions are not thought to be exclusive to the therapeutic relationship. Rogers (1959) also theorized that these conditions can exist and are important in any relationship involving psychological contact. As long as the three core conditions are perceived through another person's behaviours and words, continuously over time, constructive personality development follows. In this way, Rogers' theory can also be applied to parenting, education, management, leadership, and any other context involving human relationships in which the aim is to promote personal development and human flourishing. For research to take place into Rogers' theory of constructive personality development it is necessary to have the appropriate tools with which to measure the extent to which people experience the core conditions of congruence, unconditional positive regard, and empathic understanding. One psychometric tool developed specifically for this purpose is the Barrett-Lennard Relationship Inventory (B-L RI).

5.1.1. Barrett-Lennard Relationship Inventory (B-L RI: OS-64)

The B-L RI (Barrett-Lennard, 1962) assesses the perception of the core conditions in a relationship. The B-L RI has been revised several times since its first publication; the 64-item and 40-item (shorter) renditions are the most up-to-date versions of the B-L RI (Barrett-Lennard, 2015). Parallel forms of B-L RI were developed for respondents who receive (other to self; OS), provide (me/myself to other; MO) or

observe (Obs) the facilitative conditions in a relationship. This study will focus on the

64-item version of the B-L RI for receiver (B-L RI: OS-64). The 64 items of the B-L

RI: OS-64 are scored to produce four subscales: level of regard (R), empathic

understanding (E), congruence (C), and unconditionality of regard (U). As well as

yielding subscale scores, the B-L RI can also be used to produce an overall total

score. The construct measured by the total scale has been referred to as

"facilitativeness" (Cramer, 2003; Davis et al., 2015), which is used to represent the

core conditions as a whole. The four subscales in the 64-item B-L RI have

demonstrated high internal consistency and temporal stability reliabilities (Barrett-

Lennard, 2015; Doran et al., 2016); the means of internal consistency coefficients

across a number of studies were .91 for R, .84 for E, .88 for C, and .74 for U. Mean

test-retest reliability coefficients for each subscale were R, .83; E, .83; C, .88; and

U, .80; and for the total B-L RI, .90 (Gurman, 1977). Previous studies reported

correlations between subscales for the English version of the B-L RI: OS-64 ranged

from .31 to .74. The U subscale showed relatively lower correlations with other

subscales (Barnicot et al., 2014). Some studies, especially those investigating marital

relationships, have excluded U due to its poorer performance compared to the other

subscales in terms of score reliability and validity (Sherman & Robert, 2013).

Table 5.1. Summary of Studies Conducted Using the English/Chinese/Spanish version of the B-L RI: OS-64 (2012-2019)

Study	Discipline	Language	Participants	Summary of Findings
Oh et al., (2012)	Sport Psychology	English	One-hundred and sixty women athletes; Between 18 and 23 years.	Perceived unconditional acceptance was significantly correlated with body function ($r = .31$) and body appreciation ($r = .21$).
Chu & Tseng (2013)	Medicine	Chinese	Fifty-eight men and eighty-six women; Over 18 years.	$\alpha = .67$; Patients' perceived empathy moderated the effect of health-literacy capabilities on understanding of information.
Barnicot et al., (2014)	Clinical Psychology	English	One-hundred and fifty-seven patients.	Intercorrelations between subscales $r = .16-.87$. Perceived relationship conditions were significantly correlated with therapy outcome ($r = .24-.31$), except for unconditionality of regard.
Elkin et al., (2014)	Clinical Psychology	English	Two-hundred and fifty patients.	$\alpha = .85$; Patients' perceived facilitativeness was significantly correlated with positive therapeutic atmosphere ($r = .28$).
Davis et al., (2015)	Clinical Psychology	English	One-hundred two African American women; Between 23 and 65 years.	$\alpha = .84$; Clients' perceived facilitativeness was significantly correlated with working alliance ($r = .68$). Perceived facilitativeness mediated the effect of population-sensitive therapist characteristics on working alliance.
Gimeno Peón (2015)	Clinical Psychology	Spanish	Eight men and twenty-two women;	The personality trait extraversion was significantly correlated with the level of perceived empathy ($r = .04$).
Fulton (2016)	Clinical Psychology	English	Forty-eight women and seven men; Between 23 and 50 years.	$\alpha = .75$; Counsellors' self-report mindfulness was significantly correlated with client's perceived empathy ($r = .35$).
Dufey and Wilson (2017)	Social Psychology	Spanish	Fourteen men and thirteen women; Between 18 and 32 years.	$\alpha = .81, .90$; Perceived empathy has an immediate positive effect on self-explorative attitude.
Hara et al., (2017)	Clinical Psychology	English	Forty women and three men; Mean age of 34.8 years.	$\alpha = .84, .91$; Clients' perceived empathy in early session predicted mid-treatment homework compliance.
McClintock et al., (2017)	Clinical Psychology	English	Sixty-five women and fourteen men; Mean age of 19.3 years.	$\alpha = .73$; Clients' perceived empathy was significantly correlated with outcome expectations after first session ($r = .43$).
Dolev & Zilcha-	Clinical	English	Two-hundred and fifty outpatients;	$\alpha = .95$; Therapeutic relationship moderated the effect of interpersonal

Mano (2019)	Psychology		Between 21 and 60 years.	behaviour on therapy outcome.
Suzuki et al., (2019)	Clinical Psychology	English	Four-hundred and thirty-nine women, ninety-six men and sixty-two 'other'. Over 18 years.	$\alpha = .94$; Clients' perceived positive regard was significantly correlated with psychotherapists' expressions of positive regard ($r = .12\text{-}.61$).

For almost 60 years, the total scale and subscales of the B-L RI have been widely applied in various research fields, such as counselling psychology (Davis et al., 2015; Dolev & Zilcha-Mano, 2019; Murphy & Cramer, 2014), forensic psychology (Hearn et al., 2021), sport psychology (Oh et al., 2012), medicine (Chu & Tseng, 2013; Moghaddasian et al., 2013), education (Bockmier-Sommers et al., 2017; Swan et al., 2020), and business (Janssen, 2012). Previous studies reported that the total scale and subscales of the B-L RI were significantly correlated with a range of psychological and behavioural outcomes, such as positive client outcomes in psychotherapeutic relationships (Bell et al., 2016), greater authenticity as a client outcome in counselling (Bayliss-Conway et al., 2020), prisoners' post-traumatic growth in staff-prisoner relationships (Hearn et al., 2021), women athletes' body appreciation and eating style in coach-athlete relationships (Oh et al., 2012), and students' learning experience in student-teacher relationships (Swan et al., 2020). Studies published between 2012 and 2019 that used the English, Chinese, or Spanish version of the B-L RI: OS-64 were summarized in Table 5.1.

The B-L RI, as a measurement instrument that assesses the relationship conditions, plays an important and potentially indispensable role in the evaluation of facilitativeness/quality of relationships. For example, the B-L RI can provide psychotherapists and counsellors with significant information on the effectiveness of practice by measuring the level of the relationship conditions that are perceived by clients (Murphy & Cramer, 2014). Such information, when available, is valuable to help foster a strong therapeutic relationship and is also a reminder of how well the

psychotherapist or counsellor experiences the facilitative conditions in the

relationship (Wilkins, 2016). Recent studies suggested that both therapeutic

relationship and social support have an impact on therapy outcome (Price et al., 2013;

Zimmermann et al., 2021). The B-L RI can be used to assess the perceived

relationship conditions/facilitativeness in both therapeutic relationships and social

support relationships (Barrett-Lennard, 2015). The B-L RI is a useful measurement

tool for a comprehensive assessment of quality of clients' social and clinical supports,

with a specific focus of the key ingredients for constructive personality development,

which can be used to help better predict therapy outcome. Moreover, the B-L RI has

been translated into over 20 languages, including Arabic, Chinese, Dutch, French,

German, Greek, Hebrew, Italian, Japanese, and Spanish (Barrett-Lennard, 2015; Liao

et al., 2018).

5.1.2. Testing Measurement Invariance

Although the B-L RI has been used in a wide range of research fields and translated

into a variety of languages for many years (Barrett-Lennard, 2015), to our best

knowledge, its measurement invariance has never been evaluated. The establishment

of measurement invariance allows valid comparisons across groups (Khojasteh & Lo,

2015). In this study, measurement invariance among English, Chinese, and Spanish

versions of the B-L RI: OS-64 was tested. These three language versions were

selected due to availability issues and large native-speaker populations worldwide. An

investigation of language equivalency within the B-L RI determines whether the

questions are interpreted and responded to in a similar manner across language

versions (Dimitrov, 2010).

Prior to testing measurement invariance, a model that is acceptable among all of the groups should be chosen from the previous proposed models of the scale to conduct the analysis (Brown, 2015). The B-L RI was originally designed with four subscales (Barrett-Lennard, 2015). Cramer (1986) found support for the postulated four dimensions of the model using exploratory factor analysis (EFA). However, additional studies that examined the underlying latent construct of the 64-item B-L RI, have suggested one- and three-factor solutions for the scale (Lanning & Lemons, 1974; Mills & Zytowski, 1967; Walker & Little, 1969). A confirmatory factor analysis (CFA) confirmed the four-factor structure of the Chinese version of the 64-item B-L RI (Liao et al., 2018). However, to our best knowledge, the structure of the original English and other language versions (except for the Chinese version) of the scale have never been confirmed via CFA: neither the four-factor solution nor the alternative ones. The goal of CFA is to evaluate models identified by EFA, which would provide comparative information between competing factor models (Brown, 2015).

A multidimensional model of the B-L RI was originally assumed. The total and subscale scores have been used to represent facilitativeness/relationship quality and the core conditions, respectively (e.g., total score: Bell et al., 2016; Dolev & Zilcha-Mano, 2019; subscale score: Moghaddasian et al., 2013; Suzuki et al., 2019). An evaluation of the dimensionality of the scale is necessary to avoid conceptual ambiguity that may cause misinterpretation of the association with outcome variables. When subscale scores are used to predict outcome variables, the unique aspect of the

facet is assumed to be the source of contribution, and the general effect shared by all interrelated facets is overlooked. It is meaningless to use a subscale score when it mainly reflects the general construct. Scores from the subscales of the B-L RI were reliable in terms of internal consistency and temporal stability, but they may be derived from the reliability of the general factor. In using a total score approach, the specific effects of individual facets on an outcome variable cannot be distinguished from the effects of the shared general construct, and they may cancel each other out when a total score is used (Chen & Zhang, 2018). The bifactor model offers important information in terms of dimensionality assessment by allowing each indicator to load onto both general (facilitativeness) and specific factors (R, E, C, U). The factor loadings on the general factor and the specific factors can be inspected simultaneously within the same model. The precision of total scale and subscale scores can be tested by partitioning out the variance attributable to each other's latent construct. Based on the three proposed models, including the one-, three-, and four-factor models, two bifactor models with three (R, E&C, U) and four (R, E, C, U) specific factors were tested.

5.1.3. Aim of the Current Study

The aim of this study was to examine the measurement invariance of the optimal model for the B-L RI: OS-64 across English, Chinese, and Spanish language versions. The optimal model was selected based on results from factor and dimensionality analyses. The person-centred approach has been considered as the synthesis influenced by Eastern and Western philosophies (Jooste et al., 2015). However, to

consider the number of items of the B-L RI: OS-64, we hypothesized that only partial invariance exists across the three language versions. The literature now supports the positive contribution that relationship variables such as empathy, unconditional positive regard and congruence make for positive outcomes. Having a measurement instrument that measures these constructs within a single instrument is important for both researchers and practitioners. Much of the research to date has been concerned with English language samples; however, as Spanish and Chinese are also very widely spoken languages it is also important for measurement instruments to be able to be used meaningfully across these language-culture differences. As the measurement invariance can be established across language-cultures the tool will be highly utilized.

This is the first study to evaluate language equivalency of the B-L RI, which would allow both academics and practitioners to recognize that the core conditions may be perceived and understood differently by individuals who speak different languages or from different cultures. Therefore, findings from this study would help counsellors, educators, and service providers to interpret the B-L RI appropriately, raise cultural awareness and deliver the core conditions effectively in cross-cultural settings. The establishment of scalar invariance is required for meaningful comparisons among the means of the latent variables. Testing language equivalency would be necessary for future studies that use multiple language versions of the B-L RI. The results from this study could also provide information for researchers working on revision of the B-L RI: OS-64.

5.2. Method

5.2.1. Participants and Procedures

Six-hundred and fifty-eight native speakers of Chinese, 330 native speakers of Spanish, and 298 native speakers of English participated in this study (see Table 5.2). The Chinese-speaking sample was all taken from Liao et al. (2018). In their study, stratified random sampling (Wolf et al., 2016) by age was utilized to recruit participants in six age strata (18–25, 26–35, 36–45, 46–55, 56–65, >65 years) and data were collected via online survey. In this study, the Spanish-speaking sample and the English-speaking sample were recruited using social media websites. For the Spanish-speaking and the English-speaking samples, data were collected using Jisc Online Surveys (www.jisc.ac.uk) during June and July 2020. Prior to completing the B-L R I, participants were asked to think about their relationship with a friend and to respond to each of the items with that friend in mind.

Table 5.2. Demographic Characteristics.

Demographic Variables	English ($n = 298$)	Chinese ($n = 658$)	Spanish ($n = 330$)	Total ($N = 1286$)
	n (%)	n (%)	n (%)	n (%)
Gender				
Male	36 (12.08)	162 (24.62)	46 (13.94)	244 (18.97)
Female	261 (87.58)	495 (75.23)	284 (86.06)	1040 (80.87)
Transgender	1 (0.34)	0 (0)	0 (0)	1 (0.07)
Other	0 (0)	1 (0.15)	0 (0)	1 (0.07)
Age (years)				
18-25	58 (19.46)	211 (32.07)	52 (15.76)	321 (24.96)
26-35	82 (27.52)	221 (33.59)	149 (45.15)	452 (35.15)
36-45	67 (22.48)	110 (16.72)	78 (23.64)	255 (19.83)
46-55	62 (20.81)	81 (12.31)	29 (8.79)	172 (13.37)
56-65	24 (8.05)	33 (5.01)	19 (5.76)	76 (5.91)
>65	5 (1.68)	2 (0.30)	3 (0.90)	10 (0.78)
Duration of Friendship (years)				
< 0.5	0 (0)	11 (1.67)	0 (0)	11 (0.86)

0.5-1	7 (2.35)	41 (6.23)	0 (0)	48 (3.73)
1-3	19 (6.38)	82 (12.46)	16 (4.85)	117 (9.10)
3-5	35 (11.74)	105 (15.96)	25 (7.58)	165 (12.83)
> 5	237 (79.53)	419 (63.7)	289 (87.58)	945 (73.48)

The Chinese-speaking sample included 495 (75.2%) females, 162 (24.6%) males and one other. Of the participants, 32.1% were between the age of 18 and 25 years, 33.6% of the participants ranged from age 26 to 35, 16.7% of the participants ranged from age 36 to 45, 12.3% of the participants ranged from age 46 to 55, 5% of the participants ranged from age 56 to 65 and 0.3% of the participants were over 65 years old. Regarding occupation, 28% were students, 21.4% were professional occupations, 11.6% were sales and customer service workers, and 10.2% were administrative and secretarial occupations. Of the participants, 1.7% had friendships lasting less than 6 months, 6.2% of the participants had friendships lasting from 6 to 12 months, 12.5% of the participants had friendships lasting from 1 to 3 years, 16% of the participants had friendships lasting from 3 to 5 years, and 63.7% of the participants had friendships lasting more than 5 years.

The English-speaking sample was predominantly female, consisted of 261 (87.6%) females, 36 (12.1%) males, and one transgender person. Participants ranged in age from 18 to 79 years old. The mean age was 38 years old (SD = 12.9); 47.0% of the participants were aged from 18 to 35, 43.3% of the participants aged from 36 to 55, and 9.7% of the participants were over 56 years old. In terms of occupation, 26.8% of participants were professionals, 14.8% were students, 10.4% were educators, 7% were researchers, and 41% did not indicate their occupation.

Participants were in-relationship with their friends for an average of 15.4 years (SD = 12.7), with the shortest length of friendship being 0.5 and the longest 62.9 years.

The Spanish-speaking sample included 284 (86.1%) females and 46 (13.9%) males. The participants were aged 18 to 74 years old, and their mean age was 35 years old (SD = 10.5). Of the participants, 61.1% were aged from 18 to 35 years old, 32.2% of the participants were aged from 36 to 55 years old, and 6.7% were 56 years of age and over. Participants' friendships had lasted on average for 14.6 years (SD = 9.2). The shortest length of friendship was 2.2 years; the longest, 30.5 years. Regarding occupation, 37.0% were researchers, 11.5% were professionals, 10.6% were teachers, 4.3% were students, and 36.6% did not indicate their occupation.

5.2.2. Measures

The B-L RI: OS-64 (Barrett-Lennard, 2015) was developed to assess the necessary and sufficient conditions for constructive personality change deemed important in Rogers' theory (1957). The B-L RI: OS-64 includes four 16-item subscales: (1) level of regard; (2) empathy; (3) congruence; and (4) unconditionality. Items on each subscale are written in a way that the participant is asked to reflect on their experience of being in a relationship with a particular person, and to think of that person when answering each item (e.g., "___ respects me as a person," "___ wants to understand how I see things," "___ is comfortable and at ease in our relationship," and "___'s interest in me depends on the things I say or do": these are example items from the level of regard, empathy, congruence, and unconditionality subscales, respectively).

Each item is answered on a six-point Likert-type scale (–3 = NO, I strongly feel that it is not true; −2 = No, I feel it is not true; −1 = (No) I feel that it is probably untrue, or more untrue than true; +1= (Yes) I feel that it is probably true, or more true than untrue; +2 = Yes, I feel it is true; +3 = YES, I strongly feel that it is true). Half of the items in each of the subscales are negatively worded. The necessity of negatively worded items has been vigorously challenged in recent years. Some researchers found that the negatively worded items not only did not prevent acquiescent bias and extreme response as expected, but also caused confusion and inattention (Chyung et al., 2018; van Sonderen et al., 2013). After reverse scoring negatively worded items, the final score for each subscale is calculated by summing item scores. The higher scores suggest higher levels of perceived regard, empathy, unconditionality, and congruence in a relationship.

In this study, three language versions of the B-L RI: OS-64 were used, namely English, Chinese, and Spanish. Both the Chinese and Spanish versions of the B-L RI: OS-64 were translated from the original English version with back-translation procedures (Barrett-Lennard, 2015; Celis, 1999; Liao et al., 2018). In the current studies, the alpha coefficients for scores from the subscales in the three versions of the B-L RI: OS-64 ranged between .70 and .94, and between .95 and .96 for scores from the total scales (see Table 5.3).

Table 5.3. Means, standard deviations and scale reliabilities between subscales of the B-L RI: OS-64.

Subscale	English ($n = 298$)			Chinese ($n = 658$)			Spanish ($n = 330$)		
	M	*SD*	α	*M*	*SD*	α	*M*	*SD*	α

Level of regard	37.15	13.92	.93	28.68	14.41	.94	35.72	14.41	.94
Empathic understanding	21.54	15.96	.89	13.69	12.50	.84	19.81	13.97	.85
Unconditionality	19.87	14.23	.79	9.53	10.95	.75	11.92	11.20	.70
Congruence	28.27	16.94	.92	20.50	14.61	.89	28.47	16.03	.91
Facilitativeness	106.84	54.73	.96	72.39	46.53	.96	95.92	49.05	.95

5.2.3. Statistical Analysis

Descriptive Analysis

Descriptive data for each language version of the B-L RI: OS-64 are shown in Tables

5.3 and 5.4. SPSS version 26.0 was used for reliability and correlation analyses.

Confirmatory Factor Analysis

Prior to testing for measurement invariance of the B-L RI: OS-64 scores, single-group

confirmatory factor analyses (CFA) were conducted to determine the optimal model

by comparing model fit among three potential models: (1) a unidimensional model

with the 64 items loading on a single latent variable, facilitativeness; (2) a correlated

four-factor model, in which the four latent variables are represented by R, E, C, and

U; (3) a correlated three-factor model include R, U and a composite of E and C as

three separate factors.

All confirmatory factor analyses were conducted in Rstudio (version

1.3.1056), using the semTools (Jorgensen et al., 2020) and latent variable analysis

(lavaan; Rosseel, 2012) package. All models were estimated with the unweighted least

squares mean and variance adjusted estimation (ULSMV) due to the small sample

sizes and the ordered categorical nature of the Likert-type scoring methods (Muthén

& Muthén, 2017).

For assessing goodness of model fit, the following indices were utilized

(Brown, 2015): the comparative fit index (CFI), Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). For CFI and TLI, the suggested cutoff for a good fit is >.95 and for acceptable fit is between .90 and .95. For RMSEA and SRMR, values close to or below .06 are considered indicators of a good fit, values close to .07 and below .08 suggest a moderate fit, values close to .08 and less than .10 are considered as a marginal fit, and values greater than .10 suggest poor fit. The upper bound of the 90% RMSEA confidence intervals should not exceed the cutoff value indicating poor fit (.10; Kline, 2016). These fit indices are also applicable for ordered categorical data, but the traditional cutoff criteria were proposed based on maximum likelihood estimation. However, up to now, to our best knowledge, the cutoff values in the context of ULSMV has not been proposed. The cutoff values mentioned above can be taken into account in the model selection by using ULSMV, but the reasons why the models were adopted or not adopted should be explained (Xia & Yang, 2019).

Bifactor Model Evaluation

In the bifactor model, all items load on a single common latent variable and there are specific factors, each of which accounts for unique variance in its own separate set of domain-related items. Bifactor analysis provided information on the utility of forming subscales because it allows for the calculation of different indexes that represent the degree to which the percent of variance in total or subscale scores is attributable to the general factor only (Neff et al., 2017). Two bifactor models were examined: bifactor models (1) with three specific factors; and (2) with four specific factors.

Using the Bifactor Indices Calculator (Dueber, 2017), the following statistical indices were calculated. The omega index (ω) is a factor-analytic "model-based" estimate of the proportion of total score variance that can be attributed to all sources of common variance. By the same logic, omega subscale (ωs) is an estimate of the proportion of each subscale score's total variance attributable to the blend of general and group factor variance. Omega hierarchical (ωh) is an index used to estimate the percentage of variance in the total scores that can be attributed to the general factor after partitioning out variance explained by the specific factors. Omega hierarchical subscale (ωhs) is an index reflecting the reliability of a subscale score after partitioning out variability attributed to the general factor (Watkins, 2017).

The construct replicability (H; Rodriguez et al., 2016a) informs the degree to which a set of indicators represent a latent factor and a cutoff value of greater than .70. Factor determinacy (FD; Rodriguez et al., 2016a) indicates validity of factor scores for independent use. The values of FD exceeding .90 demonstrate trustworthy factor score estimates (Gorsuch, 2013). Explained common variance (ECV) is the ratio of the variance attributable to the general factor divided by the variance attributable to both the general and the subgroup factors. Percent of uncontaminated correlations (PUC) is computed by dividing the number of correlations between items from different group factors by the total number of correlations (Rodriguez et al., 2016a). Rodriguez et al. (2016b) recommended the criteria for the essential unidimensionality: both ECVs and PUCs are greater than .70.

Measurement Invariance

Multigroup confirmatory factor analyses (MG-CFA) for the optimal model were used to study measurement invariance among the three language versions of the B-L RI: OS-64. All of the three samples reached the desired sample size of 200 participants per group (Dimitrov, 2010), thus the statistical power to evaluate measurement invariance should be sufficient. MG-CFAs were assessed using the lavaan package (Rosseel, 2012) in Rstudio version 1.3.1056. Specifically, following the procedure outlined by Svetina et al. (2020). Variables were declared as ordinal using the function "ordered."

By restricting the baseline model increasingly, three measurement invariance models were tested one-by-one. To establish configural invariance, only the equivalent factorial structure was specified for each group. To test threshold invariance, thresholds were constrained to be equal across groups. In the scalar invariance model, both factor loadings and item thresholds were constrained to equality across groups. If full measurement invariance did not hold, partial invariance was tested. In this study, the English group was selected as the reference group because the Chinese and Spanish versions of the B-L RI: OS-64 were translated from the original English version. Two statistics were used to evaluate invariance at different levels of constraints, change in CFI (ΔCFI) and change in RMSEA (ΔRMSEA). These two statistics are more sensitive to a lack of invariance and less insensitive to sample size and model complexity as compared to chi-square (Rutkowski & Svetina, 2017). They are also equally sensitive to different types of invariance tests. SRMR was found more sensitive to noninvariance in the metric

invariance test than in other tests, so it was not used (Chen, 2007). Previous studies

have recommended that ΔCFI $\leq -.010$ and ΔRMSEA $\geq .015$ can be taken as

indication of measurement noninvariance (Chen, 2007; Dimitrov, 2010).

5.3. Results

5.3.1. Factor Scale Intercorrelations

Table 5.4 shows the results of the correlational analysis using Pearson correlation

coefficients between subscales and the total scale of the B-L RI: OS-64. For the three

language versions of the scale, the total score strongly correlated with the scores on

the subscales, with r ranging from .748 to .938. Subscale scores were moderately to

highly correlated with each other, with r between .547 and .838. Consistent with

previous studies, U showed relatively lower associations with other subscales ranging

from .547 to .695. All the above correlations were statistically significant at the

p < .01 level.

Table 5.4. Intercorrelations Among Factors for the English, Chinese and Spanish Versions of the B-L RI: OS-64

Factor	English (*n* = 298)					Chinese (*n* = 658)					Spanish (*n* = 330)				
	R	E	U	C	F	R	E	U	C	F	R	E	U	C	F
Level of Regard (R)		.793	.688	.783	.907		.779	.591	.786	.905		.768	.547	.838	.911
Empathy (E)			.695	.792	.919			.614	.787	.902			.554	.790	.895
Unconditionality (U)				.664	.843				.668	.793				.615	.748
Congruence (C)					.912					.926					.938
Facilitativeness (F)															

Note. All correlations were significant at *p* < .001.

Table 5.5. Goodness of Fit Indices for Competing Models of the B-L RI: OS-64 across three samples.

Model	χ^2(df)	CFI	TLI	RMSEA [90% CI]	SRMR	Model Comparison	$\Delta\chi^2(\Delta df)$	ΔCFI
English version ($n = 298$)								
(E1) Unidimensional	3652.01 (1953)	.985	.985	.054 [.051 .057]	.077	-	-	-
(E2) Four-factor	5583.42 (1950)	.968	.967	.079 [.077 .082]	.095	E1-E2	1033.40 (3)	-.017
(E3) Three-factor	4506.23 (1952)	.972	.971	.074 [.072 .076]	.091	E1-E3	836.90 (1)	-.013
(E4) Bifactor (four specific factors)	3078.08 (1893)	.990	.989	.046 [.043 .049]	.071	E1-E4	710.63* (70)	.005
(E5) Bifactor (three specific factors)	3435.40 (1892)	.990	.989	.046 [.043 .049]	.070	E1-E5	657.71* (67)	.005
Chinese version ($n = 658$)								
(C1) Unidimensional	8571.55 (1953)	.970	.969	.072 [.070 .073]	.079	-	-	-
(C2) Four-factor	14421.15 (1950)	.944	.942	.099 [.097 .100]	.103	C1-C2	4374.30 (3)	-.026
(C3) Three-factor	13156.55 (1952)	.948	.946	.095 [.093 .096]	.099	C1-C3	3693.90 (1)	-.022
(C4) Bifactor (four specific factors)	7202.86 (1893)	.976	.975	.065 [.064 .067]	.073	C1-C4	1954.00* (70)	.006
(C5) Bifactor (three specific factors)	8648.47 (1892)	.976	.974	.066 [.064 .067]	.073	C1-C5	1866.00* (67)	.006
Spanish version ($n = 330$)								
(S1) Unidimensional	4484.34 (1953)	.979	.979	.063 [.060 .065]	.081	-	-	-
(S2) Four-factor	7539.29 (1950)	.955	.953	.093 [.091 .096]	.105	S1-S2	1983.10 (3)	-.024
(S3) Three-factor	5698.22 (1952)	.962	.960	.086 [.083 .088]	.099	S1-S3	1658.00 (1)	-.017
(S4) Bifactor (four specific factors)	3398.00 (1893)	.983	.982	.058 [.056 .061]	.076	S1-S4	746.29* (70)	.004
(S5) Bifactor (three specific factors)	4161.76 (1892)	.984	.983	.057 [.054 .059]	.076	S1-S5	714.68* (67)	.005

Notes. χ^2 = chi-square; df = degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual; *$p < .001$.

5.3.2. Confirmatory Factor Analysis

Table 5.5 shows the CFA results comparing model fit between five competing models of the B-L RI: OS-64. The three- and four-factor models showed good fit indices of CFI and TLI with the values close to .95, but the values of RMSEA and SRMR indicated a marginal/poor fit. The fit indices of the unidimensional models indicated an acceptable fit with CFI and TLI values ranging from .969 to .985, RMSEA and SRMR values ranging from .054 to .081. Both of the bifactor models exhibited good fits for all three samples: CFI and TLI values were greater than .95, the RMSEA values were below .07, and the SRMR values were below .08. The bifactor model with four specific factors as the best fitting model showed a slightly better fit than the bifactor model with three specific factors, which support our hypothesis.

5.3.3. Bifactor Model Evaluation

Table 5.6 displays a series of reliability statistics for bifactor model scores in the three samples. The omega index (ω) ranged from .975 to .982, indicating that about 98% of total score variance could be attributed to both the general factor (relationship quality) and the specific factors (four facilitative conditions). The proportion of variance in each subscale's score explained by both the general and the specific factors were high, with ωs ranging from .704 to .968. After partitioning out variance explained by the specific factors, the percentage of variance in the total scores that can be attributed to the general factor was still high (ωh ranging from .946 to .978). On the contrary, only a small proportion of the item's unique variance was due to the specific factors (ωhs ranging from .000 to .304). Within the bifactor models, ECVs ranged between .834

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and .866 and PUCs were .762 and .635, which suggested a unidimensional rather than a multidimensional conceptualization for the B-L RI: OS-64. The general factor showed high construct replicability with H ranging from .982 to .986, which suggested that the general factor was a well-defined latent variable.

Table 5.6. Bifactor Evaluation Indices for Bifactor Models with Three and Four Specific Factors

Statistics	English version					Chinese version					Spanish version				
	R	E	U	C	F	R	E	U	C	F	R	E	U	C	F
Bifactor model with four specific factors															
ω/ω_s	.963	.928	.871	.950	.982	.954	.900	.822	.933	.975	.969	.908	.705	.952	.979
ω_h/ω_{hs}	.018	.022	.148	.152	.959	.066	.120	.301	.012	.946	.002	.100	.004	.000	.972
H	.492	.595	.654	.691	.984	.613	.640	.595	.553	.982	.459	.608	.643	.506	.986
FD	.845	.870	.848	.904	.991	.874	.872	.817	.834	.989	.853	.869	.836	.840	.993
ECV	-	-	-	-	.836	-	-	-	-	.834	-	-	-	-	.842
PUC	-	-	-	-	.762	-	-	-	-	.762	-	-	-	-	.762
Bifactor model with three specific factors															
	R	E&C	U	F		R	E&C	U	F		R	E&C	U	F	
ω/ω_s	.962	.966	.871	.981		.955	.956	.822	.975		.968	.964	.704	.978	
ω_h/ω_{hs}	.033	.020	.157	.965		.074	.027	.304	.945		.003	.001	.005	.978	
H	.513	.696	.655	.984		.625	.688	.598	.982		.460	.687	.643	.986	
FD	.841	.901	.849	.991		.878	.887	.820	.990		.850	.895	.836	.994	
ECV	-	-	-	.862		-	-	-	.849		-	-	-	.866	
PUC	-	-	-	.635		-	-	-	.635		-	-	-	.635	

Notes. R = level of regard, E = empathy, U = unconditionality, C = congruence, F = facilitativeness (general factor), ω = omega, ω_s = omega subscale, ω_h = omega hierarchical, ω_{hs} = omega hierarchical subscale, H = construct replicability, FD = factor determinacy, ECV = Explained common variance, PUC = Percent of uncontaminated correlations.

The FD values for the general factor ranged from .989 to .994, which were greater than the cutoff of .90. However, the values of H and FD for the specific factors failed to meet their criteria, which suggested that the specific factors are invalid and unreliable. The specific factors for both bifactor models cannot be treated as meaningful subconstructs, so the bifactor model appeared not to be applicable. Therefore, the unidimensional solution was adopted as the optimal model for

evaluating measurement invariance of the B-L RI: OS-64, since it was theoretically

tenable and fit the data well.

5.3.4. Measurement Invariance

Table 5.7 displays the model fit indices from the test of measurement invariance

between English, Chinese, and Spanish language versions of the B-L RI: OS-64. The

results for the configural model indicated a good fit, with RMSEA < .06, and CFI and

TLI > .95. This implies that the unidimensional model is acceptable across language

versions. Imposing equality constraints on thresholds led to a minor decrease in fit.

Changes in CFI and RMSEA were only −.001, which were not enough to indicate a

lack of invariance across groups. Then, scalar measurement invariance was tested,

which indicated a poor fit to the data across groups. Modification indices showed that

factor loadings of several items were noninvariant across the samples. Successively,

the equality constraints of loadings of item U3, U11, U43, U27, E26, C24, E46, and

U31 were freed until partial invariance was reached. The assumption of partial

invariance was supported. The CFI and TLI indicated a good fit and the RMSEA

showed a moderate fit. ΔCFI (–.008) was slightly above −.010 and ΔRMSEA (.011)

was below .015.

Table 5.7. Fit Statistics for Measurement Invariance Across Language Versions of the B-L RI: OS-64.

Model	χ^2	df	CFI	TLI	RMSEA	Model Comparison	$\Delta\chi^2$	Δdf	ΔCFI	ΔRMSEA
English (n = 298) vs. Chinese (n = 658) vs. Spanish (n = 330)										
M0: Configural: baseline	14494.61	5856	.981	.981	.059	-	-	-	-	-
M1: Equal thresholds	15351.09	6240	.980	.981	.058	M1-M0	401.82	384	-.001	.001
M2: Scalar: equal thresholds and loadings	38320.25	6366	.931	.934	.108	M2-M1	1131.10*	126	-.049	.050
M2P1: Free U3	35031.85	6364	.938	.941	.103	M2P1-M1	996.87*	124	-.042	.045
M2P2: Free U3 U11	31637.56	6362	.945	.948	.096	M2P2-M1	858.36*	122	-.035	.038
M2P3: Free U3 U11 U43	29199.15	6360	.950	.953	.092	M2P3-M1	746.31*	120	-.030	.034
M2P4: Free U3 U11 U43 U27	27466.11	6358	.954	.956	.088	M2P4-M1	678.52*	118	-.026	.030
M2P5: Free U3 U11 U43 U27 E26	22872.62	6356	.964	.966	.078	M2P5-M1	447.64*	116	-.016	.020
M2P6: Free U3 U11 U43 U27 E26 C24	21316.98	6354	.968	.969	.074	M2P6-M1	368.04*	114	-.012	.016
M2P7: Free U3 U11 U43 U27 E26 C24 E46	20476.30	6352	.969	.971	.072	M2P7-M1	328.53*	112	-.011	.014
M2P8: Free U3 U11 U43 U27 E26 C24 E46 U31	19219.73	6350	.972	.973	.069	M2P8-M1	262.75*	110	-.008	.011

Notes. χ^2 = chi-square; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation. U = unconditionality; E = empathy; C = congruence. *p < .001.

5.4. Discussion

To the best of our knowledge, this is the first study to investigate the measurement invariance of the B-L RI. We tested the measurement invariance of the English, Chinese, and Spanish language versions of B-L RI: OS-64. The optimal model to test measurement invariance was chosen via CFA and bifactor model evaluation. Five models were estimated and compared using CFA. Two bifactor models showed to be the best fitting, which may be affected by the tendency of complex models to overfit data (Reise et al., 2016). And the unidimensional model indicated an acceptable fit. As the bifactor model evaluation suggested that the specific factors of B-L RI: OS-64 reflect only theoretical perspectives rather than distinct constructs, the unidimensional model of the B-L RI: OS-64 was chosen as the optimal model to test the measurement invariance. The B-L RI: OS-64 was partially invariant for scalar invariance across three language versions. It is noteworthy that only 8 out of 64 items were found to be noninvariant, and the rest was invariant across three language versions. More than half of these noninvariant items were from the U subscale, and 4 were negatively worded statements (e,g., "___'s interest in me depends on the things I say or do"; "___ approves of me in some ways or sometimes, and plainly disapproves of me in other ways/other times"; Barrett-Lennard, 2015, p. 101). Participants were native speakers of the three languages; cultural differences may result in different interpretations of conditionality of regard. To the contrary, all items describing level of regard were invariant across the three language versions of the B-L RI: OS-64. It seems the experience of love, affection and respect is a common language across

cultures.

As far as we know, this is the first study to investigate the factor structure of the English and Spanish language versions of the B-L RI using CFA techniques, and it is also the first study to compare competing models of the factor structure of the B-L RI. The current evidence does not support the use of subscale scores in a non-clinical setting across English, Chinese, and Spanish language versions of the B-L RI: OS-64. The use of the total score may be more suitable to assess facilitativeness in a relationship, which is consistent with Ponterotto and Furlong's view (1985). Both the 64-item and 40-item B-L RI are considered redundant to measure a single construct; as such, our findings are consistent with previous suggestions that a shorter version of the B-L RI should be developed (Cramer, 1986; Lanning & Lemons, 1974). As partial measurement invariance was established across language versions of the B-L RI: OS-64, the noninvariant items are suggested to be eliminated while shortening the scale in order to ensure the invariance of the new scale.

Future studies could investigate measurement invariance of the B-L RI across different settings. As the application of the B-L RI is common across different types of relationships, it is worthwhile to explore if an individual interprets and experiences the facilitativeness in a same manner in different relationships.

5.4.1. Implications for Practice and Research

First, a clear unidimensional structure for the English, Chinese, and Spanish versions of the B-L RI: OS-64 was confirmed by CFA and bifactor model evaluation. It is recommended that only using the total score of the English, Chinese, and Spanish

versions of the B-L RI: OS-64 (facilitativeness) in practice and research. Second, measurement invariance was not fully established for the English, Chinese, and Spanish versions of the B-LRI: OS-64, data collected from these language versions of the inventory are not comparable to each other. Third, conditionality of regard may have different meanings in different languages and cultures. Practitioners are encouraged to be aware of the cultural differences in perception of the core conditions. It will be important for future studies to understand why the core conditions are perceived differently in different languages.

5.4.2. Limitations

The findings in this study are subject to at least two limitations. First, the three samples are predominantly female and aged 18 to 55 years. The participants were recruited via social media and the data were collected only through online survey. The participant recruitment and data collection methods may limit the generalizability of the results and potentially lead to sampling bias. Second, the primary focus of the study was to investigate the language equivalency of the B-L RI: OS-64. The factor structure and dimensionality of the inventory were examined to ensure the best model to represent the data across the three language groups. A future study with more focus on the longitudinal construct validity and the external validity of the B-L RI is therefore suggested. Third, we assumed that noninvariance may be caused by cultural difference, which could be investigated by including scales that measure individualism/collectivism and independent/interdependent self-construal. Fourth, we only used MG-CFA to assess measurement invariance, this method may be less

powerful in detecting differential item functioning (DIF) of individual items. DIF in an item response theory context should be examined in future studies.

5.5. Conclusion

The Barrett-Lennard relationship inventory (B-L RI) is one of the most widely used measurement tools for the assessment of the perception of human relationships. The B-L RI: OS was designed to assess a person's experiences with the facilitative conditions that are implicit in another person's words and behaviours. Through MG-CFA, the current study tested measurement invariance between English, Chinese, and Spanish language versions of the B-L RI. The results of bifactor analysis refuted the purported multidimensionality of the inventory; instead, a single factor model was supported. Findings indicated that the factor structure and the thresholds were fully invariant across the three language versions, and partial scalar invariance was met.

Chapter 6: Development and validation of a 12-item version of the Barrett-Lennard Relationship Inventory (B-L RI:mini) using item response theory

6.1. Introduction

Genuineness (congruence), empathic understanding, and unconditional positive regard are well-known as Carl Rogers' facilitative relationship conditions/core conditions. Rogers (1957) theorized that constructive personality development happens when a minimal degree of the facilitative conditions are perceived through psychological contact with another person. The facilitative conditions are widely accepted as common factors that make psychotherapy effective (Bozarth & Motomasa, 2017; McAleavey & Castonguay, 2015). Their positive effects in enhancing personal development and human flourishing are equally applicable in any relationship involving psychological contact (Rogers, 1959, 1961). The Barrett-Lennard Relationship Inventory (B-L RI; Barrett-Lennard, 1962) was developed as a measurement tool to specifically evaluate the extent to which people experience the facilitative conditions of congruence, unconditional positive regard, and empathic understanding. The B-L RI score consists of four subscales: level of regard (R), empathic understanding (E), congruence (C), and unconditionality of regard (U). The subscales can be summed to produce an overall total score that has been referred to as 'facilitativeness' (Cramer, 2003; Davis et al., 2015). Since the 1960s, the B-L RI has wide application in various fields ranging from counselling psychology (Davis et al.,

2015; Dolev & Zilcha-Mano, 2019; Murphy & Cramer, 2014), medicine (Chu & Tseng, 2013; Moghaddasian et al., 2013), forensic psychology (Hearn et al., 2020), sport psychology (Oh et al., 2012), education (Bockmier-Sommers et al., 2017; Swan et al., 2020), to business (Janssen, 2012).

The B-L RI has been modified many times since its first publication; its length reduced from 92 to 85 items (Barrett-Lennard, 1962), then to 72 items, and finally to 64 and 40 items (Barrett-Lennard, 2015). Although the 64 and 40 item current versions of the B-L RI were greatly shortened compared to its first version, researchers still considered the B-L RI lengthy and suggested a further reduction based on the results of exploratory factor analysis (Cramer, 1986; Gurman, 1977; Wiebe & Barnett Pearce, 1973). Several abbreviated versions of the B-L RI were developed based on the specific purposes of the studies (e.g., Schacht et al., 1988; Schumm, et al., 1980a, b), which were not subject to any validity testing. There has long been a need of a shorter measure of the facilitative conditions for more practical application. An even shorter version than the 40-items of the B-L RI is necessary, especially when research participants have only limited patience or attention span, there is a fixed time period for testing, or there are financial limits for conducting a study (Donnellan et al., 2006). Participants' experience and motivation for completing questionnaires may be improved by providing a shorter measurement scale. Thus, an even shorter form of the B-L RI is warranted to alleviate the burden of completing the questionnaire and enhance its practicality. This study aims to fill the gap by developing and validating a very short scale based on the 64-item B-L RI to measure

the facilitative conditions.

6.1.1. Psychometric Properties of the B-L RI

Barrett-Lennard developed the B-L RI to measure the facilitative conditions to test

Rogers' theory of constructive personality change (1957) in the clinical setting

(Barrett-Lennard, 1962). The current versions of the inventory (the 64-item/40-item

B-L RI; Barrett-Lennard, 2015) consist of four subscales: level of regard (R),

empathic understanding (E), congruence (C), and unconditionality of regard (U). Each

subscale has the same number of items (16/10 items). Parallel forms of the B-L RI

were developed for respondents who receive (OS:other to self), provide

(MO:me/myself to other), or observe (Obs) the facilitative conditions in a relationship

(Barrett-Lennard, 2015). Research has consistently shown that the scores of the B-L

RI are statistically significantly correlated with a range of psychological and

behavioural outcomes, such as positive client outcomes in psychotherapeutic

relationships (Bell et al., 2016), greater authenticity as a client outcome in counselling

(Bayliss-Conway et al., 2020), women athletes' body appreciation and eating style in

coach-athlete relationships (Oh et al., 2012), students' learning experience in student–

teacher relationships (Swan et al., 2020), and prisoners' post-traumatic growth in

staff-prisoner relationships (Hearn et al., 2020). The B-L RI has been translated into

more than 20 different languages, including Arabic, Chinese, Dutch, French, German,

Greek, Hebrew, Italian, Japanese, and Spanish (Barrett-Lennard, 2015; Liao et al.,

2018).

The B-L RI has consistently shown high internal consistency and temporal

stability reliabilities. For the B-L RI: OS-64, the means of internal consistency coefficients across a number of studies have been found to be .93 for R, .82 for E, .88 for C, .74 for U, and .85 for the total scale (Chu & Tseng, 2013; Davis et al., 2015; Dolev & Zilcha-Mano, 2019; Dufey & Wilson, 2017; Elkin et al., 2014; Fulton, 2016; Gurman, 1977; Hara et al., 2017; McClintock et al., 2017; Suzuki et al., 2019). For the B-L RI: OS-40, the means of alpha coefficients were reported to be .85 for R, .89 for E, and .82 for C, .76 for U, and .92 for the total scale (Barrett-Lennard, 2002; Greason & Welfare, 2013). Mean test–retest reliability coefficients for each subscale in the B-L RI: OS-64 were R, .83; E, .83; C, .88; U, .80 and for the total scale, .90 (Gurman, 1977).

The factor structure of the B-L RI has long been controversial. The current versions of the B-L RI were designed with four subscales (Barrett-Lennard, 2015). Cramer (1986) reproduced the four-factor structure of the B-L RI: OS-64 using exploratory factor analysis (EFA). However, additional studies used EFA and found one- and three-factor solutions for the scale (Lanning & Lemons, 1974; Mills & Zytowski, 1967; Walker & Little, 1969). These models have only recently been estimated and compared using confirmatory factor analysis (CFA). Chen and colleagues (2021) found that a bifactor model with a general factor (facilitativeness) affecting all items and four orthogonal group factors (R, E, C, and U) exhibited the best fit for English, Chinese and Spanish language versions of the B-L RI: OS-64. Additionally, the unidimensional model showed satisfactory fit indices for the three versions of the B-L RI.

A further evaluation of the bifactor model was conducted to investigate the dimensionality of the inventory. The majority of the variance in the B-L RI total score was reported to be attributed to the general factor, and the specific factors were determined to be invalid and unreliable (Chen et al., 2021). It suggested that the specific factors did not exist beyond the general factor, and the B-L RI: OS-64 was unidimensional. Therefore, the unidimensional solution was considered as the optimal model for English, Chinese and Spanish versions of the B-L RI: OS-64 since it was statistically meaningful and theoretically tenable (Chen et al., 2021). This finding is consistent with Ponterotto and Furlong's view (1985). Both the 64-item and the 40-item B-L RI are considered too lengthy to measure a single construct.

Cross-language equivalency is an important psychological property for a measurement tool with multiple language versions. The presence of language equivalency determines whether comparisons between scores of different language versions of the B-L RI are statistically meaningful (Khojasteh & Lo, 2015). A multigroup CFA demonstrated that the partial scalar invariance was supported across the English, Chinese, and Spanish language versions of the B-L RI: OS-64, and the noninvariant items were recommended to be removed during development of a shorter version of the inventory to ensure the language equivalency of the new scale (Chen et al., 2021).

6.1.2. Current Research

The first goal of this paper was to develop (Study 1) a shorter version of the B-L RI (B-L RI:mini) with a unidimensional construct of facilitativeness based on data

collected from English, Chinese, and Spanish language versions of the B-L RI: OS-64 using item response theory (IRT) approaches. The English, Chinese, and Spanish language versions were selected because they were the most widely spoken languages worldwide. Additionally, English, Chinese, and Spanish are spoken by three completely different cultures, items that perform well and consistent across these three language versions of the B-L RI are more likely to be shared understanding in human relationships. To our best knowledge, the psychometric properties of the B-L RI have never been examined in the context of IRT. As a modern approach to item and test analysis, IRT is recommended for questionnaire development, evaluation, and refinement, which can overcome some of the limitations of classical test theory (CTT; Paek & Cole, 2020). First, IRT models outcomes at the item level, instead of the test level as in CTT. IRT was considered as a more informative and thorough approach to evaluate the items and the person's latent trait (θ). Second, IRT takes into account the specific item characteristics and how a person responds to it when estimating the person's latent trait. Item parameter estimation is dependent on the specific sample that responds to the item, and the estimation of the person's latent trait depends on the specific set of items that were answered within a CTT framework. Unlike IRT, the estimations of person and item parameters are independent to each other. B-L RI is an instrument that has been translated into multiple languages, and its item/test psychometric properties may vary across different language versions. Considering that the B-L RI:mini will also certainly have multiple language versions in the future, only items that show consistently good measurement properties and are invariant

across different language versions of the B-L RI: OS-64 should be retained in the new scale. The item and scale properties of the English, Chinese, and Spanish language versions of the B-L RI: OS-64 were analysed, since they are the most spoken languages in the world.

The second goal of this paper was to validate (Study 2) the English language version of the B-L RI:mini in a new set of samples. The characteristics of the items in the inventory were thoroughly examined using IRT. In the scale-level analysis, internal consistency, test–retest reliability, construct validity, convergent validity, and criterion-related validity were evaluated for the newly developed scale.

6.2. Study 1

6.2.1. Method

6.2.1.1. Participants and Procedures

Two-hundred and ninety-eight native speakers of English, 658 native speakers of Chinese, and 330 native speakers of Spanish participated in this study. The English-speaking sample and the Spanish-speaking sample were all taken from Chen et al. (2021), which were recruited using social media websites, and Jisc Online Surveys (www.jisc.ac.uk) were used for data collection from June to July 2020. The Chinese-speaking sample was all taken from Liao et al. (2018). In their study, a stratified random sampling technique (Eckman & West, 2016) was used to draw samples in six age strata (18–25, 26–35, 36–45, 46–55, 56–65, > 65) and data were collected via an online survey. Prior to completing the B-L RI: OS-64, participants were asked to respond to each of the items with reference to a present relationship with a friend.

The English-speaking sample included 261 (87.6%) females, 36 (12.1%) males and one transgender person. The participants were aged 18 to 79 years old, and their mean age was 38 years old (SD = 12.9). Of the participants, 47.0% were aged from 18 to 35 years old, 43.3% of the participants were aged from 36 to 55 years old, and 9.7% were 56 years of age and over. Participants' friendships had lasted on average for 15.4 years (SD = 12.7). The shortest length of friendship was 0.5 years; the longest, 62.9 years. Regarding occupation, 7.0% were researchers, 10.4% were teachers, 14.8% were students, 26.8% were professionals, and 41.0% did not indicate their occupation.

The Spanish-Speaking sample included 284 (86.1%) females and 46 (13.9%) males. Of the participants, 61.1% were between the age of 18 and 35 years, 32.2% of the participants ranged from age 36 to 55, and 6.7% of the participants were over 65 years old. In terms of occupation, 37.0% were researchers, 11.5% were professionals, 10.6% were teachers, 4.3% were students, and 36.6% did not indicate their occupation. Participants' friendships had lasted on average for 14.6 years (SD = 9.2). The shortest length of friendship was 2.2 years; the longest, 30.5 years.

The Chinese-speaking sample was also predominantly female, consisted of 495 (75.2%) females, 162 (24.6%) males, and one other. With regard to age, 32.1% of the participants were aged from 18 to 25, 33.6% of the participants aged from 26 to 35, 16.7% of the participants were aged from 36 to 45, 12.3% of the participants ranged from age 46 to 55, 5% of the participants ranged from age 56 to 65, and 0.3% of the participants were over 65 years old. In terms of occupation, 28.0% of

participants were students, 21.4% were professional occupations, 11.6% were sales

and customer service workers, 10.2% were administrative and secretarial occupations,

8.7% were elementary occupations, 5.8% were skill trades, and 4.4% were

unemployed. Of the participants, 1.7% were in-relationship with their friends for less

than six months, 6.2% had friendships lasting from 6 to 12 months, 12.5% had

friendships lasting from 1 to 3 years, 16% had friendships lasting from 3 to 5 years,

and 63.7% had friendships lasting more than five years.

6.2.1.2. Measures

The B-L RI: OS-64 (Barrett-Lennard, 2015) was developed to assess the experience

of the facilitative conditions in a relationship. The facilitative conditions were deemed

important for constructive personality change in Rogers' theory (1957). The B-L RI:

OS-64 is composed of four 16-item subscales: 1) level of regard (R); 2) empathic

understanding (E); 3) congruence (C); and 4) unconditionality of regard (U).

Examples of items from the subscales include: R, "___ respects me as a person"; E,

"___ wants to understand how I see things"; C, "___ is comfortable and at ease in our

relationship"; and U, "___'s interest in me depends on the things I say or do"

(negatively worded item). The participant is asked to think about their relationship

with a particular person and to answer each of the items with that person in mind.

Participants answer each item on a six-point Likert-type scale (-3 = NO, I

strongly feel that it is not true; -2 = No, I feel it is not true; –1 = (No) I feel that it is

probably untrue, or more untrue than true; + 1 = (Yes) I feel that it is probably true, or

more true than untrue; + 2 = Yes, I feel it is true; + 3 = YES, I strongly feel that it is

true). Each subscale includes an equal number of positively and negatively worded

items. After responses to negatively worded items are reverse-coded, sum scores for

each subscale are calculated with higher scores representing higher levels of

perceived regard, empathy, congruence, and unconditionality in a relationship.

In this study, three language versions of the B-L RI: OS-64 were used, namely

English, Chinese, and Spanish. The original English version of the B-L RI: OS-64 was

back-translated into the Chinese and Spanish versions by bilingual translators

(Barrett-Lennard, 2015; Celis, 1999; Liao et al., 2018). In the previous study (Chen et

al., 2021), the alpha coefficients in the range of .70 to .94 were reported for scores

from the subscales in the English, Chinese, and Spanish language versions of the B-L

RI: OS-64, and ranging from .95 to .96 for scores from the total scales. The

unidimensional model was confirmed through CFA and bifactor model evaluation for

the three language versions of the B-L RI: OS-64. Eight (U3, U11, C24, E26, U27,

U31, U43, and E46) out of sixty-four items were reported to be noninvariant across

the three language versions of the B-L RI: OS-64.

6.2.1.3. Data Analysis

Assumptions of IRT

First, the basic assumptions of IRT include unidimensionality and local independence.

As mentioned above, unidimensionality for the B-L RI: OS-64 (the English, Chinese,

and Spanish language versions) was previously supported in CFA and bifactor model

evaluation (Chen et al., 2021). The datasets used in this study were taken from Chen

et al. (2021). The one-factor CFA showed satisfactory fit across the three language

versions: the comparative fit index (CFI) ranged from .970 to .985, the Tucker-Lewis index (TLI) ranged from .969 to .985, the root mean square error of approximation (RMSEA) ranged from .054 to .072, and the standardized root mean square residual (SRMR) ranged from .077 to .081. The bifactor model evaluation rejected the existence of the specific factors (R, E, C, and U) beyond the general factor (facilitativeness) across the three language versions of the inventory: omega hierarchical (ωh) was ranged from .946 to .978, but omega hierarchical subscale (ωhs) was ranged from 0 to .304, explained common variance (ECV) was reported ranging between .834 and .866, percent of uncontaminated correlations (PUC) were .762 and .635, and high construct replicability (H) ranging from .982 to .986. Local independence means that when latent trait is held constant across respondents, the observed responses are statistically independent (Samejima, 2015). The inter-item residual correlations (Yen's Q3; Yen, 1984) were evaluated to test local independence. Christensen et al. (2017) recommended the criterion for high likelihood of local dependence was greater than |.30|. At least one item in a pair of locally dependent items was suggested to be trimmed in order to strengthen the unidimensionality of the scale.

IRT

Second, we used the graded response model (GRM; Samejima, 2015) to assess the scale and item-level functioning since the item responses are ordered, polytomous, and categorical. The sample size needed to estimate the GRM is 250 (Reeve & Fayers, 2004); thus the requirement was met in this study. In the GRM, one common

item slope (a/item discrimination) and a set of k-1 location (b/item difficulty)

parameters are estimated. k is the number of response categories; hence five b

parameters for each item can be produced from the six response options in the B-L RI.

Item discrimination is the degree to which an item differentiates respondents with

similar levels of the same latent trait (Embretson & Reise, 2013). According to

Baker's (Baker, 2001) discrimination classification: very high discrimination, a > 1.7;

high discrimination, 1.35 < a < 1.69; moderate discrimination, 0.65 < a < 1.34; low

discrimination, 0.35 < a < 0.64; very low discrimination, 0.01 < a < 0.34; no

discrimination, a = 0. Only items with high or very high discrimination across the

three language versions of the inventory were considered for retention. Item difficulty

is the amount of the latent trait that is necessary for the respondent to have a 50%

chance to endorse a given category (Embretson & Reise, 2013). The means of b

parameters (b1-b5) for each item were calculated. Items with different levels of

difficulty were retained to best differentiate respondents with different levels of latent

trait. Then, the location and slope parameters were used to compute item information

curves, which describe how much information an item relative to the total information

of the latent construct. Items that have high discrimination and have a difficulty

parameter close to the respondents' latent trait will provide relatively high

information, whereas items that have low discrimination and have a difficulty

parameter far away from the respondents' latent trait will provide relatively low

information (Zickar & Broadfoot, 2009). The item information curves across items

can be aggregated as the test information curve. In IRT, the information curves were

used to depict measurement precision. In order to maximize the precision of measurement at different levels of the latent trait, items with high information levels at different parts along the continuum were retained (Reeve & Fayers, 2004).

Differential item functioning (DIF)

Third, DIF was conducted to detect item equivalence across the English, Chinese, and Spanish language versions of the B-L RI: OS-64 by using likelihood-ratio tests (Lopez Rivas et al., 2009). For accurate DIF detection, all others as anchors approach (Thissen et al., 1993) was used: a baseline model with all the parameter (item difficulty and discrimination) constrained to be equal across groups was specified first; then the parameters of each item, in turn, were freed and constraints on the parameters of the other items remained; and changes in model fit compared to the baseline model was examined. Those items with significant chi-square values ($p < .05$) are considered to exhibit differential functioning——the opposite of measurement invariance. Both uniform and non-uniform DIF can be detected using the method. Uniform DIF indicates that a consistent systematic difference in the response to the item between the groups across levels of the latent trait spectrum. The inequivalence of the magnitude of focal item difficulty across groups indicates the presence of uniform DIF. Whereas non-uniform DIF indicates varying differences across levels of the trait and the inequivalence of the magnitude of focal item discrimination across groups indicates the presence of non-uniform DIF (Tay et al., 2015). Items exhibiting non-uniform DIF across the three language versions of the B-L RI: OS-64 were suggested to be removed from the scale (O'Neill & McPeek, 1993).

Items that display measurement invariance or only uniform DIF across the three language versions of the B-L RI: OS-64 were considered to be retained.

All the analyses mentioned above were conducted in R statistics (R Core Team, 2020) using the RStudio interface (version 1.3.1093; RStudio Team, 2020), using the multidimensional item response theory (MIRT) package (Chalmers, 2012).

6.2.2. Results

6.2.2.1. Local Independence

Out of the 4096 item pairs, only forty-six (1.12%) in the English version of the B-L RI: OS-64, twenty-eight (0.68%) in the Chinese version, and twenty-two (0.54%) in the Spanish version had Q3 values greater than |.30|. For example, the Q3 value, between item U27 ("___likes or accepts certain things about me, and there are other things s/he does not like in me") and item U43 ("___approves of me in some ways or sometimes, and plainly disapproves of me in other ways/other times"), was 0.43. The violation of local independence may be resulting from the similar content, and the amount of locally dependent item pairs were small, the local independence assumptions might not hold strictly but closely enough for using IRT advantageously (Kolen & Brennan, 2004). Besides, locally dependent items were removed to ensure the unidimensionality of the B-L RI:mini.

6.2.2.2. Item Discrimination and Difficulty

Table S1 (Appendix 4) presents the discrimination and difficulty parameters from the GRM for the English, Chinese, and Spanish language versions of the B-L RI: OS-64. The values of the discrimination parameters for the English version fell within the

range 0 to 3.44; for the Chinese version, the range was between -1.17 and 3.06; for the Spanish version, the range was from -0.68 to 4.37. Item R25 ("___ cares for me"; Barrett-Lennard, 2015, p. 102) demonstrated the highest discrimination values in both the English and Spanish language versions of the inventory. The most discriminative item in the Chinese version of the inventory was Item R37 ("___ is friendly and warm with me"; Barrett-Lennard, 2015, p. 102). Twenty-three items had a parameters less than 1.35 at least in one of the three language versions of the inventory, which were considered for removal from the B-L RI:mini.

The means of difficulty parameters ranged from -2.45 to 75.69 in the English version of the B-L RI: OS-64; ranged from -17.14 to 6.23 in the Chinese version; ranged from -3.23 to 10.86 in the Spanish version of the inventory. Further inspection of the b values for each item showed that the item difficulties were well spread out across the latent continuum. Items with extreme values (e.g., Item E46 in the Chinese version of the inventory had b1-5 values ranged from -105.46 to 60.36) were not considered to be included in the new scale. Item C4 ("___ is comfortable and at ease in our relationship"; Barrett-Lennard, 2015, p. 102) was the 'easiest' item across the three language versions of the inventory. Item E14 ("___ looks at what I do from their own point of view"; Barrett-Lennard, 2015, p. 101) was the most 'difficult' item in both the English and Spanish versions of the inventory. In the Chinese version, item U35 ("If I show I am angry with ___ they become hurt or angry with me, too"; Barrett-Lennard, 2015, p. 102) was the most 'difficult' item.

6.2.2.3. Item and Test Information Curves

Figure S1 (Appendix 4) displays item information curves (IIC) for all the 64 items

across the English, Chinese and Spanish versions of the B-L RI: OS-64. The 64 items

provided the most information at the middle to lower levels of facilitativeness across

the three language versions of the inventory. Most of the items had the highest

information in the range between $\theta = -4$ and $\theta = -2$. Items that showed peak

information values less than 1 in any one of the language versions of the inventory

were removed (e.g., Item U3, "___'s interest in me depends on the things I say or do."

(Barrett-Lennard, 2015, p. 101), yielded almost no information across the three

language versions of the inventory). The test information curves (TIC) for the three

language versions of the inventory were shown in Figure S2 (Appendix 4), which

peaked in the range of -3 SD and 0/1 SD from the mean. The Spanish version of the

inventory appeared to have the highest test information of all the three versions at

$\theta = -2$.

6.2.2.4. Differential Item Functioning

We conducted tests of DIF across the English, Chinese and Spanish language versions

of the B-L RI: OS-64. As shown in Table S2 (Appendix 4), both the item

discrimination and difficulty parameters of E2, R5, and E10 are equivalent across the

three language versions of the inventory. Forty-nine items showed non-uniform DIF

as indicated by the significant discrimination parameters, and fifty-seven items

showed uniform DIF as indicated by the significant difficulty parameters. This is

consistent with the previous study (Chen et al., 2021) that examined the measurement

invariance of the three language versions of the inventory by using multigroup CFA.

The noninvariant items found in their study showed both uniform and non-uniform DIF.

6.2.2.5. Item Selection

As a result, 12 items, R5, E10, E18, E30, E34, C36, R41, C44, U51, U55, R57, and R61 were retained to form the B-L RI:mini (see Appendix 1). These 12 items were highly discriminative and sufficiently informative across the English, Chinese, and Spanish language versions of the B-L RI: OS-64. Besides, they did not exhibit non-uniform DIF across the languages.

6.3. Study 2

The aim of study 2 was to analyse the dimensionality, reliability, and construct validity of the B-L RI:mini. It was expected that the scale shows acceptable reliability and validity. Specifically, the value of the Cronbach's alpha coefficient should be greater than .70 with regard to internal consistency reliability (Onwuegbuzie & Daniel, 2002), the intraclass correlation coefficient should be greater than .75 in terms of test–retest reliability (Koo & Li, 2016). Regarding validity, the factor structure of the B-L RI:mini should be unidimensional, the scale should be moderately related to other measure of the same construct (convergent validity) and meaningful outcome (criterion-related validity), and the scale should not related be to measure that is conceptually unrelated to it (discriminant validity).

6.3.1. Method

6.3.1.1. Participants and Procedures

Participant demographics are shown in Table 6.1. The average duration of

participants' relationship was 108.14 months (SD = 102.28).

Table 6.1. Demographic Characteristics.

Demographic Variables	Count (N=362)	Percentage
Gender		
Male	316	87.3
Female	30	8.3
Trans	4	1.1
Genderqueer	6	1.7
Prefer not to say	6	1.7
Ethnicity		
Caucasian	274	75.7
Asian	46	12.7
Latino/Hispanic	6	1.7
Mixed	12	3.3
Other	24	6.6
Age (years)		
18-25	81	22.4
26-35	143	39.5
36-45	73	20.2
46-55	47	13.0
56-65	16	4.4
>65	2	.6
Types of relationship		
Spouse	122	33.7
Partner	195	53.9
Friend	39	10.8
Other	6	1.6
Duration of relationship (years)		
<.5	9	2.5
.5-1	18	5.0
1-3	102	28.2
3-5	43	11.9
5-10	87	24.0
10-20	64	17.7
20-50	39	10.8

Participants were recruited using social media (Benfield & Szlemko, 2006). Two

longitudinal surveys were administered via Jisc Online Surveys (www.jisc.ac.uk). The first survey included all the measurements mentioned below, whereas the second survey only included the B-L RI:mini. Participants were asked to provide their email addresses in order to receive the invitation to complete the B-L RI:mini again within seven days of initial administration for assessment of test–retest reliability. We included measures of social support and experiences in close relationship in order to establish convergent validity and criterion-related validity, respectively. Empathic understanding, unconditional positive regard, and genuineness can be seen as a form of emotional support. And people who continuously and consistently perceive the facilitative conditions in their close relationships tend to feel more comfortable and secure, less anxious and avoidant in relationships, and to be more authentic (Rogers, 1961). We would expect the B-L RI:mini to be moderately associated with higher ratings of social support and closeness of relationship (Rogers, 1957, 1961). Whereas the BL-RI: mini is developed on the basis of Rogers' (1957) theory, other measures are derived from different theoretical perspectives, such as attachment theory. We also included a test for social desirability in order to establish that the B-L RI:mini discriminant validity.

6.3.1.2. Measures

B-L RI: mini

The new 12-item B-L RI measure was developed from the 64-item B-L RI (Barrett-Lennard, 2015) in Study 1. Cronbach's alpha for B-L RI:mini was .91 in Study 2.

Multidimensional Scale of Perceived Social Support (MSPSS)

We used the MSPSS scale (Zimet et al., 1988) to measure perceived social support

from family (e.g., My family really tries to help me), friends (e.g., My friends really

try to help me) and significant others (e.g., There is a special person who is around

when I am in need). The scale consists of 12 items, all measured on a Likert scale

ranging from 1 (very strongly disagree) to 7 (very strongly agree). The mean rating

across all items is computed. Higher scores indicate greater perceived social support.

A Cronbach alpha of .88 was reported by Zimet et al. (1988).

Socially Desirable Response Set Five-Item Survey (SDRS-5)

The SDRS-5 (Hays et al., 1989) measures the extent to which participants respond in

a socially desirable manner (e.g., No matter who I'm talking to, I'm always a good

listener). This scale contains five items scored using a Likert scale from 1 (definitely

true) to 5 (definitely false). Only some extreme responses are scored 1, and all other

responses are scored 0. The alpha coefficients in the previous study ranged from .66

to .68 (Hays et al., 1989).

The Experiences in Close Relationship Scale – Short Form (ECR-S)

The ECR-S (Wei et al., 2007) is a 12-item scale derived from the original 36-item

ECR (Brennan, Clark, & Shaver, 1998). The ECR-S was used to assess a general

pattern of adult attachment by measuring the level of attachment anxiety (e.g., I need

a lot of reassurance that I am loved by my partner) and attachment avoidance (e.g., I

want to get close to my partner, but I keep pulling back). Each subscale contains six

items. The response is scored using a Likert scale from 1 (Strongly Disagree) to 7

(Strongly Agree). According to the previous study, the alpha coefficients for the

anxiety subscale was .77 and .78 for the avoidance subscale. Also, 1-month test–retest

reliability = .80 and .83 for anxiety and avoidance subscales, respectively (Wei et al.,

2007).

6.3.1.3. Data Analysis

Reliability

The internal consistency reliability and test–retest reliability of the B-L RI:mini were

examined using Cronbach's alpha and intra-class correlation coefficient, respectively.

SPSS version 26.0 was used to conduct correlation and reliability analyses.

Factor Structure

CFA is commonly used to evaluate the internal construct validity and dimensionality

of assessments (Harrington, 2009). A common rule of thumb is that the minimum

sample to variable ratio of 10:1 is necessary for performing factor analysis, while the

ideal ratio might be 15:1 or 20:1 (Clark & Watson, 1995). The ratio between the

number of participants and the items turned out to be as high as 30:1 (N = 362). CFA

was conducted to evaluate the adequacy of three potential models: (1) a

unidimensional model with the 12 items loading on a single latent variable,

facilitativeness; (2) a correlated four-factor model that includes R, E, C, and U; (3) a

bifactor model with a general factor (facilitativeness), along with four specific factors

(R, E, C, and U). Multiple indices of fit were used to evaluate and compare these

models: The Root Mean Square Error Approximation (RMSEA), the Confirmatory Fit

Index (CFI), and finally by the Standardized Root Mean Square Residual (SRMR).

The acceptable fit was evaluated based on the following standards (Hooper et al.,

2008; Kline, 2016): RMSEA < .08, CFI ≥ .90, and SRMR ≤ .08.

Unidimensionality

Bifactor model analysis was used to examine the unidimensionality of the B-L

RI:mini (Neff et al., 2017), which allows each item to load on a general factor

(facilitativeness) and a group factor (R, E, C, and U). The following statistical indices

were calculated using the Bifactor Indices Calculator (Dueber, 2017). The omega

index (ω) indicates the proportion of total score variance that is attributable to all

sources of common variance included in the model (Reise et al., 2013). By the same

logic, the omega subscale (ωs) indicates the amount of each subscale score's total

variance that is attributable to the blend of general and group factor variance

(Watkins, 2017). Omega hierarchical (ωh) indicates the ratio of variance in the total

scores that is attributable to the single general factor (McDonald, 2013). Omega

hierarchical subscale (ωhs) is a reliability estimate that gives the proportion of a

subscale score variance that is attributable to the specific factor after accounting for

the general factor (Reise et al., 2013). ωh values greater than .80 suggest that the most

of the explained variance was attributed to the general factor, rather than a specific

factor. High ωhs values and low ωh values suggest that the scale is multidimensional,

instead of unidimensional. The construct replicability (H; Rodriguez et al., 2016a)

informs the degree to which a latent factor is well defined by a set of items, and a cut-

off value of greater than .70 was recommended. Factor determinacy (FD; Rodriguez

et al., 2016a) represents the correlation between factor scores and the factors, which

indicates the validity of factor scores for independent use. The values of FD greater

than .90 demonstrate the factor score estimates are trustworthy (Gorsuch, 2013).

Explained common variance (ECV) is an indicator of unidimensionality, which is

calculated by dividing the variance attributable to the general factor by the variance

attributable to both the general and the subgroup factors. Percent of uncontaminated

correlations (PUC) represents the percentage of item correlations contaminated by

variance that is attributed to the general factor and specific factor, which is computed

by dividing the number of correlations between items from different group factors by

the total number of correlations (Rodriguez et al., 2016a). Rodriguez and colleagues

(2016b) recommended the criteria for the essential unidimensionality: both ECVs and

PUCs are greater than .70.

Convergent and Criterion-Related Validity

As a part of construct validity, convergent and criterion-related validity of the B-L

RI:mini were also tested in this study. MSPSS (Zimet et al., 1988) was used to test the

convergent validity of B-L RI:mini and ECR-S (Wei et al., 2007) was used for the test

of criterion-related validity. Theoretically, perceived facilitativeness should be

positively related to perceived social support and negatively related to attachment-

related anxiety and avoidance. Thus, the convergent validity and criterion-related

validity were examined by assessing associations between B-L RI:mini, MSPSS and

ECR-S. Social desirability bias is a common threat to the validity of self-report data

(King & Bruner, 2000). Therefore, social desirability was evaluated to check and

control for its impact on participants' responses.

6.3.2. Results

6.3.2.1. Internal Consistency Reliability

The internal consistency reliability of the B-L RI:mini was examined using a Cronbach's alpha index. The alpha coefficient for total B-L RI:mini score was .91. The item-total correlation coefficients ranged from .25 to .84 (See Table 6.2). The score of item U55N displayed a low but significant correlation ($r = .25$, $p < .001$) with the total score. Another unconditionality item, U51's score, presented the second least correlation ($r = .64$, $p < .001$) with the total score.

6.3.2.2. Test-Retest Reliability

The test–retest interval was one week and resulted in 216 verifiably matchable responses. The B-L RI:mini showed excellent test–retest reliability ($r = .87$).

6.3.2.3. Confirmatory Factor Analysis

The factorial validity and unidimensionality of the B-L RI:mini were investigated using CFA techniques, and confirmatory bifactor modelling. We could not confirm a good fit for the model with the significance of $\chi2$ ($< .05$) for all solutions. However, the previous study has demonstrated that this statistic is very sensitive to sample size (Kline, 2016). Thus, other fit indices were analysed. The results indicate that all the models fitted the data sufficiently well (Unidimensional model: $\chi2(54) = 388.127$, $p < .001$, CFI = .952, RMSEA = .051, SRMR = .061; Four-factor model: $\chi2(48) = 130.883$, $p < .001$, CFI = .988, RMSEA = .069, SRMR = .030; Bifactor model: $\chi2(37) = 58.213$, $p = .015$, CFI = .997; RMSEA = .040; SRMR = .016). However, the bifactor model had the best overall fit indices.

Table 6.2. B-L RI:mini scale items, mean (M), standard deviation (SD), and item-total correlation (*r*).

(n = 362)	M	SD	*r*
1. "_____ feels a true liking for me." (R5)	2.40	1.07	.73*
2. "_____ nearly always knows exactly what I mean." (E10)	1.36	1.44	.79*
3. "Whether the ideas and feelings I express are "good" or "bad" seems to make no difference to _____'s feeling toward me." (U51)	1.63	1.58	.64*
4. "_____ expresses their true impressions and feelings with me." (C36)	1.68	1.48	.77*
5. "I feel that _____ really values me." (R41)	1.98	1.36	.83*
6. "_____ usually senses or realizes what I am feeling." (E18)	1.26	1.62	.80*
7. "Sometimes I am more worthwhile in _____'s eyes than I am at other times." (U55N)	-.03	2.09	.25*
8. "_____ realizes what I mean even when I have difficulty in saying it." (E30)	.81	1.69	.80*
9. "_____ is willing to express whatever is actually in their mind with me, including personal feelings about I or me." (C44)	1.22	1.70	.75*
10. "_____ is truly interested in me." (R57)	2.12	1.32	.84*
11. "_____ usually understands the whole of what I mean." (E34)	1.31	1.58	.82*
12. "_____ feels affection for me." (R61)	2.31	1.19	.72*

Note: Total alpha = .91; N = negatively worded item; In parenthesis: the 64-item B-L RI item number (Barrett-Lennard, 2015, pp. 101-103); * significant at the .01 level.

6.3.2.4. Bifactor Model Evaluation

The overall omega index (ω) was .95, indicating that 95% of total score variance

could be attributed to both the general factor (facilitativeness) and specific factors (R,

E, C, and U). Thus, the proportion of error score in the total score was only 5%. The

omega hierarchical (ωh) index was .87 greater than .80 (Reise et al., 2013), indicating

that the B-L RI: mini's total score predominantly reflects the general factor (See Table

6.3).

Table 6.3. Bifactor Evaluation Indices for Bifactor Model with Four Specific Factors.

Factors	ω/ω_s	ω_h/ω_{hs}	H	FD	ECV	PUC
F	.945	.867	.934	.944	.765	.788
R	.921	.204	.468	.740	-	-
E	.914	.188	.425	.719	-	-
C	.816	.194	.282	.650	-	-
U	.365	.177	.190	.461	-	-

Notes. R = level of regard, E = empathy, U = unconditionality, C = congruence, F = facilitativeness (general factor), ω = omega, ω_s = omega subscale, ω_h = omega hierarchical, ω_{hs} = omega hierarchical subscale, FD = factor determinacy, ECV = Explained common variance, PUC = Percent of uncontaminated correlations.

In contrast, omega hierarchical subscale (ωhs) scores were low for all four

factors (.19—.20); none of them met the minimum standard of .50 suggested by Reise

(2012). This result indicates that most of the reliable variance of each subscale score

was due to the general factor rather than the specific factors. Even though the omega

subscale for R, E, and C were high, there were only small proportions of variance in

subscale scores that were attributed to the group factors alone. Within the bifactor

model, H of the general factor was greater than .70, and no specific factor met the

criteria for adequate construct replicability, which suggested that only the general

factor was considered well defined by its items. Additionally, only the general factor

showed FD value greater than .90, which suggested that only the total scale score

should be used. On the scale level, both ECV and PUC were greater than .70,

supporting the unidimensional nature of the B-L RI:mini.

6.3.2.5. Convergent and Criterion-Related Validity

Both convergent and criterion-related validity were supported by the significantly

moderate correlations between B-L RI:mini and relative measures. Social desirability

was controlled in convergent and criterion-related validity analyses. Convergent

validity was demonstrated by a positive correlation between the B-L RI:mini and the

MSPSS (r = .34, $p < .001$). For criterion-related validity, the B-L RI:mini was found to

be negatively related to both the anxiety subscale (r = -.25, $p < .001$) and the

avoidance subscale (r = -.36, $p < .001$) of the ECR-S.

6.3.2.6. Discriminant Validity

There were only low and non statistically significant correlations found between the

B-L RI:mini and the SDRS-5, indicating that no social desirability bias is present.

Pearson's correlation between the total B-L RI:mini scale and the SDRS-5 was -.07

($p = .193$).

6.4. Discussion

The B-L RI is a well-known instrument to measure facilitative conditions for

constructive personality development, which has been used in various fields and been

translated into a variety of languages (Barrett-Lennard, 2015; Liao et al., 2018). The

B-L RI provides information which can help us to improve the quality of relationships

with others and our interpersonal and communication skill to facilitate other's personal growth. In psychotherapy research, the B-L RI has generally been used to measure the facilitativeness of the therapeutic relationship and the supervisory relationship (e.g., Carey & Williams, 1986; Lawson, 1982; Wade & Bernstein, 1991). The B-L RI enables counsellors, counselling students, and educators to examine if counsellors: 1) have perceived sufficient facilitative conditions for their personal/professional development in counsellor education/supervision/group settings; 2) have provided sufficient facilitative conditions for an effective therapeutic relationship. Noteworthily, the application of the B-L RI is common across different types of relationships, both clinical and non-clinical, which enables us to evaluate the facilitative conditions that individuals perceived in their relationships with several significant others by a single instrument.

However, the length of the B-L RI may be seen as excessive by researchers and practitioners who want to use the B-L RI in combination with a large battery of instruments, particularly when the B-L RI needs to be administered on multiple occasions. The short measurement instrument has the advantage of reducing the difficulty for participants to remain focused on completing the questionnaire, so the research compliance rate and participants' motivation in responding to the questionnaire can be improved.

To meet the practical need for a short form of the B-L RI, this study aimed to develop a mini form of the B-L RI in a scientifically meaningful manner. This research involved two studies: 12 items were selected from the 64-item B-L RI to be

included in the shortest form of the B-L RI using IRT in Study 1. Following the numbering of the 64-item B-L RI, the abbreviated B-L RI included items R5, E10, E18, E30, E34, C36, R41, C44, U51, U55, R57, and R61. To our best knowledge, this is the first study that employed IRT-based techniques to investigate the psychometric properties of the English, Chinese, and Spanish language versions of the B-L RI: OS-64. IRT provides more detailed information on the item level comparing to CTT, which is more suitable for scale development. Besides, DIF analysis revealed that most of the items function differently across the three language versions of the inventory. In Study 2, the validation process was implemented for the B-L RI: mini. With the reduced structure, the reliability analyses showed good results for the inventory, with a Cronbach's alpha of .91. All of the items showed high item-total correlations except for the U55, which may be caused by the ambiguous wording and the reverse scoring. Da Rocha Bastos et al., (1979) argued that a high degree of unconditionality of regard could be represented either as unconditional acceptance or as inexorable rejection. The semantic ambiguity is more likely to occur in the real-life setting because the therapist is expected to be related to the client in a positive way. Besides, U55 was the only reverse worded item in the B-L RI:mini, which may increase the difficulty for participants to understand the statement. This finding was consistent with the context of B-L RI literature, indicating that significant and relatively high correlations between R, E, and C except for U (Da Rocha Bastos et al., 1979). The test–retest reliability of the inventory after one week was .87. In summary, both the internal consistency and test–retest reliabilities of the B-L RI:mini were

proved to be satisfactory.

The B-L RI:mini was demonstrated to be unidimensional using CFA and bifactor model evaluation. Empathic understanding, congruence, and unconditional positive regard are meaningful in theory, but not in psychometric testing. The prior research has only used EFA to examine the factor structure of the B-L RI. Several possible models have been explored, but they have never been confirmed and compared. With the help of CFA, the bifactor model evaluation showed that most of the variances in the subscales' scores were attributed to the general factor (facilitativeness), and the specific factors are invalid and unreliable. Even though previous research found that the subscales scores were internally consistent and temporally stable, which can be derived from the reliability of the general factor. The facilitative conditions are conceptually distinguishable, but also synchronous in close relationships. Both total scale and subscale scores revealed only the overall facilitativeness of relationships, the use of subscale score is meaningless. Consistent with the only previous report for bifactor model evaluation of the B-L RI: OS-64 (Chen et al., 2021), this new form of B-L RI can be considered as an efficient and useful tool to evaluate the levels of perceived facilitativeness instead of measuring the relationship conditions separately.

Assessments of convergent validity and criterion-related validity further supported the construct validity of the B-L RI:mini. Facilitativeness is a special form of social support that serves to promote personality change (Rogers, 1957). Perceiving facilitativeness constantly in a relationship would reduce the experience of anxiety

and avoidance (Rogers, 1961). As expected, we found a positive association of relationship quality with perceived social support as well as the negative associations of relationship quality with attachment avoidance and anxiety. Also, low and non statistically significant correlations between scores on the B-L RI:mini and the measure of social desirability suggested no evidence of social desirability bias in our study.

6.4.1. Scoring Methods

The use of the B-L RI:mini is convenient and can save administration time, especially for longitudinal study and monitoring of the maturity of personality development where the participant may be required to complete the form on a number of occasions. We recommend using a total score for the B-L RI:mini. Based on the bifactor model evaluation, it was concluded that it was not appropriate to use the subscales independently.

On the one hand, B-L RI can be used to measure one's perceived facilitativeness in various types of relationships. On the other hand, the wide application of the inventory makes the establishment of norms and standards difficult. After reversing negatively worded item U55 (-3/-2/-1 = 3/2/1), a total score varying from -36 to 36 can be obtained by summing all the item scores. For psychotherapy relationships, Barrett-Lennard (2015) suggested to "utilize a three-fold approach to assembling comparison data and working standards." (p.42). The first two components of this approach can be directly applied in the B-L RI:mini. First, means and variance data can be organized from available studies that reporting such data

from the B-L RI:mini. Second, a local data pool should be built up by gathering data systematically from participants in the same local setting. Then, the mean and variance of the local data could be selected and organized. The standard scoring method was suggested as a complementary or alternative to the two components above. Comparison standards for the 64-item B-L RI were established by this method. Applying the same method to establish scoring interpretation for the B-L RI:mini: a total score of 30 and above are "as high as one could plausibly expect in any relationship context, in terms of honest, discriminating perception." (p.42); a total score of 24 implies that the facilitative conditions were substantially perceived in the referent relationship; a total score of 18 is probably the minimal level that should be achieved in fruitful helping relationships; any score below 12 "would be expected to represent a less than adequate level in therapy relationships." (p.42).

6.4.2. Strengths and Limitations

The interpretation of the findings should take the strengths and limitations of this study into account. Alternative confirmatory analytic models of the B-L RI have been little explored; we compared the original correlated four-factor model with unidimensional and bifactor models in this study. The bifactor modelling approach was used to further our understanding of the scoring of the B-L RI. The findings demonstrated that the B-L RI:mini produces the same unidimensional structure as the B-L RI: OS-64. Further strengths are its large sample size, as it provided an ideal participant sample ratio to conduct factor analysis. However, like all research, this study had limitations. The homogeneous nature of the sample might limit the findings

of this study. A majority of the participants were female Caucasian. Another limitation might be that only one negatively worded item was contained in the scale; the use of alternating item wording in questionnaires has been recommended in order to reduce acquiescent bias and extreme response bias (Rorer, 1965). The necessity of negatively worded items is still under discussion. Sonderen et al. (2013) found the negatively worded items not only did not prevent such bias but also caused confusion and inattention. Despite controversial opinions regarding the inclusion of reverse-worded items, the B-L RI:mini showed adequate reliability and validity.

6.5. Conclusion

In summary, the results from these studies indicated that the 12-item B-L RI is a valid and reliable instrument of facilitativeness in the non-clinical setting. The B-L RI: mini was proven to retain the good psychometric properties of the 64-item B-L RI and to require less time to complete. Our findings indicated that the B-L RI:mini should only be used to obtain a total score for facilitativeness and should not be separated into its subscales. It is recommended that future studies assess the reliability and validity of the B-L RI:mini in the clinical setting.

Chapter 7: Dispositional Authenticity, Perceived Facilitativeness, Femininity Ideology, and Dyadic Relationship Functioning in Opposite-Gender Couples: Actor-Partner Interdependence Analysis

7.1. Introduction

Authenticity has long been highly advocated in a variety of fields, such as popular culture, philosophy, and psychology. Authenticity in psychology has divergent definitions that can be broadly categorized into two approaches, referred to as the consistency approach and the congruence approach (Sutton, 2020). The consistency approach viewed authenticity as personality traits that are consistent across situations or social roles. Recent research, however, demonstrated that cross-situational or cross-role personality consistency is a different concept from authenticity (Sutton, 2018; Cooper et al., 2018). Being authentic does not have to mean possessing rigid and unchangeable personality traits (Sheldon, 2013). On the contrary, an authentic person permits "himself freely to be the changing, fluid, process which he is" (Rogers, 1961, p. 181). The congruence approach was rooted in the theory of Carl Rogers (1959, 1961), the founder of client-centred therapy and the person-centred approach. Authenticity was regarded as congruence between the three levels of psychological functioning: (a) internal experience, (b) symbolized awareness, and (c) external behaviour and communication (Barrett-Lennard, 1998).

Rogers hypothesized that the consequence of being authentic, inside and out,

"is an alteration in personality and behaviour in the direction of psychic health and maturity and more realistic relationships to self, others, and the environment" (Rogers, 1961, p. 66). Evidence supports his hypothesis by showing that authenticity is associated with various adaptive functioning and wellbeing indicators across a range of contexts (see Sutton, 2020). For example, researchers have reported a positive association between authenticity and mindfulness, lower verbal defensiveness, higher secure self-esteem, emotional intelligence, and psychological wellbeing. (Chen & Murphy, 2019; Heppner & Kernis, 2007; Lakey et al., 2008; Tohme & Joseph, 2020). Contrariwise, empirical evidence supported a link between inauthenticity and negative psychological outcomes. For example, authenticity had an inverse relationship with distress (Boyraz et al., 2014), depressive symptoms, anxiety symptoms, physical symptoms, alcohol-related problems, and loneliness (Bryan et al., 2017).

7.1.1. Dispositional authenticity in romantic relationships

Dispositional authenticity, as the congruence between inner experience, symbolized awareness, and external expression, has been found to be related to one's own romantic relationship functioning, such as fear of intimacy, self-disclosure, trust, relationship satisfaction, and perceived social support (Kernis & Goldman, 2006; Tracy et al., 2009). However, very few studies have investigated the interpersonal impact of dispositional authenticity on functioning or adjustment in romantic relationships. To our best knowledge, the only previous study that explored the impact of dispositional authenticity on romantic relationship functioning in dyadic data was

conducted by Brunell and colleagues (2010), who found that both men's and women's dispositional authenticity predicted their own individual relationship functioning, but only men's dispositional authenticity predicted their partner's individual relationship functioning. Women's dispositional authenticity was not related to men's individual relationship functioning. They explained that the gender difference which occurred might be due to the social expectations placed on women, such as women are more communal than men, women should be attuned to others and build relationships. They concluded that authentic men assist women's job of maintaining intimacy in the relationship, which resulted in better relationship functioning of women. In other words, they implied that men's dispositional authenticity would moderate the association between women's femininity ideology and relationship functioning.

However, mutuality, the sense of oneness with a partner in a romantic relationship, has been found to promote the greatest level of satisfaction and authentic behaviour in romantic relationships. Individual and relationship outcomes were maximized for both partners in the relationship with mutuality (Davila et al., 2017; Harter et al., 1997; Kayser & Acquati, 2019). In fact, from a person-centred perspective, couples' authenticity would help them to come "to a deeper mutual understanding and to a resolution of difficulties" (Rogers, 1973, p. 27).

Dyadic adjustment has been considered as an indicator of couples' adaptation and consistency with each other in the relationship, which includes dyadic consensus, dyadic satisfaction, dyadic cohesion, and affectional expression (Farero et al., 2019). A previous study found that genuine self-esteem and authentic pride had positive

effects on one's own dyadic adjustment (Tracy et al., 2009). However, it is not yet clear whether individuals' dispositional authenticity has the same beneficial effect on their partner's dyadic relationship functioning. To fill this gap, the first aim of this study was to demonstrate the impact of dispositional authenticity on dyadic relationship functioning in opposite-gender couples by using a dyadic approach.

7.1.2. Dispositional authenticity, facilitativeness, and relationship functioning

The facilitative conditions proposed by Rogers were genuineness, empathic understanding, and unconditional positive regard. It is now widely accepted that the facilitative relationship conditions are common factors that make psychotherapy effective (Bozarth & Motomasa, 2017; McAleavey & Castonguay, 2015). However, while Rogers' work is most widely known in the psychotherapy literature, he went on to discuss how these same conditions were equally applicable in any relationship involving psychological contact, and would similarly produce beneficial effects on enhancing personal development and wellbeing (Rogers, 1959, 1961). For example, perceived facilitative conditions have been found to correlate with women athletes' body appreciation and eating style in coach-athlete relationships (Oh et al., 2012), positive client outcomes in psychotherapeutic relationships (Bell et al., 2016), prisoners' post-traumatic growth in staff-prisoner relationships (Hearn et al., 2020), and students' learning experience in student-teacher relationships (Swan et al., 2020).

However, no previous study has investigated the impact of one's authenticity on another person's perception of these facilitative conditions of empathy, genuineness, and unconditional positive regard, neither in therapeutic relationships

nor in other types of relationships. According to Rogers (1957), if one's authenticity makes an impact on another person's functioning and development, the effect should be exerted through the latter person's perceived facilitative conditions. To facilitate another person's growth, not only congruence but also empathic understanding and unconditional positive regard must be perceived in the relationship. The process of becoming more authentic includes leaving behind conditions of worth and being open and curious to experience (Joseph, 2016; Rogers, 1961). Recent studies have found dispositional authenticity to be positively correlated with unconditional positive self-regard (Kim et al., 2020) and to moderate the association between self-compassion and compassion to others (Bayır-Toper et al., 2020). Transparency in behaviour and communication build closeness and trust; a deep empathic understanding enables the receivers to get close to their own internal experience; unconditional acceptance takes away the threat of losing positive regard. Authentic people show their curiosity, openness, acceptance, and trust to their own and others' internal experiences through genuine behaviours and expressions in close relationships. The facilitative way authentic people perceive, understand, and treat themselves is also reflected in their interactions with other people. Therefore, people who have close relationships with authentic people perceive congruence, empathy, and unconditional positive regard in their interactions, and in turn, the perceived facilitativeness brings better relationship functioning. The second aim of this study was to examine the mediating role of perceived facilitativeness in the association between dispositional authenticity and dyadic relationship functioning in opposite-gender couples.

7.1.3. Dispositional authenticity, femininity ideology, and relationship functioning

Rogers viewed authenticity as a default human state, but one that was easily derailed. Newborn infants are authentic as they are in tune with their organismic selves (Joseph, 2016; Rogers, 1959). However, their states of congruence can hardly be maintained when their internal experiences "are discriminated by significant others as being more or less worthy of positive regard" (Rogers, 1959, p. 225). The values from significant others, also called conditions of worth, are adopted as their own and can be maintained until adulthood. Instead of acting on their organismic valuing process, they gradually alienate their symbolized awareness from their internal experience and act in accord with the conditions of worth (Murphy et al., 2020). Perceived conditional regard has been found to be detrimental to a range of psychological, behavioural, and relational outcomes, such as relationship quality, adjustment, and school dropout (e.g., Itzhaki et al., 2018; Kanat-Maymon et al., 2016).

Gender socialization is one of the best-known examples of the learning process of conditions of worth: individuals are given positive regard when their behaviours and attitudes are consistent with sociocultural expectations around their assigned or perceived sex, and negative regard when their gender expressions do not meet the expectations. The internalisation of conventional beliefs regarding gender roles is referred to as gender ideology (Levant et al., 2007).

Women are generally expected to show communal traits (e.g., warm, caring), and men are traditionally ascribed agentic traits (e.g., dominant, competent) (Eagly, 2013). There was no evidence of salutary effects of femininity ideology on women's

relationship functioning, although women were traditionally expected to avoid

conflict and preserve harmonious relationships (Wood & Eagly, 2010). However,

there was evidence that femininity ideology is detrimental to girls'/women's

psychological wellbeing. For example, femininity ideology was negatively associated

with self-esteem and positively associated with depression in adolescent girls (Tolman

et al., 2006). Femininity ideology had a negative correlation with body appreciation in

adult women (Swami & Abbasnejad, 2010). Heterosexual women who conformed to

feminine norms related to romantic relationship was found to show more

romanticizing controlling behaviours (Papp et al., 2017). Women who highly valued

romantic relationship and believed that they should invest self in romantic

relationship because of their gender did not seem to show better romantic relationship

functioning. Moreover, conformity to feminine norms may elicit women's controlling

behaviour in romantic relationships. These findings were more consistent with

Rogers' (1959) theory compared to Brunell and colleagues' (2010) interpretation of

the gender difference in the impact of one's dispositional authenticity on their

partner's relationship functioning. But as women become more authentic, they will

experience less conditions of worth. Women's femininity ideology would not affect

the impact of their dispositional authenticity on their own psychological and relational

adjustment. But it is unknown if women's femininity ideology affects their partners'

relationship functioning in opposite-gender relationships.

Additionally, men's femininity ideology is not associated with their self-

concept, femininity ideology is not conditions of worth for men. There is a lack of

research on how men's femininity ideology is associated with either their own or their partners' relationship functioning. However, men's avoidance of femininity ideology may relate to negative interpersonal experiences (Levant & Powell, 2017). More definitive evidence of the relationships between dispositional authenticity, femininity ideology, and couple's relationship functioning is awaited.

Over the past 20 years, increasing attention has been given to authenticity in various research fields (Harter, 2009). Gender ideology, as an important concept in the gender role strain paradigm, has been researched since the 1980s (Pleck, 1987). However, there is a lack of studies focused on both authenticity and gender ideology. Hence, the third aim of this study was to examine the moderating role of femininity ideology in the association between dispositional authenticity and dyadic relationship functioning in opposite-gender couples.

7.1.4. This Study

The objective of this longitudinal study was to (a) examine intrapersonal and interpersonal associations between dispositional authenticity and dyadic relationship functioning in opposite-gender romantic relationships, test (b) perceived facilitativeness as a mediator, and (c) femininity ideology as a moderator that may explain these interpersonal and intrapersonal associations. Based on person-centred theory and previous research literature, the following hypotheses were proposed and tested with a longitudinal and dyadic approach:

Hypothesis 1: For both men and women, dispositional authenticity would be

positively and prospectively associated with their own and their partner's

dyadic relationship functioning.

Hypothesis 2: For both men and women, both the interpersonal and intrapersonal links between prior dispositional authenticity and later dyadic relationship functioning would be mediated by both one's own and one's partner's later perceived facilitativeness. It was expected that greater dispositional authenticity would be related to greater perceived facilitativeness. In turn, perceived facilitativeness would be positively associated with the levels of dyadic relationship functioning.

Hypothesis 3: Femininity ideology would moderate the link between dispositional authenticity and dyadic relationship functioning. Men's femininity ideology may weaken the positive associations between their dispositional authenticity and dyadic relationship functioning.

7.2. Method

7.2.1. Procedures

The participants were recruited through social media groups between November 2019 and September 2021. The inclusion criteria were (a) 18 years old or older; (b) both partners of the relationship agreed to participate, and it had to be an opposite-gender relationship; (c) couples were involved in the relationship for a minimum of 3 months and (d) agreed to complete the follow-up survey after a two-week interval. Data were collected via Jisc Online Surveys. One member of a couple completed the survey first. Then a receipt number was given to be sent to their partner together with the link to the online survey. The partner was required to provide the receipt number when they

were filling in the survey. Email addresses were asked to provide for researchers to send the link to the follow-up survey.

7.2.2. Participants

The final sample consisted of 239 opposite-gender couples (N = 478). Men's mean age was 31.35 years (SD = 8.49), and women's mean age was 30.45 years (SD = 9.23). The average relationship duration was 4.34 years (SD = 4.38, range = 0.25-27.08 years). Collectively, this sample was 55.23% Caucasian, 19.67% South Asian, 8.37% East Asian, 5.65% African, 2.51% Latino/Hispanic, 2.51% Mixed, and 6.06% identified as having another racial or ethnic background.

7.2.3. Measures

Participants completed self-report surveys at two time points, two weeks apart. At the first time point (T1), participants completed questionnaires assessing dispositional authenticity and femininity ideology. In the second time point (T2), participants completed measures of perceived facilitativeness and dyadic relationship functioning. Sociodemographic information, including gender, age, ethnicity, and length of relationship was also obtained.

Dispositional authenticity (T1) Dispositional authenticity was measured with the Authenticity Scale (Wood et al., 2008). This is a 12-item measure composed of a 4-item self-alienation subscale (e.g. 'I feel as if I don't know myself very well'), a 4-item authentic living subscale (e.g. 'I am true to myself in most situations'), and a 4-item accepting external influence subscale (e.g. 'I usually do what other people tell me to do'). For all items, participants report on a Likert-type scale ranging from 1

(*does not describe me at all*) to 7 (*describes me very well*). To compute a total scale score, items on the self-alienation and external influence subscales are reverse scored, such that higher scores on the total are indicative of higher authenticity. Wood and colleagues (2008) reported α coefficients for subscales ranged from .69 to .78. The two-week and four-week test-retest reliability coefficients were also adequate for all subscales ranging from .78 to .84. Moreover, convergent validity was demonstrated as the subscales were strongly correlated with subjective wellbeing, psychological wellbeing, and self-esteem.

Femininity Ideology (T1) The Femininity ideology Scale (FIS) provides a measure of the degree to which participants endorse traditional femininity ideology (Levant et al., 2007). To assess the degree to which participants assume women's role in relationships, the 7-item caretaking subscale, and the 8-item emotionality subscale were used. Sample items read, "When someone's feelings are hurt, a woman should try to make them feel better." and "It is expected that a single woman is less fulfilled than a married woman.". Participants were asked to rate the degree to which they agree with the statements using a 5-point Likert -type scale (1 = *strong disagreement with traditional norms* and 5 = *strong agreement with traditional norms*), with higher scores on all items reflecting higher agreement with traditional women gender roles in relationships. The Total Traditional Score was obtained by taking the mean of all the items. Previous research (Levant et al., 2007) revealed Cronbach's alphas for the caretaking subscale (α = .80) and for the emotionality subscale (α = .82).

Perceived facilitativeness (T2) Perceived facilitativeness was assessed using

the 12-item Barrett-Lennard Relationship Inventory (B-L RI:mini; Chen et al., 2021).

The B-L RI: mini is a global evaluative assessment of the one-dimensional construct

of Rogers' (1959) facilitative conditions. Participants were asked to report on the

amount of empathy, congruence, unconditionality, and positive regard they feel their

partner expresses towards them with the use of a Likert scale, which ranged from -3

(*NO, I strongly feel that it is not true*) to 3 (*YES, I strongly feel that it is true*).

Examples of items included "My partner usually senses or realizes what I am

feeling.", "My partner expresses their true impressions and feelings with me.",

"Whether the ideas and feelings I express are "good" or "bad" seems to make no

difference to my partner's feeling toward me." Higher scores are indicative of the

participants perceiving higher facilitativeness from their partners. Chen and

colleagues (2021) reported high reliability with an α coefficient of .91. They also

reported good construct validity as perceived facilitativeness is moderately associated

with perceived social support, attachment anxiety, and avoidance.

Dyadic relationship functioning (T2) The 7-item Abbreviated Dyadic Adjust

Scale (ADAS; Sharpley & Rogers, 1984) was used to measure perceptions of

relationship adjustment for either married or unmarried couples. Three items of the

ADAS assessed topics of disagreement between partners, and they were rated on a 6-

point Likert scale, with response options ranging from "always disagree" to "always

agree". Three questions assessed frequency of positive exchanges, and they had a 6-

point Likert scale with possible response options ranging from "never" to "more

often". An additional item accessed overall happiness in the relationship with a 7-

point Likert scale ranging from "extremely unhappy" to "perfect". The ADAS had a

possible range from 0 to 36. Higher scores indicated greater adjustment. Whisman and

colleagues (2011) reported coefficient alphas ranging from .78 to .92. The ADAS has

also demonstrated good criterion-related and construct validity.

7.2.4. Statistical analyses

7.2.4.1. APIM

Structural equation modelling (SEM) was used to characterize the direct and indirect

effects among a set of variables. SEM is one of the most widely used tools for data

analysis in applications throughout the social and behavioural sciences and is

particularly useful for analysis of dyadic data (Kenny et al., 2006). A common

problem of nonindependence in the social sciences also arises in dyadic data analysis.

The Actor-Partner Interdependence Model (APIM) has been developed to account for

the nonindependence of dyadic data, which is able to test the influence that two

related individuals have on each other (Kenny, 1995; Kenny & Judd, 1996).

Therefore, path analysis was used to analyse the APIM within an SEM framework in

Mplus Version 8.6 (Muthén & Muthén, 2017).

APIM nests dyadic members' scores with their individual unit measure

retained. In the basic APIM, causal variables and outcome variables for both dyadic

members were presented in the model. Thus, the central components of the APIM are

the relationships between these variables, which are called actor effect and partner

effect. Whereas actor effect refers to the effect of a person's causal variable on that

person's outcome variable, partner effect refers to the effect of a person's partner's

causal variable on the person's outcome variable (Cook & Kenny, 2005).

Tests of distinguishability were conducted. The omnibus test of distinguishability was conducted to determine whether dyad members were distinguishable by their gender. The model could be simplified if dyadic members are able to be treated as indistinguishable, which could result in a dramatic increase in statistical power (Kenny et al., 2006).

For APIM, six pairs of parameters were set equal with each other: (a) two means of the causal variables; (b) two variances of the causal variables; (c) two intercept of the outcome variables; (d) two error variances; (e) two actor effects; (f) two partner effects (Kenny & Ledermann, 2010). For complete indistinguishability, all six pairs of parameters were constrained to be equal. For Y indistinguishability, the equality constraints on means and variances of causal variables were removed from the six constraints. For effect indistinguishability, only actor effects and partner effects were constrained.

Model fits for these restricted models were evaluated using the following fit indices and a set of a priori cut-off criteria (Hooper et al., 2008; Kline, 2016) for adequate fit; comparative fit index (CFI, > .90), the standardized root mean square Residual (SRMR, < .08) and the root-mean-square error of approximation (RMSEA, < .08).

The Actor-Partner Interdependence Mediation Model (APIMeM; Ledermann et al., 2011) and the Actor-Partner Interdependence Moderation Model (APIMoM; Garcia et al., 2015) were developed based on the APIM, which were utilized to

examine the effects of mediator and moderator on both intrapersonal and interpersonal associations.

7.2.4.2. APIMeM

APIMeM includes mediator variables besides causal and outcome variables. Both the direct effects of the dyad members' dispositional authenticity on their own and their partners' dyadic relationship functioning and the indirect effects via their own and their partners' perceived facilitativeness are estimated by APIMeM (Ledermann et al., 2011). To assess the significance level of indirect and total effects, bias-corrected 95% confidence intervals (CI) were obtained using nonparametric bootstrapping with 5000 re-samplings. To investigate distinguishability in APIMeM, extra equality constraints on mediators and mediation effects were needed (Garcia et al., 2015).

7.2.4.3. APIMoM

APIMoM was used to evaluate the moderating role of femininity ideology on the relationship between dispositional authenticity and dyadic relationship functioning. The independent variables and moderators were grand-mean centred to facilitate the interpretation of interaction effects and reduce collinearity. After centring, the interaction terms were created by multiplying dispositional authenticity score by femininity ideology score. Parameter estimates of paths from those interaction terms to dyadic relationship functioning were also examined. The sampling-error-adjusted Bayesian information criterion (SABIC) was suggested to be used to test the model fit of APIMoM (Garcia et al., 2015), where smaller values indicate better model fit. Besides the six constraints mentioned earlier, the equality constraints on means and

variances of moderators and moderation effects were also imposed on the APIMoM to account for the indistinguishability of the dyads.

When the best fit model yielded a significant interaction term, the simple slope procedure (Preacher et al., 2006) was adopted to further examine the pattern of the relationship. Simple slope analyses were conducted at low (1 SD below the mean), mean, and high (1 SD above the mean) levels of femininity ideology with low, mean, and high levels of dispositional authenticity. The plot was generated in R statistics (R Core Team, 2020) using the RStudio interface (version 1.3.1093; RStudio Team, 2020), using the plot function.

7.3. Results

7.3.1. Preliminary analyses

Table 7.1 shows descriptive statistics and correlations for men's and women's ratings of dispositional authenticity, perceived facilitativeness, femininity ideology, and dyadic relationship functioning.

For both men's and women's reports, the perceptions of dyadic relationship functioning were positively associated with both their own and their partners' perceptions of facilitativeness. Both men's and women's dispositional authenticity were positively related to their own and their partners' perceived facilitativeness and dyadic relationship functioning. Men's and women's femininity ideologies were positively correlated with each other. Women's femininity ideology was negatively related to their own and their partners' dispositional authenticity. Men's femininity ideology was positively correlated with their own perceived facilitativeness.

Table 7.1. Means, Standard Deviations, Scale Reliabilities, and Correlations for Study Variables.

	1	2	3	4	5	6	7	8
1. Dispositional authenticity T1 (women)	-							
2. Perceived facilitativeness T2 (women)	.310**	-						
3. Femininity ideology T1 (women)	-.239**	-.090	-					
4. Dyadic relationship functioning T2 (women)	.380**	.723**	-.035	-				
5. Dispositional authenticity T1 (men)	.112	.201**	-.135*	.200**	-			
6. Perceived facilitativeness T2 (men)	.228**	.524**	.014	.488**	.396**	-		
7. Femininity ideology T1 (men)	-.073	-.035	.200**	-.081	.037	.132*	-	
8. Dyadic relationship functioning T2 (men)	.272**	.483**	-.088	.453**	.373**	.703**	.014	-
Mean	-2.121	18.845	2.488	25.623	-1.845	19.427	2.527	24.808
SD	11.321	10.991	.708	4.937	10.606	11.881	.766	5.021
α	.806	.851	.848	.707	.812	.884	.886	.670

Note. $N = 239$ couples.

*$p < .05$. **$p < .01$.

7.3.2. APIM analyses

The purpose of the APIM analyses was to examine the relationship between dispositional authenticity at T1 and perceived dyadic relationship functioning at T2 in opposite-gender romantic relationships.

The basic saturated APIM was estimated first. The fit indices were irrelevant, so they were not reported (Cook & Kenny, 2005). The dyadic members were treated as distinguishable by their genders in the basic APIM. Then, distinguishability was tested. For the APIM examining the relationship between dispositional authenticity and dyadic relationship functioning, the fit indices indicated good fits with completely indistinguishable dyad ($\chi^2(6) = 7.17$, $p = .306$; CFI = .989; RMSEA = .029; SRMR = .056). Consistent with *H1*, both actor (B = .160, *SE* = .021, $p < .001$, $\beta = .352$) and partner (B = .091, *SE* = .022, $p < .001$, $\beta = .199$) effects of dispositional authenticity on dyadic relationship functioning were statistically significant (see Figure 7.1).
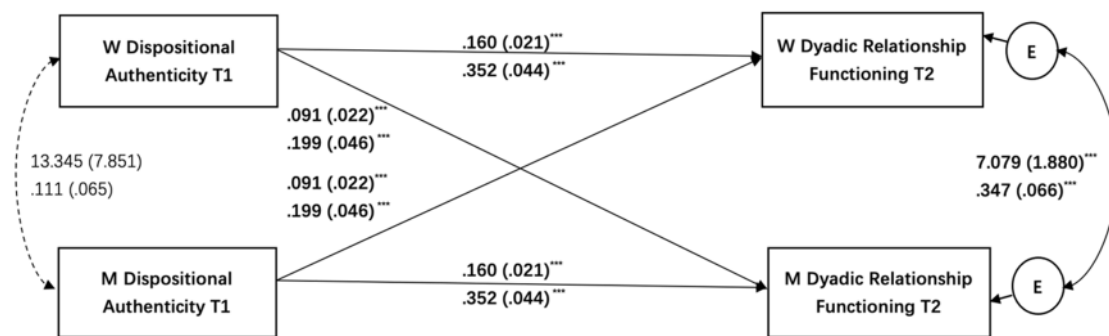
Figure 7.1. Estimated APIM. Unstandardized (upper), standardized (lower) path estimates, and standard errors were reported. Dotted lines represent nonsignificant paths.
Note. W = Women; M = Men; T1 = Time Point 1; T2 = Time Point 2. ***$p < .001$.

7.3.3. APIMeM analyses

The APIMeM analyses aimed to identify perceived facilitativeness at T2 as a possible

mediator in the causal relation between dispositional authenticity at T1 and dyadic

relationship functioning at T2 in opposite-gender romantic relationships.

Figure 7.2. Estimated APIMeM. Unstandardized path estimates (upper) and standardized path estimates (lower) were reported with standard error. Dotted lines represent nonsignificant paths.
Note. W = Women; M = Men; T1 = Time Point 1; T2 = Time Point 2. **$p < .01$; ***$p < .001$.
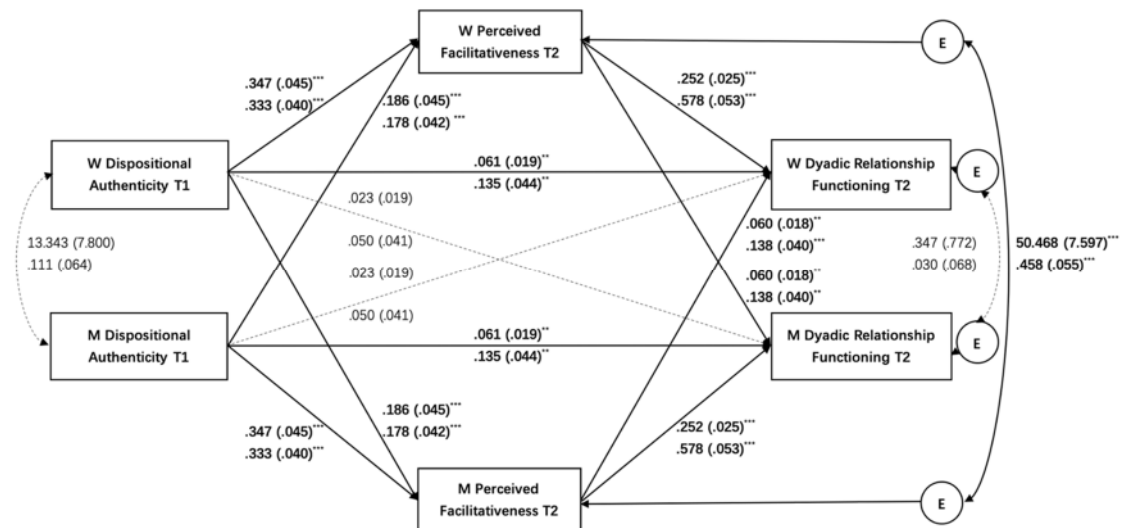
The APIMeM with completely indistinguishable dyadic members showed a

good model fit ($\chi^2(12) = 19.16$, $p = .085$; CFI = .986; RMSEA = .050; SRMR = .049).

Path estimates for the APIMeM examining the effects of dispositional authenticity on

dyadic relationship functioning through perceived facilitativeness were shown in

Figure 7.2. Both men' and women's prior dispositional authenticity were positively

associated with their own (B = .347, *SE* = .045, $p < .001$, β = .333) and their partner's

future perceived facilitativeness (B = .186, *SE* = .045, $p < .001$, β = .178). Individuals'

perceived facilitativeness was related to both their own (B = .252, *SE* = .025, $p < .001$,

β = .578) and their partners' (B = .060, *SE* = .018, *p* = .001, β = .138) dyadic

relationship functioning. There were only significant positive direct effects of the

person's prior dispositional authenticity on their own future dyadic relationship

functioning (B = .061, *SE* = .019, *p* = .002, β = .135). The 95% CI was used to

determine the significance of those effects. Direct, indirect, and total effects were

reported in Table 7.2. All the four mediations were significant. The direct partner

effects were statistically insignificant because corresponding confidence intervals

contain zero.

Consistent with *H2*, both dyad members' perceived facilitativeness were found

to partially mediate the actor effects of dispositional authenticity, but completely

mediate the partner effects of dispositional authenticity on dyadic relationship

functioning. To be specific, both dyad members' dispositional authenticity predicted

higher their own and each other's perceived facilitativeness, which in turn was linked

to higher their own and each other's perceived dyadic relationship functioning. But

one's dispositional authenticity was related prospectively to their own dyadic

relationship functioning only.

Table 7.2. Total, direct, and indirect effects in the APIMeM.

Effect	B	SE	p	95%CI	β	Proportion of the Total Effect
Actor effect						
Total effect	.160	.021	<.001	[.127,.196]	.352	
Total IE	.099	.015	<.001	[.075,.124]	.217	61.88%
via own perceived facilitativeness	.088	.015	<.001	[.064,.114]	.192	55.00%
via partner's perceived facilitativeness	.011	.004	.008	[.006,.020]	.025	6.88%
Direct effect	.061	.019	.002	[.030,.093]	.135	38.13%
Partner effect						
Total effect	.091	.023	<.001	[.053,.128]	.199	
Total IE	.068	.014	<.001	[.046,.092]	.149	74.73%
via own perceived facilitativeness	.047	.013	<.001	[.028,.070]	.103	51.65%
via partner's perceived facilitativeness	.021	.006	.001	[.012,.032]	.046	23.08%
Direct effect	.023	.019	.220	[-.007,.054]	.050	25.27%

Note. IE = indirect effect.

7.3.4. APIMoM analyses

The APIMoM analyses aimed to investigate moderating effects of femininity ideology at T1 on relationships between dispositional authenticity at T1 and dyadic relationship functioning at T2 in opposite-gender romantic relationships.

Following the procedure recommended by Garcia and their colleagues (2015). First, a model with all interaction effects set to 0 was fitted. The fit of the model was poor ($\chi^2(8) = 27.54$, $p < .001$; CFI = .856; RMSEA = .101; SRMR = .033; SABIC = 159.02), which indicates that femininity ideology moderates the relationships between dispositional authenticity and dyadic relationship functioning. Then the indistinguishability of the dyads was tested. However, the dyads were not completely indistinguishable ($\chi^2(14) = 26.53$, $p = .022$; CFI = .908; RMSEA = .061; SRMR = .037; SABIC = 144.17), but partially indistinguishable ($\chi^2(6) = 4.72$, $p = .580$; CFI = 1.000; RMSEA < .001; SRMR = .019; SABIC = 140.82).
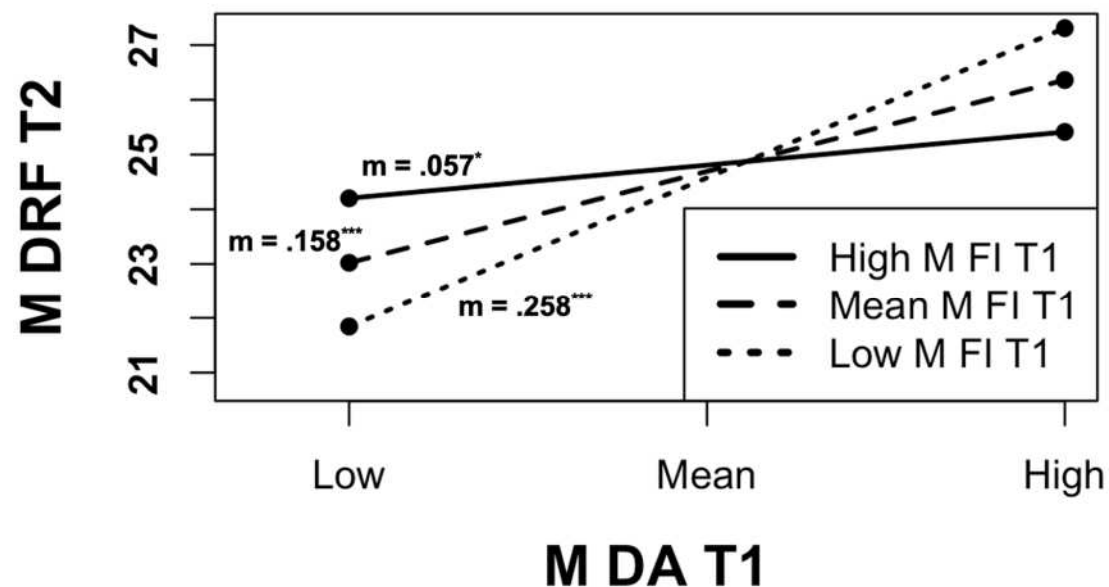
Figure 7.3. Moderating effects of men's FI (T1) on the associations between men's DA (T1) and men's DRF (T2).
Note. M = men; DA = dispositional authenticity; FI = femininity ideology; DRF =

dyadic relationship functioning; T1 = Time Point 1; T2 = Time Point 2; m = slope; $^{*}p$
< .05. $^{***}p$ < .001.

Men's femininity ideology was a moderator of the actor effect of dispositional
authenticity on their own dyadic relationship functioning (B = -.131, *SE* = .03, *p*
< .001; see Table 7.3, Model I), but that is the only significant moderation effect. As
shown in Figure 7.3, the positive actor effect of men's dispositional authenticity on
their levels of dyadic relationship functioning was stronger for men with lower (B
= .258, *SE* = .029, *p* < .001) compared to men with average (B = .158, *SE* = .020, *p*
< .001) or higher (B = .057, *SE* = .020, *p* = .045) levels of T1 femininity ideology.
Specifically, traditional gender norms of femininity held by men inhibited the positive
effects of their own T1 dispositional authenticity on T2 dyadic relationship
functioning.

Regarding the subconstructs of dispositional authenticity, femininity ideology
only moderates the relationship between self-alienation and dyadic relationship
functioning, because the fit of a model with all interaction effects set to 0 was poor
(Self-alienation: ($\chi^2(8)$ = 17.97, *p* = .021; CFI = .890; RMSEA = .072; SRMR = .024;
SABIC = 149.46); Authentic living: ($\chi^2(8)$ = 12.91, *p* = .115; CFI = .943; RMSEA
= .051; SRMR = .032; SABIC = 144.39); Accepting external influence: ($\chi^2(8)$ =
13.97, *p* = .083; CFI = .947; RMSEA = .056; SRMR = .021; SABIC = 145.46)).
Additionally, dyads are indistinguishable from the effects in the APIMoM (see Table
7.3, Model II) as the model with equal effect constraints showed a good fit ($\chi^2(8)$ =
10.37, *p* = .240; CFI = .974; RMSEA = .035; SRMR = .023; SABIC = 141.86). Both
men's and women's femininity ideology significantly moderated the actor effect of

self-alienation on their own dyadic relationship functioning (B = .088, *SE* = .40, *p* = .028).

Interestingly, both men's and women's levels of femininity ideology buffered the negative effects of their own self-alienation on their own dyadic relationship functioning. As seen in Figure 7.4, examination of simple slopes showed that the negative links between self-alienation and dyadic relationship functioning were weaker for individuals at 1 *SD* above the mean levels of femininity ideology (men: B = -.135, *SE* = .049, *p* = .006; women: B = -.144, *SE* = .047, *p* = .002) compared to individuals at the mean (B = -.203, *SE* = .038, *p* < .001; women: B = -.206, *SE* = .038, *p* < .001) or 1 *SD* below (B = -.270, *SE* = .049, *p* < .001; women: B = -.269, *SE* = .049, *p* < .001) in femininity ideology.

H3 was partially supported. Femininity ideology does not only weaken the positive impact of dispositional authenticity on dyadic relationship functioning (for men only), but also buffer the negative impact of self-alienation on dyadic relationship functioning (for both men and women).

Table 7.3. APIMoM results for effects of dispositional authenticity and interactions between dispositional authenticity and femininity ideology on dyadic relationship functioning

Effect	Model I: DA×FI → DRF				Model II: SA×FI → DRF			
	B	*SE*	*p*	β	B	*SE*	*p*	β
Intercept								
Men	24.667	.315	<.001	4.980	24.876	.319	<.001	4.902
Women	25.583	.301	<.001	5.124	25.497	.302	<.001	5.240
Actor effect								
Men	**.160**	**.020**	**<.001**	**.342**	**-.204**	**.038**	**<.001**	**-.239**
Women	**.160**	**.020**	**<.001**	**.363**	**-.204**	**.038**	**<.001**	**-.237**
Partner effect								
Men	**.097**	**.021**	**<.001**	**.221**	**-.106**	**.042**	**.011**	**-.118**
Women	**.097**	**.021**	**<.001**	**.205**	**-.106**	**.042**	**.011**	**-.130**
Moderator actor effect								
Men	.169	.260	.517	.026	.197	.289	.495	.030
Women	.169	.260	.517	.024	.197	.289	.495	.029
Moderator partner effect								
Men	-.183	.238	.443	-.026	**-.514**	**.237**	**.030**	**-.072**
Women	-.183	.238	.443	-.028	**-.514**	**.237**	**.030**	**-.081**
Actor *X* by actor *M*								
Men	**-.131**	**.027**	**<.001**	**-.223**	**.088**	**.040**	**.028**	**.093**
Women	-.008	.046	.867	-.012	**.088**	**.040**	**.028**	**.073**
Partner *X* by actor *M*								
Men	-.026	.027	.334	-.049	.051	.056	.362	.045
Women	-.026	.027	.334	-.036	.051	.056	.362	.046

Actor *X* by partner *M*								
Men	-.008	.027	.773	-.011	-.006	.052	.916	-.005
Women	-.008	.027	.773	-.015	-.006	.052	.916	-.005
Partner *X* by partner *M*								
Men	-.074	.046	.113	-.115	-.041	.048	.395	-.032
Women	.032	.032	.306	.054	-.041	.048	.395	-.044

Note. $N = 239$ couples. B = unstandardized estimate; β = standardized estimate; X = DA/SA; M = FI; Y = DRF; DA = dispositional authenticity; SA = self-alienation; FI = femininity ideology; DRF = dyadic relationship functioning; bold indicates statistical significance.
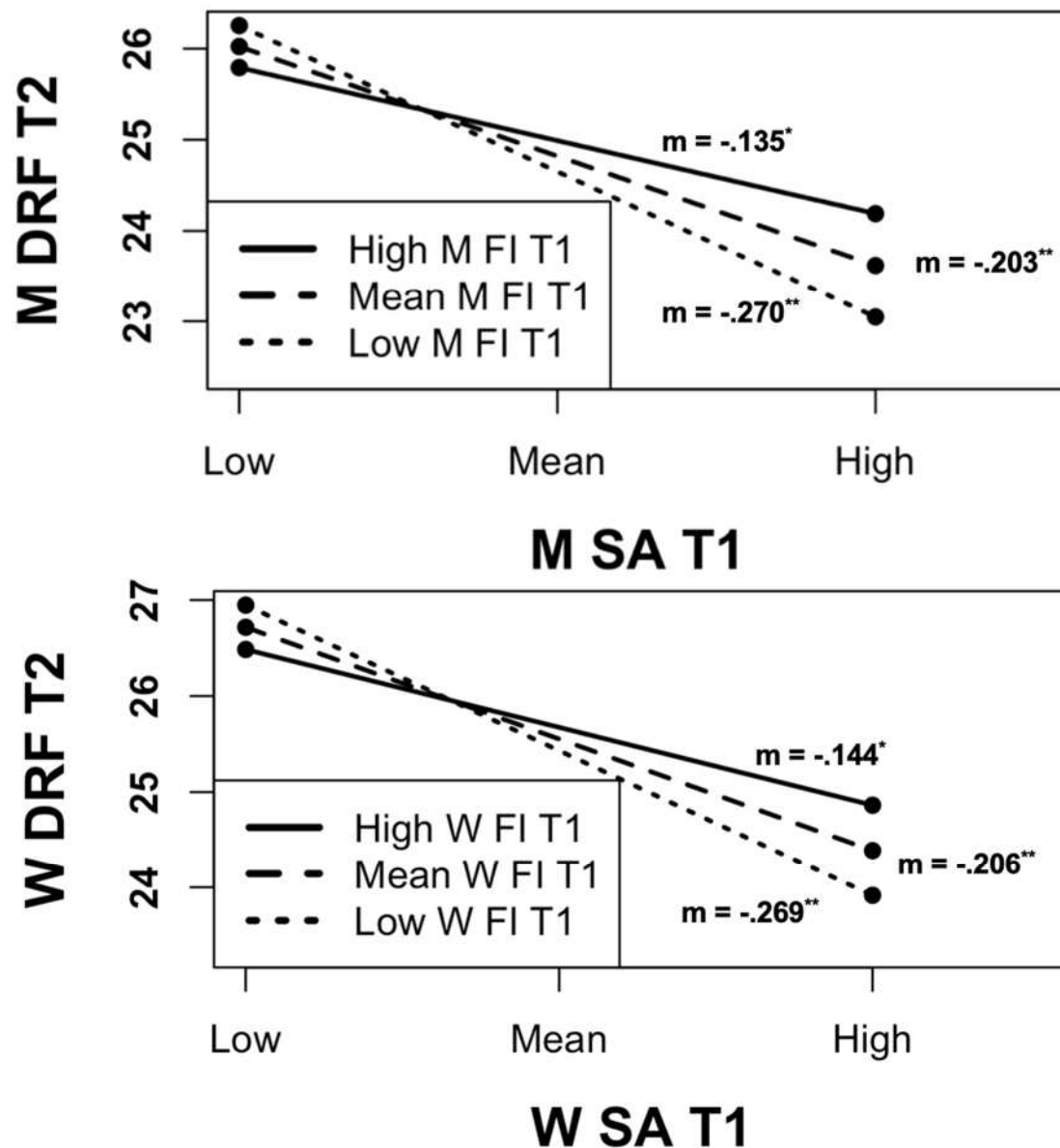
Figure 7.4. Moderating effects of FI (T1) on the associations between SA (T1) and DRF (T2).
Note. M = men; W = women; SA = self-alienation; FI = femininity ideology; DRF = dyadic relationship functioning; T1 = Time Point 1; T2 = Time Point 2; m = slope; [*]$p < .01$. [**]$p < .001$.

7.4. Discussion

This was the first dyadic study that examined the association between dispositional

authenticity and dyadic relationship functioning among couples; and tested whether

these associations were mediated by perceived facilitativeness and moderated by

femininity ideology. This study fills several gaps in the literature by (a) examining the effect of one's prior dispositional authenticity on their own and their partner's later dyadic relationship functioning; (b) testing the mediating role of perceived facilitativeness in the associations according to Rogers' (1957) well-known theory of personality development; (c) testing the moderating role of femininity ideology in the associations at the intersection of person-centred personality theory (Rogers, 1959) and the gender role strain paradigm (Pleck, 1995); (d) using dyads, rather than the individual, as the unit of analysis, which enables the examination of the interdependence between the two partners in a romantic relationship.

The most noteworthy finding of this study is that one's dispositional authenticity was prospectively associated with their partner's dyadic relationship functioning, and the association was completely mediated by the partner's perceived facilitativeness. It seems that an authentic person is not only perceived as genuine, but also empathic and showing their unconditional positive regard towards their partner. This finding is not surprising because an authentic person is not only genuine to others, but also keeping connections with the inner experience.

It would seem that the unconditional and empathic way an authentic person relates to themselves is integrated into their behaviour and communication when they are interacting with others. Then, the partner's levels of adjustment to the relationship and satisfaction in the relationship are facilitated by their perceived genuineness, empathic understanding, and unconditional positive regard in the relationship. When individuals are perceived as genuine by their partners, the feelings the individuals are

experiencing are available to their partners' awareness. The ability of the individuals

to live with and communicate the complexity of their feelings is an invitation to their

partners' genuineness. Furthermore, when the partners perceive that they are accepted

and empathized without reservations and evaluations, they are more likely to be aware

and express whatever feeling is going on in them at that moment. Both partners'

genuineness contributes to a sense of intimacy and trust and encourages them to face,

discuss, and solve conflicts and difficulties together as a whole.

Consistent with prior research (Tracy et al., 2009), one's dispositional

authenticity was positively associated with their own dyadic relationship functioning.

The association was also partially mediated by the person's perception of their

partner's facilitative conditions. Previous research found that dispositional

authenticity was positively related to feeling supported by others (Tracy et al., 2009),

the facilitative conditions may be more readily accessible for authentic people to

perceive in social interactions due to an open, curious, non-judgmental, and accepting

attitude, they hold towards themselves. Besides, dyadic relationship functioning is

more reliant on the involvement of both members of the couple compared to

individual relationship functioning. After all, one member alone can hardly make a

dyad function well. However, mutual perceptions of the facilitative conditions were

evident in therapeutic relationships. Both clients' and psychotherapists' perceptions of

genuineness, empathic understanding, and unconditional positive regard towards each

other improved over time (Murphy & Cramer, 2014), although the spotlight of

psychotherapy is on clients. In the models, partners' perceived facilitative conditions

were positively correlated; the mutual generation and experiencing of the facilitative conditions ultimately lead to a better dyadic relationship functioning. Men and women were completely indistinguishable in the associations mentioned above. Gender differences are more a product of socialization. When individuals embrace their internal experience and get away from the influence of conditions of worth, they become a continuing process, a flowing river of change, that is not restricted by gender role beliefs or other external evaluations. Perceived facilitativeness promotes the shift of the locus of evaluation from external to internal, which then leads to positive changes in adjustment and functioning.

However, the salutary effects of these transparencies to dyadic relationship functioning can be inhibited by femininity ideology. The positive effect of men's dispositional authenticity on their own dyadic relationship functioning was weaker when they held average or high levels compared to low levels of femininity ideology. But femininity ideology also buffered the deteriorating effects of the internal incongruence on dyadic relationship functioning. The negative link between self-alienation and dyadic relationship functioning was weaker for both men and women who held high levels of femininity ideology than for who held average or low levels of femininity ideology.

Rogers theorized that conditions of worth decrease following increase in authenticity, but femininity ideology is not conditions of worth for men which is not associated with men's self-concept. Men may be unaware of femininity ideology they hold as they become more authentic. Men who lack of self-experience of being a

woman and internalised benevolent sexism, becoming more authentic does not mean move away from those less obvious and more socially accepted prejudice and discrimination towards women.

In sum, the main purpose of this study was to investigate prospective actor and partner effects of dispositional authenticity in relation to dyadic relationship functioning. This study revealed that dispositional authenticity facilitates both one's own and one's partner's dyadic relationship functioning through perceiving genuineness, empathic understanding, and unconditional positive regard from each other. However, femininity ideology can weaken the relationship between dispositional authenticity/self-alienation and dyadic relationship functioning.

7.4.1. Limitations, Future Research, and Implications

Some limitations in the existing research are worth noting. First, the couples' participation was entirely voluntary, which means that they were probably more willing to be involved in activities related to their relationship than those who did not participate in the study. Second, as in any study using self-report measures, the results may be affected by social desirability and recall bias.

Future studies should test whether holding masculinity ideology is detrimental to couples' dispositional authenticity and if it plays a moderating role in the association between dispositional authenticity and relationship functioning. Sincerely expressing and behaving in accordance with the traditional masculinity role may reverse the impact of dispositional authenticity from positive to negative. Additionally, further investigation is needed to clarify the relationships among men's

femininity ideology, dispositional authenticity, and relationship functioning.

7.5. Conclusion

In conclusion, according to Rogers' (1961) person-centred theory, congruence between inner experience, symbolic awareness, and external behaviour and communication is a key result of constructive personality development. This study found that authenticity is also a source to facilitate other people's functioning. As such, this study supports the theoretical basis of person-centred couple counselling that facilitates couple's relationship functioning by resuming the authenticity for both members of the couple. Once the couple is authentic enough, they perceive the facilitative conditions from each other and move towards better dyadic relationship functioning.

Feminine traits in both men and women are beneficial to intimate partner relationships, but they should not become requirements and expectations imposed on any specific group of people. Femininity ideology, as a type of gendered condition of worth, has not shown any association with better relationship functioning. Instead, femininity ideology weakens men's development of mutual adaptation and ability to solve conflicts and difficulties together as a whole by interacting with the effect of men's own dispositional authenticity. We fully function only if we abandon the introjected beliefs in what we should or should not do or be and become our authentic selves.

Chapter 8: Dispositional Authenticity, Perceived Facilitativeness, Internalised Homophobia and Relationship Quality in Same-Gender Couples: Actor-Partner Interdependence Analysis

8.1. Introduction

Empirical studies have documented the positive effects of authenticity on various healthy relational outcomes. Relational authenticity was found to relate to one's own self-esteem, self-concealment, splitting, adult attachment orientations, caregiving, and relationship satisfaction (e.g., Gouveia et al., 2016; Lopez & Rice, 2006). Wickham (2013) found that perceived partner's relational authenticity was a stronger predictor of one's own relationship goals and quality than partner's self-report relational authenticity. Additionally, perceived partner's relational authenticity predicts relationship satisfaction and commitment independent of attachment avoidance. And the associations were mediated by levels of interpersonal trust (Wickham et al., 2015). Dispositional authenticity has been found to be associated with one's own romantic relationship functioning, such as trust, fear of intimacy, self-disclosure, relationship satisfaction, and perceived social support (Kernis & Goldman, 2006; Tracy et al., 2009).

In a dyadic study, Brunell and colleagues (2010) found that dispositional authenticity had a positive impact on relationship functioning in opposite-sex couples. And in turn, both men's and women's healthy relationship functioning predicted each

other's positive relationship outcomes. To our knowledge, there is no dyadic study conducted to examine the association between dispositional authenticity and relational outcome in same-gender couples. To fill this gap, the first aim of this study was to demonstrate the impact of dispositional authenticity on relationship quality in same-gender couples by using a dyadic approach.

8.1.1. The conception of authenticity

In the person-centred approach, authenticity was regarded as congruence between the three levels of an individual's (a) internal experience, (b) conscious awareness, and (c) external behaviour and communication (Barrett-Lennard, 1998). Some researchers isolated the congruence between (b) conscious awareness and (c) external behaviour and communication from the tripartite construct of authenticity (Hart et al., 2020; Lopez & Rice, 2006; Wickham, 2013), and this part of congruence has been referred to as 'relational authenticity', 'behavioural authenticity', or 'authentic living' (Kernis & Goldman, 2006; Lopez & Rice, 2006; Wood et al., 2008).

Dispositional authenticity is deemed to be the cornerstone of constructive personality development in Rogerian theory (Rogers, 1959). Wood and colleagues (2008) developed a scale to measure dispositional authenticity based on the person-centred theory. The authenticity scale assesses three aspects of dispositional authenticity: the first aspect is self-alienation, which means the incongruence between (a) internal experience and (b) conscious awareness; the second aspect is authentic living, which means the congruence between (b) conscious awareness and (c) external communication and behaviour; the third aspect is accepting external influence, which

indicates the extent to which individuals accept the influence of others and their belief in conformity to others' expectations. When individuals become authentic, they are moving towards better psychological adjustment and functioning. Consistent with Rogers' theory, researchers have reported associations between dispositional authenticity and a range of psychological outcomes, such as higher levels of dispositional mindfulness, secure self-esteem, emotional intelligence, psychological wellbeing, and lower levels of verbal defensiveness, distress, depressive symptoms, anxiety symptoms, physical symptoms, alcohol-related problems, and loneliness (see, Boyraz et al., 2014; Bryan et al., 2017; Chen & Murphy, 2019; Heppner & Kernis, 2007; Lakey et al., 2008; Tohme & Joseph, 2020).

8.1.2. Dispositional authenticity, facilitativeness, and relationship quality

According to Rogers (1957), one's authenticity can be promoted after perceiving a minimal degree of certain interpersonal facilitative conditions through psychological contact with another person over a period of time. The facilitative conditions proposed by Rogers were genuineness, empathic understanding, and unconditional positive regard. It is now widely accepted that the facilitative conditions are common factors that make psychotherapy effective (Bozarth & Motomasa, 2017; McAleavey & Castonguay, 2015). A recent longitudinal study showed that the more that therapy client's perceived their therapist to be empathic, genuine, and unconditional, the greater their authenticity subsequently (Bayliss-Conway et al., 2020).

However, while Rogers' work is most widely known in the psychotherapy literature, he went on to discuss how these same conditions were equally applicable in

any relationship involving psychological contact and would similarly produce beneficial effects on enhancing personal development and wellbeing (Rogers, 1959, 1961). For example, perceived facilitative conditions have been found to correlate with women athletes' body appreciation and eating style in coach-athlete relationships (Oh et al., 2012), prisoners' post-traumatic growth in staff-prisoner relationships (Hearn et al., 2020), and students' learning experience in student-teacher relationships (Swan et al., 2020). Cramer (2003a) found that perceived facilitativeness was positively related to relationship satisfaction in romantic relationships. However, there was only one gay relationship in the sample. Thus, the second aim of this study was to examine the impact of perceived facilitativeness on relationship quality in same-gender couples.

The literature reviewed above suggests direct associations between dispositional authenticity, facilitativeness, and relational outcome. However, it is not yet known the potential mechanism behind these relationships. Person-centred theory (Rogers, 1961) suggests that perceived facilitativeness leads to authenticity and positive changes in adjustment and functioning. Therefore, the third aim of this study was to examine the mediating role of dispositional authenticity in the association between perceived facilitativeness and relationship quality in same-gender couples.

8.1.3. Dispositional authenticity, internalised homophobia, and relationship quality

We are born to be authentic. However, children's authenticity is extremely fragile in the face of significant others' conditional regard (Joseph, 2016). Conditions of worth

are perceived when individuals feel that some aspects of themselves are discriminated as more or less worthy of affirming or warmly favouring response (e.g., liking, affection, respect, appreciation) than any other (Barrett-Lennard, 2015; C. Rogers, 1959). Further, the conditions of worth may be internalised into their own identity or sense of self (Murphy et al., 2020). Internalised homonegativity/homophobia is a type of internalised condition of worth. Sexual minorities may adopt heterosexist attitudes from others and internalise the negative evaluation of homosexuality into their own way of thinking (Herek et al., 2009).

Internalised homophobia was found to negatively impact relationship quality in same-sex couples (Szymanski & Chung, 2001), and the association was mediated by depressive symptoms (Frost & Meyer, 2009). Furthermore, internalised homophobia was found to be related to intimate partner violence among sexual minority men and women (Kelley et al., 2014; Milletich et al., 2014; Pepper & Sand, 2015). In a dyadic study, Otis and colleagues (2006) found that individuals' own experience of internalised homophobia was negatively associated with both their own and their partners' reported relationship quality. Another study found that individuals' and their partners' psychological violence perpetration played roles in mediating the relationships between individuals' own internalised homophobia and individuals' own and their partners' relationship quality (Li et al., 2021). Only one study found nonsignificant relation between one's internalised homonegativity and one's partner's relationship quality by using multiple regression analysis (Mohr & Fassinger, 2006).

As reviewed above, dispositional authenticity had a positive effect on

relational outcomes, whereas internalised homophobia has a negative relationship with relational outcomes. However, it is not clear how dispositional authenticity and internalised homophobia interact with each other. According to Rogerian theory, authentic individuals do not experience conditions of worth, internalised homophobia may not affect the relationship between one's own dispositional authenticity and relationship quality. But internalised homophobia may have an impact on the relationship between one's partner's dispositional authenticity and relationship quality. A recent study found that the positive relationships between authentic living and one's own relational outcomes were moderated by their own levels of psychopathy (Seto & Davis, 2021). Authentic living of individuals who have high psychopathy traits may impair rather than enhancing their own interpersonal relationship quality. Thus, the fourth aim of this study was to examine the moderating effect of internalised homophobia on the relationship between dispositional authenticity and relationship quality in same-gender couples.

8.1.4. This study

This dyadic study aims to examine the relationships among dispositional authenticity, perceived facilitativeness, internalised homophobia, and relationship quality within same-gender couples. Based on person-centred theory and previous research literature, this study tested (a) the mediating role of dispositional authenticity on the interpersonal and intrapersonal associations between perceived facilitativeness and relationship quality; (b) the moderating role of internalised homophobia on the associations between dispositional authenticity and relationship quality. Additionally,

the following hypotheses were proposed:

Hypothesis 1 (H1): Dispositional authenticity would be positively

associated with one's own and their partner's relationship quality.

Hypothesis 2 (H2): Perceived facilitativeness would be positively

associated with one's own and their partner's relationship quality.

Hypothesis 3 (H3): Internalised homophobia would be negatively

associated with one's own and their partner's relationship quality.

Hypothesis 4 (H4): The link between one's perceived facilitativeness and their

relationship quality would be mediated by their own dispositional authenticity.

It was expected that greater perceived facilitativeness would be related to

greater dispositional authenticity for oneself. In turn, their dispositional

authenticity would be positively associated with their own levels of

relationship quality.

Hypothesis 5 (H5): Internalised homophobia would not moderate the

link between dispositional authenticity and relationship quality. But

internalised homophobia would weaken the positive associations

between authentic living and relationship quality.

8.2. Method

8.2.1. Procedures

The participants were recruited through social media groups between May 2021 and

November 2021. Data were collected via Jisc Online Surveys. One member of a

couple completed the survey first. Then a receipt number was given to be sent to their

partner together with the link to the online survey. The partner was required to provide the receipt number when they were filling in the survey in order to pair partners' responses.

8.2.2. Samples

One hundred and fifty-eight same-gender couples (N = 316) were included in the study based on the following criteria: (a) both members of the couple agreed to participate, and it had to be a same-gender relationship; (b) aged 18 years and older; (c) couples were involved in the relationship for a minimum of 3 months. The average relationship duration was 6.35 years (SD = 5.72). A total of 124 (78.48%) couples were cohabitating.

The average age of participants was 32.94 years (SD = 9.33). In total, 78.48% of participants were women, 19.94% were men, 1.27% were non-binary, .95% were gender-fluid, .32% agender and .32% gender-nonconforming. The percentage of participants whose gender identity is different from the sex they were assigned at birth was 4.43%. The majority, 62.97% of participants identified themselves as lesbian, 17.72% as bisexual, 17.09% as gay, 1.27% as pansexual, and .95% were questioning their sexual orientation. About 68.67% of the participants self-identified as White, 12.34% as South Asian, 8.54% as East Asian, 2.22% as Latino/Hispanic, 1.90% as African, 1.27% as Southeast Asian, .63% as Middle Eastern, and 4.43% Mixed.

8.2.3. Measures

Demographic questionnaire This questionnaire inquired about gender, sexual orientation, age, race/ethnicity, relationship duration, and cohabitation status.

Dispositional authenticity Dispositional authenticity was assessed using the Authenticity Scale (AS; Wood et al., 2008). The AS comprised three 4-item subscales: self-alienation (e.g., 'I feel as if I don't know myself very well'), authentic living (e.g., 'I am true to myself in most situations'), and accepting external influence (e.g., 'I usually do what other people tell me to do'). Participants are asked to respond using a 7-point Likert scale ranging from 1 (*does not describe me at all*) to 7 (*describes me very well*). The items of self-alienation and accepting external influence are reverse-scored so that higher scores indicate higher dispositional authenticity. The scale developers reported Cronbach's alpha ranging from .69 to .78 for the subscales, and the two-week and four-week test-retest reliability coefficients ranged from .78 to .84 (Wood et al., 2008).

Perceived facilitativeness Perceived facilitativeness was assessed using the 12-item Barrett-Lennard Relationship Inventory (B-L RI:mini; Chen et al., 2021). The B-L RI: mini is a global evaluative assessment of the one-dimensional construct of Rogers' (1959) facilitative conditions. Participants were asked to report on the amount of empathy, congruence, unconditionality, and positive regard they feel their partner expresses towards them with the use of a Likert scale, which ranged from -3 (*NO, I strongly feel that it is not true*) to 3 (*YES, I strongly feel that it is true*). Examples of items included "My partner usually senses or realizes what I am feeling.", "My partner expresses their true impressions and feelings with me.", "Whether the ideas and feelings I express are "good" or "bad" seems to make no difference to my partner's feeling toward me." Higher scores are indicative of the participants

perceiving higher facilitativeness from their partners. Chen and colleagues (2021) reported high reliability with an α coefficient of .91. They also reported good construct validity as perceived facilitativeness is moderately associated with perceived social support, attachment anxiety, and avoidance.

Internalised homophobia The Revised Internalised Homophobia Scale provides a measure of the degree to which participants internalise the anti-homosexuality societal attitudes towards them (Herek et al., 2009). Sample items read, "If someone offered me the chance to be completely heterosexual, I would accept the chance". Participants were asked to rate the degree to which they agree with the statements using a 5-point Likert -type scale (1 = *Disagree Strongly* and 5 = *Agree Strongly*), with higher scores on all items reflecting more negative self-attitudes. The score was obtained by taking the mean of all the items. Previous research (Herek et al., 2009) revealed Cronbach's alpha was α = .87.

Perceived Relationship Quality Relationship quality was measured with the Perceived Relationship Quality Components Inventory (Fletcher et al., 2000a, 2000b). The scale consists of seven intercorrelated domains of relationship quality: satisfaction, commitment, intimacy, trust, passion, love, and romance. The items were rated on a 7-point Likert scale, with response options ranging from "not at all" to "extremely". Higher scores indicate better relationship quality. The scale was reported to have Cronbach's alphas of .87 for females and .91 for males (Beaudoin et al., 2020).

8.2.4. Statistical analyses

8.2.4.1. APIM

Path analysis was used to analyse the Actor-Partner Interdependence Model (APIM) within a Structural Equation Modelling (SEM) framework in Mplus 8.6 (Muthén & Muthén, 2017). The APIM is a dyadic data analytic approach that estimates the effect of independent variable has on one's own dependent variables and on another person's dependent variable, simultaneously and independently (Kenny, 1995). The central components of the APIM are the relationships between dyadic members' independent and dependent variables. The effect of a person's independent variable on their own dependent variable is called as actor effect, and the effect of a person's independent variable on another person's dependent variable is called as partner effect (Cook & Kenny, 2005).

The APIM has been extended to include mediator and moderator, the Actor-Partner Interdependence Mediation Model (APIMeM; Ledermann et al., 2011) and the Actor-Partner Interdependence Moderation Model (APIMoM; Garcia et al., 2015) were also utilized in this study in order to examine the effects of mediator and moderator on both intrapersonal and interpersonal associations. The members are indistinguishable based on their gender for same-gender couples; thus, means, variances, intercepts, and error variances from the same measure and effects were set equal across dyad members (Cook & Kenny, 2005; Garcia et al., 2015; Ledermann et al., 2011).

The adequacy of the models was evaluated using the following fit indices and a set of a priori cut-off criteria (Hooper et al., 2008; Kline, 2016): the root-mean-

square error of approximation (RMSEA, < .08); the comparative fit index

(CFI, > .90), and the standardized root mean square Residual (SRMR, < .08).

8.2.4.2. APIMeM

APIMeM was used to examine the mediating role of dispositional authenticity on the

relationship between perceived facilitativeness and perceived relationship quality.

Both the direct effects of the dyad members' causal variables on their own and their

partners' outcome variables and the indirect effects via their own and their partners'

mediators are estimated (Ledermann et al., 2011). To assess the significance level of

indirect and total effects, 95% confidence intervals (CI) were computed using the

bias-corrected and nonparametric bootstrapping with 5000 re-samplings.

8.2.4.3. APIMoM

APIMoM was used to evaluate the moderating role of internalised homophobia on the

relationship between dispositional authenticity and perceived relationship quality. The

independent variables and moderators were centred to the grand means to facilitate

the interpretation of interaction effects and reduce collinearity. Then interaction terms

were constructed by multiplying dyadic members' centred causal variable by their

centred moderators. The moderation effects were tested by including those interaction

terms in the model. The use of sampling-error-adjusted Bayesian information criterion

(SABIC) was suggested to test the model fit of APIMoM by Garcia and their

colleagues (2015), where smaller values indicate better model fit.

When a significant interaction term was identified in the best fit models, the

simple slope procedure recommended by Preacher and colleagues (2006) was adopted

to further examine the pattern of the relationship. Simple slope analyses were conducted at low (1 SD below the mean), mean, and high (1 SD above the mean) levels of moderator variables with low, mean, and high levels of independent variables. All plots were generated using the plot function in Rstudio version 1.3.1056 (RStudio Team, 2020).

8.3. Results

8.3.1. Preliminary Analysis

The means, standard deviations, reliability coefficients (Cronbach's alpha), and bivariate correlations of all variables are presented in Table 7.1. Only the association of authentic living with accepting external influence and with perceived relationship quality was not statistically significant.

8.3.2. APIM analyses

The purpose of the APIM analyses was to examine the relationships between dispositional authenticity/perceived facilitativeness and perceived relationship quality in same-gender romantic relationships.

The fit indices indicated good fits for the APIMs examining the relationship between dispositional authenticity and relationship quality ($\chi^2(6) = 2.21$, $p = .900$; CFI = 1.00; RMSEA < .001; SRMR = .045), the relationship between perceived facilitativeness and relationship quality ($\chi^2(6) = 5.23$, $p = .515$; CFI = 1.00; RMSEA < .001; SRMR = .063), and the relationship between internalised homophobia and relationship quality ($\chi^2(6) = 2.53$, $p = .865$; CFI = 1.00; RMSEA < .001; SRMR = .054) within same-gender couples. Consistent with *H1*, *H2* and *H3*, both actor and

partner effects of dispositional authenticity, perceived facilitativeness, and internalised

homophobia were statistically significant (see Table 7.2).

Table 8.1. Means, Standard Deviations, Scale Reliabilities, and Correlations for Study Variables.

		1	2	3	4	5	6	7	M	SD	α
1.	Dispositional authenticity	-							-0.158	12.036	.861
2.	Self-alienation	-.470[**]	-						13.250	7.609	.848
3.	Authentic living	.253[**]	-.701[**]	-					21.592	5.670	.698
4.	Accepting external influence	-.807[**]	.182[**]	-.058	-				12.557	5.755	.836
5.	Perceived facilitativeness	.274[**]	-.227[**]	.126[*]	-.178[**]	-			22.623	7.854	.765
6.	Internalised homophobia	-.325[**]	.162[**]	-.138[*]	.260[**]	-.138[*]	-		1.465	0.681	.753
7.	Perceived relationship quality	.271[**]	-.180[**]	.070	-.168[**]	.617[**]	-.239[**]	-	42.854	5.582	.803

Note. $N = 316$.
[*]$p < .05$. [**]$p < .01$.

Table 8.2. APIM for dispositional authenticity/perceived facilitativeness/internalised homophobia and relationship quality.

Model	Effect	B	SE	p	β
DA → RQ	Intercept	42.883	.377	< .001	7.694
	Actor effect	.113	.027	< .001	.243
	Partner effect	.066	.028	.017	.142
PF → RQ	Intercept	30.516	1.325	< .001	5.475
	Actor effect	.35	.038	< .001	.493
	Partner effect	.195	.036	< .001	.274
IH → RQ	Intercept	47.13	1.132	< .001	8.456
	Actor effect	-1.501	.406	< .001	-.183
	Partner effect	-1.417	.557	.011	-.173

Note. $N = 158$ couples. B = unstandardized estimate; β= standardized estimate; DA = dispositional authenticity; PF = perceived facilitativeness; IH = internalised homophobia; RQ = relationship quality.

8.3.3. APIMeM analyses

The APIMeM analyses aimed to identify dispositional authenticity as a possible mediator in the relation between perceived facilitativeness and relationship quality in same-gender romantic relationships.

The APIMeM with completely indistinguishable dyadic members showed a good model fit ($\chi^2(12) = 8.19$, $p = .770$; CFI = 1.00; RMSEA < .001; SRMR = .051). The effect estimates of the APIMeM are presented in Table 8.3. Only the actor effects were statistically significant for the effects from perceived facilitativeness to dispositional authenticity (B = .421, *SE* = .087, *p* < .001, β = .028) and from dispositional authenticity to perceived relationship quality (B = .048, *SE* = .022, *p* = .032, β = .104). However, individuals' perceived facilitativeness was related to both their own (B = .330, *SE* = .039, *p* < .001, β = .465) and their partners' (B = .187, *SE* = .036, *p* < .001, β = .263) perceived relationship quality.

Direct, indirect, and total effects were reported in Table 8.4. The 95% CI was used to determine the significance of the effects. All the total effects and direct effects were significant. Individuals' perceived facilitativeness had both direct and indirect effects on their own perceived relationship quality, but the indirect effect via only their own dispositional authenticity (B = .02, 95% CI [.005,.041], β = .028). *H3* was supported.

Table 8.3. Effect estimates for the APIMeM.

Effect	B	SE	p	β
Effects from perceived facilitativeness → dispositional authenticity				
actor effect	.421	.087	< .001	.275
partner effect	-.002	.104	.987	-.001
Effects from dispositional authenticity → perceived relationship quality				
actor effect	.048	.022	.032	.104
partner effect	.019	.024	.440	.040
Effects from perceived facilitativeness → perceived relationship quality				
actor effect	.330	.039	< .001	.465
partner effect	.187	.036	< .001	.263

Note. B = unstandardized estimate; β = standardized estimate; *SE* = standard error.

Table 8.4. Total, direct, and indirect effects in the APIMeM.

Effect	B	95%CI	β	Proportion of the Total Effect
Actor effect				
Total effect	.350	[.288,.411]	.493	
Total IE	.020	[.005,.041]	.028	5.71%
via own dispositional authenticity	.020	[.005,.040]	.028	5.71%
via partner's dispositional authenticity	.000	[-.006,.005]	.000	0
Direct effect	.330	[.265,.393]	.465	94.29%
Partner effect				
Total effect	.195	[.132,.250]	.274	
Total IE	.008	[-.009,.029]	.011	4.10%
via own dispositional authenticity	.000	[-.009,.009]	.000	0
via partner's dispositional authenticity	.008	[-.008,.026]	.011	4.10%
Direct effect	.187	[.124,.242]	.263	95.90%

Note. IE = indirect effect.

8.3.4. APIMoM analyses

The APIMoM analyses aimed to investigate moderating effects of internalised homophobia on relationships between dispositional authenticity and relationship quality in same-gender romantic relationships.

The procedure recommended by Garcia and their colleagues (2015) was followed. First, a model with all interaction effects set to 0 was fitted. The fit of the model was good ($\chi^2(8) = 9.81$, $p = .278$; CFI = .974; RMSEA = .038; SRMR = .037; SABIC = 53.88), which indicates that internalised homophobia does not moderate the relationships between dispositional authenticity and perceived relationship quality. Then, the moderation effect of internalised homophobia was tested on the relationships between the subconstructs of dispositional authenticity and perceived relationship quality. Internalised homophobia does not moderate the effects from self-alienation to perceived relationship quality ($\chi^2(8) = 6.52$, $p = .589$; CFI = 1.00; RMSEA < .001; SRMR = .029; SABIC = 50.59) neither. However, internalised homophobia moderates the relationships between authentic living and perceived relationship quality ($\chi^2(8) = 21.86$, $p = .005$; CFI = .835; RMSEA = .105; SRMR = .044; SABIC = 65.94) and the relationships between accepting external influence and perceived relationship quality ($\chi^2(8) = 18.22$, $p = .020$; CFI = .867; RMSEA = .090; SRMR = .055; SABIC = 62.29), because the model fit was poor when all interaction effects set to 0.

Table 8.5. APIMoM for dispositional authenticity, internalised homophobia, and perceived relationship quality.

Effect	Model I: AL×IH → RQ				Model II: AEI×IH → RQ			
	B	*SE*	*p*	β	B	*SE*	*p*	β
Actor effect	.032	.059	.591	.036	**-.109**	**.046**	**.018**	**-.110**
Partner effect	.049	.060	.414	.028	-.072	.046	.117	-.073
Moderator actor effect	**-1.695**	**.404**	**< .001**	**-.196**	**-.994**	**.361**	**.006**	**-.116**
Moderator partner effect	**-1.675**	**.557**	**.003**	**-.203**	-.838	.445	.059	-.103
Actor X by actor M	-.113	.083	.173	-.084	-.184	.113	.104	-.122
Actor X by partner M	**-.201**	**.096**	**.038**	**-.167**	-.128	.103	.213	-.095
Partner X by actor M	-.104	.075	.167	-.053	.089	.083	.286	.065
Partner X by partner M	.019	.113	.865	.010	**-.368**	**.096**	**< .001**	**-.250**

Note. $N = 158$ couples. B = unstandardized estimate; β= standardized estimate; X = authentic living/accepting external influence; M = internalised homophobia; Y = perceived relationship quality; AL = authentic living; AEI = accepting external influence; IH = internalised homophobia; RQ = perceived relationship quality; bold indicates statistical significance.

To further examine the moderating effects of internalised homophobia on the associations, the APIMoMs with indistinguishable dyads were fitted and the model fits were good (authentic living $\times$ internalised homophobia $\rightarrow$ relationship quality: $\chi^2(8) = 10.99$, $p = .202$; CFI = .964; RMSEA = .049; SRMR = .035; SABIC = 55.06; accepting external influence $\times$ internalised homophobia $\rightarrow$ relationship quality: $\chi^2(8) = 1.88$, $p = .985$; CFI = 1.00; RMSEA < .001; SRMR = .019; SABIC = 45.95). Partner's internalised homophobia significantly moderated actor effects of authentic living (B = -.201, $SE = .10$, $p = .038$; see Table 8.5 Model I) and partner effects of accepting external influence (B = -.368, $SE = .10$, $p < .001$; see Table 8.5 Model II) on relationship quality.

As illustrated in Figure 8.1A, individuals' authentic living was positively related to their own perceived relationship quality only when their partners showed low levels of internalised homophobia (B = .174, $SE = .083$, $p = .035$). When their partners showed high (B = -.105, $SE = .096$, $p = .271$) or average (B = .034, $SE = .059$, $p = .559$) levels of internalised homophobia, individuals' authentic living were unrelated to their own perceived relationship quality.

The link between one's partner's accepting external influence and one's own relationship quality was not significant when the partner showed average levels of internalised homophobia (B = -.067, $SE = .046$, $p = .144$). However, the partner effects of accepting external influence were positive when the partner showed low levels of internalised homophobia (B = .190, $SE = .083$, $p = .022$), and negative when the partner showed high (B = -.323, $SE = .080$, $p < .001$) levels of internalised

homophobia (see Figure 8.1B). *H4* was partially supported.
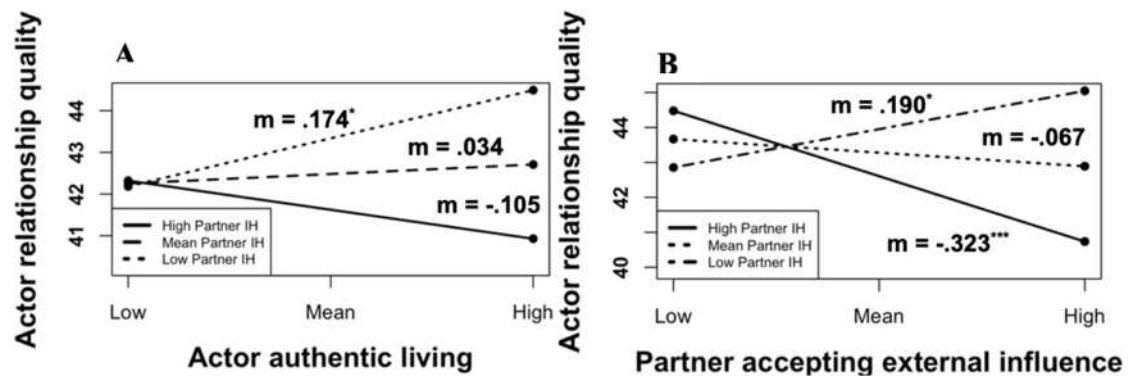
Figure 8.1. Moderating effects of internalised homophobia (IH) on the associations between authentic living/accepting external influence and relationship quality.
Note. m = slope.
*$p < .05$. ***$p < .001$

8.4. Discussion

This study fills several gaps in the literature by (a) examining the effect of one's dispositional authenticity on their own and their partner's perceived relationship quality; (b) examining the effect of one's perceived facilitativeness on their own and their partner's perceived relationship quality; (c) testing the mediating role of dispositional authenticity in the associations between perceived facilitativeness and perceived relationship quality; (d) testing the moderating role of internalised homophobia in the associations between dispositional authenticity and perceived relationship quality within same-gender couples.

With regard to *H1*, *H2*, and *H3*, the actor and partner effects from dispositional authenticity, perceived facilitativeness, and internalised homophobia to perceived relationship quality were statistically significant and in the expected directions.

Consistent with previous studies (Cramer, 2003a; Kernis & Goldman, 2006; Otis et al., 2006; Tracy et al., 2009) and Rogers' (1957) theory of personality development, dispositional authenticity and perceived facilitativeness were positively associated with one's own and one's partner's perceived relationship quality. Internalised homophobia as an internalised condition of worth was negatively related to one's own and one's partner's perceived relationship quality.

The associations between individuals' perceived facilitativeness and relationship quality were partially mediated by their own dispositional authenticity, which supports *H4*. When individuals perceive their partners' genuineness, empathic understanding, and unconditional positive regard, they tended to consider the quality of their same-gender romantic relationship to be high. Additionally, the facilitativeness they perceive from their same-gender partners may encourage them to embrace intrapersonal and interpersonal transparency both inside and outside of their romantic relationships (Rogers, 1961), which in turn also reinforces the quality of the relationships with their partners.

Consistent with Rogers' theory, internalised homophobia, as conditions of worth regarding sexuality, did not moderate the relationship between dispositional authenticity and relationship quality. However, the relationships of the subconstructs of dispositional authenticity to relationship quality can be affected by internalised homophobia. A recent study found that the positive association between individuals' authentic living and their own interpersonal relationship quality was only significant when they reported low levels of psychopathy (Seto & Davis, 2021). Similar findings

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were reported in this study; the positive association between individuals' authentic living and their own perceived relationship quality was only significant when their partners reported low levels of internalised homophobia. Individuals who experience internalised homophobia may show negative reactions when their partners authentically express their homosexuality; the conditional regard the partners receive is unlikely to be beneficial to the relationship quality. Perceived conditional regard was found to be detrimental to romantic relationship quality and adjustment (Kanat-Maymon et al., 2016).

Individuals' internalised homophobia was also found to be significantly moderated the relationship between their own accepting external influence and their partners' perceived relationship quality. When individuals experience high levels of internalised homophobia, the more they accept external influence, their partners perceive the lower quality of their same-gender couple relationships. Whereas, when individuals experience low levels of internalised homophobia, the more they accept external influence, their partners perceive the higher quality of their relationships. For individuals who operate an external locus of evaluation, their thoughts and attitudes about homosexuality would largely depend on the acceptance of homosexuality by the society they are part of or the people around them. Individuals who accept external influence may experience less difficulty and receive more support on societal aspects with their same-gender couple relationship when their external environment is friendly to homosexuality.

8.4.1. Limitations and future directions

Despite the contribution of this study, there were several limitations that should be acknowledged. First, the sample size of the study was modest, which may limit the statistical power of the analyses. Second, causal inference cannot be drawn from the findings and the results due to the cross-sectional design. Additional research using a longitudinal design is needed to address this shortcoming. Third, as in any study using self-report measures, the results may be affected by social desirability and recall bias. Future studies should further explore perceived conditional regard as a possible mediator in the relationship between internalised homophobia and perceived relationship quality within same-gender couple relationships.

8.5. Conclusion

Overall, these findings support the hypotheses that dispositional authenticity and perceived facilitativeness are positively related to one's own and one's partner's perceived relationship quality within same-gender couples. And internalised homophobia is negatively related to perceived relationship quality. Dispositional authenticity partially mediated the relationship between one's own perceived facilitativeness and relationship quality. The positive relationship between individuals' authentic living and their own perceived relationship quality disappears if their partners experience average-to-high levels of internalised homophobia. The relationship between individuals' accepting external influence and their partners' perceived relationship quality is positive when the individuals experience low levels of internalised homophobia. But the relationship turns negative when the individuals experience high levels of internalised homophobia. Dispositional authenticity as a

whole construct is generally positively related to relational outcomes. But the

relationships between the external aspects of dispositional authenticity and relational

outcomes may be affected by internalised and perceived conditions of worth. To get

the most benefit from authenticity for our interpersonal relationships, we do not only

need to be true and honest to each other; we also need to identify our conditions of

worth and be aware of the values or beliefs that are adopted from the external

environment. And that can be especially important for sexual minorities who grew up

and live in an environment with low acceptance and high stigmatization of

homosexuality.

Chapter 9: General discussion, implications, and future research

9.1. Chapter overview

The second section of this chapter presents a summary of the research findings in this thesis. Then the implications of these findings and the possible extensions of the work of this thesis are discussed in the third section. The last section discusses the limitations and contributions.

9.2. Summary of the empirical findings

This thesis aims to expand the impact of the person-centred approach in social psychology. In CHAPTER 2, the person-centred theory of personality development and interpersonal relationships was introduced, empirical evidence for the theory in social psychology was reviewed, the causes of the underdevelopment of the person-centred research in social psychology were explored, and listed below:

- Rogers left academia two years after he extended his approach to social psychology (Thorne, 2007). Since then, the empirical interest in the person-centred approach waned (Joseph & Murphy, 2013). To this day, some hypotheses of the person-centred theory remain untested in social psychology.

- The person-centred approach, as an alternative paradigm of the medical model, its development could have been hindered by the dominant paradigm (Joseph & Murphy, 2013).

- Qualitative and creative research methods are emphasised in the person-centred

community, especially creative thinking and theorising were considered as a future direction of methods of social science (Rogers, 1959). Empirical quantitative research did not receive enough attention in the person-centred community, but the quantitative research method is still a mainstream research technique in contemporary psychology. The lack of quantitative research could have restricted the communication and cooperation between the person-centred approach and other psychological theories.

- The Barrett-Lennard Relationship Inventory (B-L RI), a psychometric tool developed to assess the core conditions in the person-centred approach, is too lengthy. The time-consuming use of the B-L RI might hinder the development of the person-centred research indirectly.

Then, the solutions to address these causes were proposed in psychometry and theory, which are listed below:

- The B-L RI, as an important psychometric tool in the person-centred approach, should be shortened. A new version of the B-L RI with a smaller number of items but still reliable and valid should be developed.

- The person-centred theory should be tested systematically and dyadically, and in combination with other psychological theories.

- The person-centred concepts and theory of negative functioning need more research attention, which is crucial to attract interests of researchers and practitioner from a broad range of disciplines.

Applying the above solutions, the objectives of this thesis were:

- Examining the psychometric properties of the B-L RI.

- Developing a short version of the B-L RI to improve its utility.

- Testing the person-centred theory in romantic relationships.

To address the objectives of this thesis, four independent but interrelated studies were conducted in the context of non-professional relationships; the key findings are the following:

- The B-L RI is a unidimensional scale; the total score of the B-L RI: OS-64 is recommended to use in practice and research. - (CHAPTER 5)

- Partial scalar invariance was established across the English, Chinese, and Spanish language versions of the B-L RI: OS-64. Conditionality of regard may be interpreted differently in different languages, whereas the level of regard remains invariant across languages. - (CHAPTER 5)

- The B-L RI:mini was developed to assess facilitativeness, which showed excellent reliability and validity. The B-L RI:mini is about five times shorter than the B-L RI: OS-64; administration time can be saved by the B-L RI:mini. - (CHAPTER 6)

- Dispositional authenticity had a positive impact on one's own dyadic relationship functioning in opposite-gender relationships. The positive impact of dispositional authenticity on one's partner's dyadic relationship functioning was completely mediated by the partner's perceived facilitativeness. - (CHAPTER 7)

- Dispositional authenticity and perceived facilitativeness had positive relationships with both one's own and one's partner's relationship quality in same-gender

relationships. The positive relationship between individuals' perceived facilitativeness and relationship quality was partially mediated by their own dispositional authenticity. - (CHAPTER 8)

- The positive impact of men's dispositional authenticity on their own dyadic relationship functioning was moderated by their own femininity ideology. In opposite-gender relationships, the more men agree with traditional norms of femininity, the positive relationship between their dispositional authenticity and dyadic relationship functioning became weaker. Interestingly, both men's and women's femininity ideology buffered the negative impacts of their self-alienation on their own dyadic relationship functioning. - (CHAPTER 7)

- Internalised homophobia had negative relationships with both one's own and one's partner's relationship quality in same-gender relationships. Internalised homophobia did not moderate the positive relationship between dispositional authenticity and relationship quality. But the positive relationship between individuals' authentic living and relationship quality was only significant when their partner had a low level of internalised homophobia. Individuals' relationship quality was positively related to their partners' accepting external influence when their partners had low levels of internalised homophobia. And the positive relationship turned negative when their partner had high levels of internalised homophobia. - (CHAPTER 8)

9.3. Implications

The findings support some hypotheses of the person-centred theory of personality and

interpersonal relationships. First, being authentic means the genuine expression of one's awareness of moment-by-moment experiences, with accurate symbolisation of actual experience. Dispositional authenticity is a crucial indicator of well-being and psychological adjustment, which is closely related to relationship quality and relationship functioning in terms of romantic relationships. Second, as long as one party in a relationship is authentic, congruence, empathic understanding, and unconditional positive regard will gradually be perceived from both parties, and the relationship experience and functioning of both parties can be improved over time. Third, individuals who perceived high levels of facilitativeness in their romantic relationships tend to be more authentic dispositionally. Fourth, authentic individuals experience fewer conditions of worth; there were negative relationships between dispositional authenticity and conditions of worth regarding gender and sexuality.

Additionally, the research findings potentially extended the person-centred theory of personality and interpersonal relationships. A new theory could emerge, which needs further confirmation. First, the core conditions of congruence, empathic understanding, and unconditional positive regard may be experienced differently in professional relationships and in non-professional relationships. Traditionally, the core conditions are considered as four independent but interrelated constructs. But the findings revealed that the core conditions should be treated as a package; the levels of perceived congruence, empathic understanding, positive regard, and unconditionality of regard vary simultaneously in non-professional relationships. There is a general construct behind the four constructs, which was termed as facilitativeness. Future

research is suggested to examine the construct validity of the B-L RI by using CFA and IRT in the context of psychotherapy. Maybe the client can experience the core conditions as separate characteristics in a therapeutic relationship since the therapist is trained to provide the core conditions.

Second, Rogers theorised that as individuals become more authentic, they hold fewer conditions of worth. Therefore, conditions of worth should not moderate the relationship between the overall construct of dispositional authenticity and relational outcomes, which was supported by the study of the opposite- and same-gender relationships (CHAPTER 5&6). The overall impact of men's dispositional authenticity on their own dyadic relationship functioning was positive regardless of how strong the femininity ideology they held. But men's femininity ideology determines how positive the impact is. Men's femininity ideology is not associated with their own self-concept; therefore, men's femininity ideology is not conditions of worth but a set of beliefs about the acceptable, 'normal', and ideal womanhood. The caring and emotionality aspects of femininity ideology are benevolent. Thus, they are less obvious and more socially accepted; men who do not have self-experiences as a woman may be less aware of benevolent prejudice and discrimination against women. Such beliefs could weaken the positive relationship between men's own dispositional authenticity and dyadic relationship functioning. Men who hold traditional femininity ideology may expect their women partners to make more contributions to maintain their relationships, which may, in turn, weaken their willingness and ability to adjust and adapt as a team. This finding implies that individuals may not be able to identify

the benevolent prejudices against members of other social groups when they become more authentic. Individuals who hold those positive and complementary stereotypes towards other people may tend to accept the status quo. Positive and complementary patterns of intergroup stereotyping may be a blind point of fully functioning people. Positive stereotyping should be challenged more openly to promote social change and social equity. Further longitudinal studies are needed to clarify this hypothesis.

Third, conditions of worth moderate the relationships between the subconstructs of dispositional authenticity and relational outcomes. Femininity ideology buffered the negative impact of one's self-alienation on one's own dyadic relationship functioning in opposite-gender relationships. Internalised homophobia reverses the relationships between authentic living/accepting external influence and relationship quality at the interpersonal level. These findings may imply that different types of conditions of worth selectively interact with different facets of authenticity to make impact on psychological adjustment. Sexism has been categorised into three types: ambivalent, benevolent, and hostile (Connor et al., 2017). Benevolent sexism associates one's gender with a set of positive characteristics. For example, women are pure, caring, and innocent. Whereas hostile sexism is an antagonistic attitude towards a group of people based on their sex or gender. Ambivalent sexism is a combination of hostile and benevolent sexism. For example, women are differentiated into two categories based on their conformity to traditional gender norms. Women who conform to traditional gender norms are the target of benevolent sexism whereas women who do not conform to traditional gender norms are viewed as deserving

hostile sexism. The same categories can be applied to different prejudices and introjected values. In the third study, the caring and emotionality subscales of the femininity ideology scale were used. Caring and emotionality seems benevolent. In the fourth study, the internalised homophobia was assessed which is hostility towards homosexuality. Benevolent values may tend to interact with the internal aspect of authenticity and hostile values may tend to interact with the external aspects of authenticity. When the introjected values are benevolent, it may buffer against the negative consequence of disconnection from one's organismic valuing process. When the introjected values are hostile, it may neutralise the impact of authentic expression and behaviour and reflect the external influence individuals received from the environment.

Future studies should explore the interactions of the three facets of dispositional authenticity with different types of conditions of worth. Existing research and theory on prejudices and conditions of worth about gender and sexuality provide rich ideas for the extension of the person-centred theory of negative functioning.

As more and more empirical research reveals the protective role of authenticity, facilitativeness, and unconditional positive self-regard against prejudice and discrimination, their value will be seen by more people and a more human and humane world of tomorrow will finally be upon us.

9.4. Limitations and contributions

The specific limitations for each study were discussed in detail in CHAPTER 5-8. A

limitation of this thesis was the moderate sample sizes of the last two studies, which

limited the number of variables for modelling. The relationships among dispositional

authenticity, perceived facilitativeness, femininity ideology/internalised homophobia,

and relational outcomes were estimated in two separate models, APIMeM and

APIMoM.

Besides the limitations, the present work presented the solutions to expand the

impact of the person-centred approach in social psychology, and the proposed

solutions were implemented. This thesis makes several contributions to the

development of the person-centred approach in the psychometric and theoretical

aspects. For the first time, the factor structure of the English and Spanish versions of

the B-L RI was examined by using CFA, the optimal model of the B-L RI was

confirmed in the context of non-professional relationships, and the language

equivalency of the B-L RI was tested. A 12-item version of the B-L RI was developed,

which would significantly reduce the time required to complete the scale. The B-L

RI:mini was reliable and valid, which would potentially improve its frequency of use

in quantitative research. The B-L RI:mini is recommended to be used in future

research. This thesis provided empirical evidence to support the person-centred theory

of personality and interpersonal relationships among opposite-gender and same-

gender couples, in combination with the gender role strain paradigm and minority

stress theory.

Positive functioning has received increasing attention in mainstream

psychology over recent years. It is time to promote person-centred concepts and

theories into the views of psychologists from other fields. This thesis exemplified how the bridges can be built between person-centred psychology and other areas of psychology by using the concept of conditions of worth as an interface. Previous studies proved the negative impact of conditions of worth on mental and physical health, some theorists and researchers relate the negative impact to the discrepancy between self-concept and ideal self (e.g., the gender role strain paradigm) and encourage individual to develop an authentic sense of self. These ideas are highly consistent with the person-centred theory. The person-centred theory can provide a systematic understanding of the impact of prejudice and discrimination. More importantly, the theory demonstrates the way to facilitate the development of authenticity that protects individual from the adverse effects of prejudice and discrimination. The person-centred approach also enhances better practice of dealing with prejudice and discrimination in both a professional and non-professional setting, unlike the other approaches which only focus on a single setting. The person-centred paradigm does not divide the positive and the negative aspects of human experience and considers all human beings as an organism that possesses the actualising tendency regardless of race, ethnicity, age, gender, sexual orientation, gender identity, economic status, disability, and other diverse backgrounds. Thus, the person-centred paradigm can potentially provide a basis to foster peace and mutual understanding between individuals, organisations, social groups, communities, and countries.

Cross-theoretical research is encouraged to be conducted, which promotes connections and communications between the person-centred community and other

areas of psychology. Especially with social psychology, the influence of the person-centred psychology in the field will create better possibilities to expose the person-centred view of individual and relationship to the mass media and mainstream culture. When people learn the person-centred way of understanding individuals and societies, the expansion of medicalisation will lack a solid base and "the world of tomorrow" will come.

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Appendix 1: Ethics approval

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20/05/2020

Our Ref: 2020/12

Dear Shun Chen

Thank you for your research ethics application for your project:

Cross-Cultural Measurement Invariance of the Barrett-Lennard Relationship Inventory

Our Ethics Committee has looked at your submission and has the following comments.

- It is our understanding that you are using the Barrett-Lennard Relationship Inventory for another study as part of your PhD research.
- In future applications it will be helpful if you direct reviewers to your other projects particularly those that have already secured ethical approval. We want to provide support by being consistent in our reviews.
- Reviewers have commented on the general thoroughness of the application. Greater frankness, provision of all public material and consistency in important aspects of consent and data retention are likely to secure approval.

However, before your research can be approved, the Committee requests the following amendments are made:

- Clarify what 'friendship' means. Reviewers are trying to decide how sensitive the data are. It is possible that the risk relating to the generation and storage of sensitive personal data is greater than that indicated on the form.
- Please send a copy of the social media post you will use to recruit participants.
- The length of time the data will be stored needs to be clarified. For the purpose of research ethics the University requires data to be retained for seven years after the publication of findings. However, the EU GDPR states that for legal reasons personal data might be stored for up to 25 years. At present these two matters are not sufficiently clear in the documentation. Make a decision about this and convey it clearly to participants.
- Revise the consent form:
  - Complete sentences
  - Separate items
  - Clarify the nature of further research in the statement: 'I understand that the data may be used for further research for the seven-year period that it will be stored'.
- Review the participant information sheet:
  - Provide roles to accompany names
  - Include contact details for the research ethics coordinator
  - Be clear about what 'friendship' means
  - Tell participants about the focus of the questionnaire
  - Proof read the document carefully for errors in English usage.

Based on the above assessment, it is deemed your research is:

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- **Approved subject to the conditions listed above (an email to say how these conditions will be met will suffice)**

This research is approved provided it is completed by end 2023
If your research overruns this date, please contact the Ethics Team to arrange an extension and update on any additions/changes to your work.

We look forward to hearing from you with the information that is requested.

KEFuller

Dr Kay Fuller
Chair of the Ethics Committee

University of Nottingham
UK | CHINA | MALAYSIA

Our Ref: 2018/52

Dear Shun Chen

Thank you for your research ethics application for your project:

A study of the reliability and validity of the BLRI-mini

Our Ethics Committee has looked at your submission and has the following comments.

- Thank you for your application.

After confirming you will address the minor issues raised in a letter dated 16/01/19, we are pleased to confirm your research is now:

- **Approved**

We wish you well with your research.

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09/10/2019

Our Ref: 2019/34

Dear Shun Chen

Thank you for your research ethics application for your project:

Femininity ideology, authenticity and relationship functioning in romantic relationship: an application of the moderated actor-partner interdependence model

Our Ethics Committee has looked at your submission and has the following comments.

- Thank you for attending to the comments and suggestions made earlier.
- We note that the information sheet provided to the participants details the involvement of the study and you provide a very brief statement about the nature of the research.
- We note that the number of research instruments may be onerous for participants.

Based on the above assessment, it is deemed your research is:

- **Approved and please keep your supervisors informed about the progress of your study**

Please keep your supervisors informed about the progress of your study. Please advise us of any amendments to your study. We wish you well with your research.

Dr Mary Oliver
Ethics Committee

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21/04/2021

Our Ref: 2021.11

Dear Shun Chen

Thank you for your research ethics application for your project:

Internalised Homophobia, Authenticity and Relationship Functioning in Same-Sex Couples: an application of the actor-partner interdependence model

Following receipt of your recent documents confirming you will address some minor issues we raised in a letter dated 30.03.2021, we are pleased to confirm your research is now:

- **Approved**

We wish you well with your research.

This research is approved provided it is completed by December 2022.
If your research overruns this date, please contact the Ethics Team to arrange an extension and update on any additions/changes to your work.

For a discussion of issues involved in conducting research interviews securely online, see
https://blogs.nottingham.ac.uk/digitalresearch/2021/02/25/conducting-research-interviews-online/.

Dr Kay Fuller
On behalf of the Ethics Committee

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Appendix 2: Participant Information Sheet and Consent Form

Study 1 - (CHAPTER 3)

Participant Information Sheet

About this study:

Thank you for your interest in taking part in this online survey. My name is Shun Chen; I am a PhD Student from the University of Nottingham. This study is part of my doctoral thesis. This research aimed to investigate the perceived friendship quality across cultures.

Why should I take part in this research?

By completing this survey, you may know more about your friendship. It is also hoped this research leads to a greater understanding of the perceived friendship quality across cultures.

What does the study involve?

Upon choosing to partake in the survey, you will be guided to a page where you will be asked to answer a few demographic questions. After this, you will be asked to complete a questionnaire about your friendship. The survey should take no longer than 15 minutes to complete.

Confidentiality and anonymity:

The information in this study will be used only for research purposes and in ways that will not reveal who you are. No identifying information will be recorded; all data collected in this study will be anonymous and kept confidentially. You will not be identified in any publication from this study or in any data files shared with other researchers. All data will be stored in compliance with GDPR and the Code of

Research Conduct and Research Ethics at the University of Nottingham. Your data will be stored securely within the One Drive system of The University of Nottingham for 7 years, and then it will be deleted.

Voluntary participation:

You must be at least 18 years old in order to participate in this study. Participation is voluntary, and you can choose to quit the survey at any time before submitting your response. If you do have any further questions before you wish to take part, please contact us.

We are very grateful for your valuable contribution to this research. Thank you for your time.

Contact details:

Researcher: Shun Chen (shun.chen1@nottingham.ac.uk)

Supervisor: Dr David Murphy (david.murphy@nottingham.ac.uk)

Supervisor: Prof. Stephen Joseph (stephen.joseph@nottingham.ac.uk)

School of Education Research Ethics Coordinator

(educationresearchethics@nottingham.ac.uk)

Consent form

Thank you for your interest in participating in this project.

Before proceeding, it must be ensured that participants have a full understanding of the study's content and the rights of the participant. Please read the following statements.

Statements

- I have read and understood the participant information sheet, and thus, I am aware of what my participation will involve.

- I am taking part in this research voluntarily.

- I understand the purpose of the research project and my involvement in it.

- I understand that I may withdraw from the research project at any time before the publication of this study. And this will not affect my status now or in the future.

- I understand that data will be stored within the system of The University of Nottingham for seven years.

- I understand that the data may be used for further research for the seven-year period that it will be stored.

- I understand that while information gained during the study may be published, I will not be identified, and my personal results will remain confidential.

- I understand that I may contact the researcher or supervisor if I require further information about the research and that I may contact the Research Ethics Coordinator of the School of Education, University of Nottingham if I wish to make a complaint relating to my involvement in the research.

Clicking on the "Agree" button indicates that:

- You have read and agree with the above statements;

- You are either a native English or Spanish speaker; You are aged 18 or above.

Información para el Participante

Sobre este estudio:

Muchas gracias por participar en esta encuesta en línea. Mi nombre es Shun Chen, estudiante de doctorado de la Universidad de Nottingham, Inglaterra. Este proyecto forma parte de mi tesis doctoral, la cual tiene por objetivo investigar la percepción de la calidad de amistades en distintas culturas.

¿Por qué debería participar en esta investigación?

Al completar esta encuesta, usted puede conocer más sobre más sobre su

percepción de la calidad de sus amistades. También se espera que los resultados de esta investigación conduzcan a una mayor comprensión sobre la percepción de la calidad de amistades en distintas culturas.

¿En qué consiste este estudio?

Al participar en esta encuesta, usted será dirigido a una página web donde se le pedirá que conteste unas preguntas sobre su demografía. Acto seguido, se le pedirá que conteste una encuesta sobre amistad. Completar esta encuesta no tomará más de 15 minutos.

Confidencialidad y anonimato

Los datos de este estudio se utilizarán exclusivamente con fines de investigación. Sus datos personales no serán revelados. No se registrarán sus datos de identificación. Los datos recopilados serán anónimos y se mantendrán confidenciales. Su identidad no será revelada en ninguna publicación relacionada con esta investigación ni en ningún otro archivo compartido con otros investigadores. Todos los datos se almacenarán en conformidad con el Reglamento General de Protección de Datos y el código de Código de Conducta de Investigación y Ética (Code of Research Conduct and Research Ethics) de la Universidad de Nottingham. Sus datos se almacenarán de forma segura dentro del sistema One Drive de la Universidad de Nottingham. El periodo de almacenamiento será de 7 años, después de los cuales sus datos se eliminarán.

Participación voluntaria

Debe tener al menos 18 años para participar en este estudio. Su participación es voluntaria y puede abandonar la encuesta en cualquier momento antes de completar y enviar su respuesta. Si tiene alguna consulta, por favor contáctenos a las direcciones que se encuentran al final de este documento.

Muchas gracias por dedicar parte de su tiempo a completar esta encuesta. Estamos muy agradecidos por su contribución a este proyecto de investigación.

Información de contacto:

Shun Chen (shun.chen1@nottingham.ac.uk)

Dr David Murphy (david.murphy@nottingham.ac.uk)

Prof. Stephen Joseph (stephen.joseph@nottingham.ac.uk)

School of Education Research Ethics Coordinator

(educationresearchethics@nottingham.ac.uk)

Política sobre el Reglamento General de Protección de Datos (GDPR, por sus siglas en inglés)

Información de privacidad para los participantes de esta investigación

Información sobre las obligaciones de la universidad respecto a su información como participante, con qué personas u organizaciones puede ponerse en contacto y sus derechos como participante, por favor visite:

https://www.nottingham.ac.uk/utilities/privacy.aspx.

Por qué recopilamos sus datos personales

Recopilamos datos personales bajo los términos de la Universidad bajo la Royal Charter (University's Royal Charter) en nuestra capacidad como organismo de enseñanza e investigación para avanzar en la educación y el aprendizaje. En esta ocasión, el propósito para la recopilación de datos es la investigación.

Bases legales para procesar su información personal bajo la regulación GDPR

Las bases legales para el tratamiento de su información personal se encuentran en el Artículo 6(1e), la cual admite el tratamiento de datos personales con el fin de cumplir una misión en interés público.

Categoría especial respecto a datos personales

Además de las bases legales para el procesamiento de su información personal, la Universidad debe cumplir una regulación adicional para el procesamiento de cualquier información que pertenece a la categoría especial. Esta categoría especial incluye: información que revele el origen racial o étnico, posición política, creencias filosóficas o religiosas, afiliación sindical, datos genéticos, datos biométricos con fin de identificar una persona natural, datos sobre salud o información relacionada con la vida u orientación sexual de una persona natural. Las bases para procesar sus datos sensibles se encuentran en el Artículo 9(2a), el cual exige que el interesado de su consentimiento explícito para el tratamiento de sus datos personales.

Cuanto tiempo conservamos sus datos

La Universidad puede almacenar sus datos personales por un periodo de hasta 25 años y por no menos de 7 años después de que el proyecto de investigación haya finalizado. Los investigadores que recopilaron o procesaron sus datos pueden almacenar su información de forma indefinida y reutilizarla para investigaciones futuras. Medidas para salvaguardar su información almacenada incluye la anonimización de sus datos. En esta investigación no se registrarán datos de identificación. En todo momento, los participantes permanecerán en el anonimato.

¿Con quién compartimos sus datos?

Extractos de sus datos pueden divulgarse en trabajos de investigación en línea para la comunidad científica. Sus datos pueden ser almacenados indefinidamente en repositorios externos (por ejemplo, UK Data Archive) y pueden procesarse posteriormente con fines de interés público, históricos, científicos o estadísticos. Sus datos también pueden desplazarse a otra institución junto al investigador que realizó el proceso de tratamiento de datos.

Formulario de Consentimiento

¡Muchas gracias por su participación!

Antes de proceder, es necesario que cada participante sea consciente de sus derechos y entienda plenamente el propósito de este proyecto y encuesta. Por favor, lea las siguientes declaraciones:

- He leído y entendido la sección llamada "información para el participante" y, por tanto, soy consciente de lo que mi participación involucrará. Participo en este proyecto de investigación de forma voluntaria.

- Soy consciente del propósito de este proyecto de investigación y soy consciente de mi participación en él.

- Soy consciente de que puedo retirarme en cualquier momento previo a la publicación de este proyecto de investigación. Después de ser publicado, mi decisión no puede ser cambiada.

- Soy consciente de que mis datos van a ser almacenados en el sistema de la Universidad de Nottingham por siete años.

- Soy consciente de que mis datos puedan ser publicados. Mi identidad y respuestas permanecerán confidenciales.

- Soy consciente que puedo contactar con el investigador a cargo o su supervisor si requiero información adicional sobre el proyecto de investigación. En caso de querer hacer un reclamo, puedo contactar al Coordinador de Ética en Investigación (Research Ethics Coordinator) en La Escuela de Educación (School of Education) de la Universidad de Nottingham.

Seleccionando el botón "acepto", yo:

He leído, entiendo y acepto las declaraciones descritas arriba.

Soy un hablante nativo del idioma español y/o inglés.

Soy mayor de edad (18 años o más).

Study 2 - (CHAPTER 4)

Participant Information Sheet

About this study:
This study is being conducted by The Centre for Research in Human Flourishing, from the School of Education at The University of Nottingham. This research aimed to investigate relationship quality in the close personal relationship.

What does the study involve?
Upon choosing to partake in the survey, you will be guided to a page where you will be asked to answer a series of demographic questions. After this, you will be asked to complete 4 short questionnaires. The survey should take no longer than 15 minutes to complete. 7 days after you have completed this survey, you will be asked to complete a single questionnaire again.

Confidentiality and anonymity:
The information in this study will be used only for research purposes and in ways that will not reveal who you are. No identifying information will be recorded, all data collected in this study will be anonymous, and kept confidentially. You will not be identified in any publication from this study or in any data files shared with other researchers. All data will be stored in compliance with GDPR regulations.

Voluntary participation:
You must be at least 18 years old in order to participate in this study. Participation is voluntary, and you can choose to quit the experiment at any time. Any data entered will be deleted and not analyzed. If you do have any further questions before you wish to take part please contact us.

Consent form

Thank you for your interest in participating in this project.
Before proceeding it must be ensured that participants have a full understanding of the study's content and the rights of the participant. Please read the following statements.

Statements

- I have read and understood the participant information sheet and thus, I am aware of what my participation will involve. I am taking part in this research voluntarily.
- I understand the purpose of the research project and my involvement in it.

- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.
- I understand that data will be stored within the system of The University of Nottingham.
- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
- I understand that I may contact the researcher or supervisor if I require further information about the research and that I may contact the Research Ethics Coordinator of the School of Education, University of Nottingham if I wish to make a complaint relating to my involvement in the research.

Please select your choice. Clicking on the "Agree" button indicates that you are:
- You have read and agree with the above statements
- Aged above 18 years of age
- Agree to complete a follow-up survey within a 7-day interval

Study 3 - (CHAPTER 5)

Participant information sheet

About this study:

Thank you for your interest in taking part in this online survey. My name is Shun Chen, I am a PhD Student from the University of Nottingham. This is part of my doctoral thesis. This research aimed to investigate the development of relationship functioning within opposite-gender partners.

Why should I take part in this research?

By completing this survey, you and your partner may know more about your intimate relationship. It is also hoped this research leads to a greater understanding of the development of relationship functioning.

What does the study involve?

Please invite your partner to participate in this study together by sharing the survey link (https://nottingham.onlinesurveys.ac.uk/rs4hc). Upon choosing to partake in the survey, you will be guided to a page where you will be asked to answer a couple of demographic questions. After this, you will be asked to complete 2 short questionnaires about you and your relationship. The survey should take no longer than 10 minutes to complete. 2 weeks after you have completed this survey, you will be asked to complete another two surveys which include two short questionnaires that focus on your relationship.

Please note some questions (multiple-choice) involve disclosures of sensitive information. If during or following completion of this survey, you feel in need of support, you can contact us or the organizations listed on page 7.

Confidentiality:

The information in this study will be used only for research purposes and in ways

that will not reveal who you are. No identifying information will be recorded, all data collected in this study will be kept confidentially. You will not be identified in any publication from this study or in any data files shared with other researchers. All data will be stored in compliance with GDPR regulations and the Code of Research Conduct and Research Ethics at the University of Nottingham.

Voluntary participation:

You must be at least 18 years old in order to participate in this study. Participation is voluntary, and you can choose to quit the study at any time before the publication of this study. Any data entered will be deleted and not analysed. You will only need to provide the email address you give in this survey for identifying your response. If you do have any further questions before you wish to take part, please contact us.

We are very grateful for your important contribution to this research. Thank you for your time.

Contact details:

Shun Chen (shun.chen1@nottingham.ac.uk)

Dr David Murphy (david.murphy@nottingham.ac.uk)

Prof. Stephen Joseph (stephen.joseph@nottingham.ac.uk)

School of Education Research Ethics Coordinator

(educationresearchethics@nottingham.ac.uk)

Consent form

Thank you for your interest in participating in this project.

Before proceeding, it must be ensured that participants have a full understanding of the study's content and the rights of the participant. Please read the following statements.

Statements

- I have read and understood the participant information sheet, and thus, I am aware of what my participation will involve. I am taking part in this research voluntarily.

- I understand the purpose of the research project and my involvement in it.

- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.

- I understand that data will be stored within the system of The University of Nottingham.

- I understand that while information gained during the study may be published, I will not be identified, and my personal results will remain confidential.

- I understand that I may contact the researcher or supervisor if I require further information about the research and that I may contact the Research Ethics Coordinator of the School of Education, University of Nottingham if I wish to make a complaint relating to my involvement in the research.

Please select your choice. Clicking on the "Agree" button indicates that:

- You have read and agree with the above statements

- You are aged 18 or above

- You have been together with your partner for more than 3 months

- Agree to complete follow-up surveys at a 2-week interval

Study 4 - (CHAPTER 6)

Participation information sheet

ABOUT THIS STUDY:
Thank you for your interest in taking part in this online survey. My name is Shun Chen; I am a PhD Student from the University of Nottingham. This study is part of my doctoral thesis. This research aimed to investigate the impact of minority stress (chronically high levels of stress faced by members of stigmatized minority groups) on romantic relationship functioning (the ability to cope with issues and changes that arise in romantic relationship) among same-gender couples.

WHY SHOULD I TAKE PART IN THIS RESEARCH?
By completing this survey, you may know more about your romantic relationship. It is also hoped this research leads to a greater understanding on preventing the impact of minority stress on same-sex romantic relationship.

WHAT DOES THE STUDY INVOLVE?
Please invite your partner to participate in this study together by sharing the survey link. Upon choosing to take part in the survey, you will be guided to a page where you will be asked to answer a couple of demographic questions. After this, you will be asked to complete 3 short questionnaires. The survey should take no longer than 10 minutes to complete.
Please note some questions (multiple-choice) involve disclosures of sensitive information. If during or following completion of this survey, you feel in need of support, you can contact us or the organizations listed on the next page.

CONFIDENTIALITY AND ANONYMITY:
The information in this study will be used only for research purposes and in ways that will not reveal who you are. No identifying information will be recorded; all data collected in this study will be anonymous and kept confidentially. You will not be identified in any publication from this study or in any data files shared with other researchers. All data will be stored in compliance with GDPR and the Code of Research Conduct and Research Ethics at the University of Nottingham. Your data will be stored securely within the One Drive system of The University of Nottingham for 7 years. After this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality.

VOLUNTARY PARTICIPATION:
You must be at least 18 years old in order to participate in this study. Participation is voluntary, and you can choose to quit the survey at any time before submitting your response. If you do have any further questions before you wish to take part, please contact us.

We are very grateful for your valuable contribution to this research. Thank you for your time.

Contact details:
Researcher: Shun Chen (shun.chen1@nottingham.ac.uk)
Supervisor: Dr David Murphy (david.murphy@nottingham.ac.uk)
Supervisor: Prof. Stephen Joseph (stephen.joseph@nottingham.ac.uk)
School of Education Research Ethics Coordinator (educationresearchethics@nottingham.ac.uk)

Consent form

Thank you for your interest in participating in this project.

Before proceeding, it must be ensured that participants have a full understanding of the study's content and the rights of the participant. Please read the following statements.

Statements

- I have read and understood the participant information sheet, and thus, I am aware of what my participation will involve. I am taking part in this research voluntarily.
- I understand the purpose of the research project and my involvement in it.
- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.
- I understand that data will be stored within the system of The University of Nottingham.
- I understand that while information gained during the study may be published, I will not be identified, and my personal results will remain confidential.
- I understand that I may contact the researcher or supervisor if I require further information about the research and that I may contact the Research Ethics Coordinator of the School of Education, University of Nottingham if I wish to make a complaint relating to my involvement in the research.

Please select your choice. Clicking on the "Agree" button indicates that:

- You have read and agree with the above statements
- You are aged 18 or above
- You have been together with your partner for more than 3 months
- Your partner agrees to take part in this research too

Appendix 3: Questionnaires

The Barrett-Lennard Relationship: OS-64 (English Version)

Below are listed a variety of ways that one person may feel or behave in relation to another person. Please consider each numbered statement with reference to your relationship with _____ (name), mentally adding their name in the space provided. If the other person's name is John, for example, then read statement number 1 as "John feels a true liking for me." Mark each statement in the answer column on the right, according to how strongly you feel that it is true, or not true, in this relationship.

EXAMPLE:

Please be sure to mark every one. Write in a plus number (+3, +2, or +1), or a minus number (–1, –2, or –3), to stand for the following answers:

–3: NO, I strongly feel that it is not true

–2: No, I feel it is not true

–1: (No) I feel that it is probably untrue, or more untrue than true

+1: (Yes) I feel that it is probably true, or more true than untrue

+2: Yes, I feel it is true

+3: YES, I strongly feel that it is true

1. _____ respects me as a person
2. _____ wants to understand how I see things
3. _____'s interest in me depends on the things I say or do
4. _____ is comfortable and at ease in our relationship
5. _____ feels a true liking for me
6. _____ may understand my words but they does not see the way I feel
7. Whether I am feeling happy or unhappy with myself makes no real difference to the way _____ feels about me
8. I feel that _____ puts on a role or front with me
9. _____ is impatient with me
10. _____ nearly always knows exactly what I mean
11. Depending on my behavior _____ has a better opinion of me sometimes than they has at other times
12. I feel that _____ is real and genuine with me
13. I feel appreciated by _____
14. _____ looks at what I do from their own point of view
15. _____'s feeling toward me doesn't depend on how I judge or feel about myself. [Answer 'no' (–1, –2 or –3) if the way you feel about yourself alters their feeling.]
16. It makes _____ uneasy when I ask or talk about certain things

17. _____ is indifferent to me

18. _____ usually senses or realizes what I am feeling

19. _____ wants me to be a particular kind of person

20. I feel that what _____ says expresses exactly what they are feeling and thinking at that moment

21. _____ finds me rather dull and uninteresting

22. _____'s own attitudes toward things I do or say prevent their from understanding me

23. I can/could be openly critical or appreciative of _____ without making their feel differently about me

24. _____ wants me to think that they like or understand me more than they really do

25. _____ cares for me.

26. _____ thinks that I feel a certain way, because that's the way they feel

27. _____ likes or accepts certain things about me, and there are other things they do not like in me

28. _____ doesn't avoid or go round anything that is important for our relationship

29. I feel that _____ disapproves of me

30. _____ realizes what I mean even when I have difficulty in saying it

31. _____'s attitude toward me stays the same: they are not pleased with me sometimes and critical or disappointed at other times

32. Sometimes _____ is not at all comfortable but we go on, outwardly ignoring it

33. _____ just tolerates me

34. _____ usually understands the whole of what I mean

35. If I show that I am angry with _____ they become hurt or angry with me, too

36. _____ expresses their true impressions and feelings with me

37. _____ is friendly and warm with me

38. _____ takes no notice of some things I think or feel

39. How much _____ likes or dislikes me is not altered by anything that I tell them about myself

40. At times I sense that _____'s not aware of what they are really feeling with me

41. I feel that _____ really values me

42. _____ appreciates exactly how the things I experience feel to me

43. _____ approves of me in some ways or sometimes, and plainly disapproves of me in other ways/other times

44. _____ is willing to express whatever is actually in their mind with me, including personal feelings about themself or me

45. _____ doesn't like me for myself

46. At times _____ thinks that I feel a lot more strongly about a particular thing than I really do

47. Whether I happen to be in good spirits or feeling upset does not make _____ feel any more or less appreciative of me

48. _____ is openly themself in our relationship

49. I seem to irritate and bother _____

50. _____ does not realize how sensitive I am about some things we discuss

51. Whether the ideas and feelings I express are "good" or "bad" seems to make no difference to _____'s feeling toward me

52. There are times when I feel that _____'s outward response to me is quite different from the way they feel underneath

53. _____ feels contempt for me

54. _____ understands me

55. Sometimes I am more worthwhile in _____'s eyes than I am at other times

56. _____ doesn't hide from themself anything that they feel with me

57. _____ is truly interested in me

58. _____'s response to me is usually so fixed and automatic that I don't get through to them

59. I don't think that anything I say or do really changes the way _____ feels toward me

60. What _____ says to me often gives a wrong impression of their whole thought or feeling at the time

61. _____ feels affection for me

62. When I am hurt or upset _____ can recognize my feelings exactly, without becoming upset themself

63. What other people think of me does (or would, if they knew) affect the way _____ feels toward me

64. I believe that _____ has feelings they do not tell me about that are causing difficulty in our relationship

---

The Barrett-Lennard Relationship: OS-64 (Spanish Version)

A continuación, se enumeran una serie de declaraciones en que una persona puede sentirse o comportarse en relación con otra persona. Por favor, lea cada declaración pensando en su amistad con _____ (nombre de su amigo/a). Por ejemplo, si tiene una amistad con John, entonces piense en la primera declaración "Me respeta como persona" como "John me respeta como persona". Indique en la Hoja de Respuestas cuán fuertemente siente usted que cada declaración es cierta o falsa. Por favor, conteste todas las declaraciones. Responda seleccionando +3, +2, +1, -1, -2 o -3, a las siguientes declaraciones:

1.- Me respeta como persona.
2.- Quiere entender cómo yo veo las cosas.

3.- Su interés por mí depende de lo que yo haga o diga.

4.- Se siente cómodo(a) y a gusto en nuestra relación.

5.- El (ella) siente real agrado por mí.

6.- Puede que entienda mis palabras, pero no se da cuenta de lo que yo siento.

7.- Que yo esté contento(a) o descontento(a) conmigo mismo(a) no tiene efecto sobre lo que él (ella) siente por mí.

8.- Siento que se pone una máscara o actúa un rol cuando está conmigo.

9.- Es impaciente conmigo.

10.- Casi siempre sabe con exactitud lo que quiero decir.

11.- Según mi comportamiento, algunas veces tiene mejor opinión de mí que en otras.

12.- Siento que es verdadero(a) y auténtico(a) conmigo.

13.- Me siento apreciado(a) por él (ella).

14.- Lo que yo hago, él (ella) lo ve desde su propio punto de vista.

15.- Lo que siente por mí no depende de mis sentimientos por él (ella).

16.- Se siente incómodo(a) cuando yo pregunto o hablo respecto a ciertos temas.

17.- Le soy indiferente.

18.- Generalmente intuye o se da cuenta de lo que estoy sintiendo.

19.- Quiere que yo sea de una forma determinada.

20.- Casi siempre siento que lo que él (ella) dice expresa en forma exacta lo que siente o piensa en ese momento.

21.- Me encuentra más bien aburrido(a) y poco interesante.

22.- Su actitud frente a ciertas cosas que yo hago o digo le impiden entenderme.

23.- Puedo o podría criticarlo(a) o apreciarlo(a) abiertamente sin que cambie lo que él (ella) siente por mí.

24.- Quiere que yo crea que me entiende o le agrado más de lo que en realidad me entiende o le agrado.

25.- Le importo.

26.- A veces piensa que yo siento algo de cierta manera porque así lo siente él (ella).

27.- Hay cosas de mí que le agradan y otras cosas que no le agradan.

28.- No evita nada que es importante para nuestra relación.

29.- Siento que no aprueba mi manera de ser.

30.- Entiende lo que quiero decir aún cuando a mí me resulte difícil expresarlo.

31.- Su actitud hacia mí es siempre la misma: no se siente satisfecho(a) conmigo en algunas ocasiones y crítico(a) o desilusionado(a) en otras.

32.- A veces se siente realmente incómodo(a); sin embargo, hacemos como que no nos damos cuenta y seguimos adelante.

33.- Se limita a tolerarme.

34.- Generalmente capta la totalidad de lo que quiero decir.

35.- Si me enojo con él (ella), él (ella) también se enoja o se siente dolido(a).

36.- Frente a mí, expresa sus verdaderas impresiones y sentimientos.

37.- Es amistoso(a) y cálido(a) conmigo.

38.- Simplemente pasa por alto algunas cosas que yo siento o pienso.

39.- Cuánto yo le gusto o disgusto no cambia por lo que yo le diga sobre mí mismo(a).

40.- A veces siento que él (ella) no se da cuenta de lo que realmente siente por mí.

41.- Siento que realmente me valora.

42.- El (ella) capta exactamente la forma en que yo siento las cosas que experimento.

43.- Aprueba algunas cosas que hago y no aprueba abiertamente otras.

44.- Está dispuesto(a) a expresarme lo que realmente está pensando, incluyendo cualquier sentimiento hacia sí mismo(a) o hacia mí.

45.- No le gusto por lo que soy.

46.- A veces, él (ella) cree que mis sentimien tos por algo en particular son mucho más fuertes que como yo los siento en realidad.

47.- El que yo esté de buen ánimo o de mal genio no le hace sentir ni más ni menos aprecio por mí.

48.- En nuestra relación se muestra tal como es.

49.- Parece que le molesto e irrito.

50.- No percibe cuán sensible soy respecto a algunas de las cosas que conversamos.

51.- El que las ideas o sentimientos que yo exprese sean buenos o malos no parece influír en sus sentimientos hacia mí.

52.- A veces siento que lo que muestra externamente es muy diferente de lo que realmente siente.

53.- A veces me desprecia.

54.- Me entiende.

55.- Hay ocasiones en que soy más valioso para él (ella) que en otras.

56.- Siento que él (ella) no ha tratado de ignorar nada de lo que siente hacia mí.

57.- Se interesa realmente en mí.

58.- Su conducta conmigo es generalmente tan fija y automática que no consigo llegar a él (ella).

59.- Creo que nada que yo diga o haga realmente cambie lo que él (ella) siente por mí.

60.- Con frecuencia, lo que me dice da una impresión equivocada de todo lo que piensa o siente en ese momento.

61.- Siente un cariño profundo por mí.

62.- Cuando yo me siento dolido o alterado, él (ella) puede reconocer y distinguir claramente mis sentimientos, sin alterarse él (ella).

63.- Lo que otros piensan de mí afecta (o afectaría, si lo supiera) lo que siente por mí.

64.- Creo que algunos de sus sentimientos, de los cuales no me habla, están produciendo dificultades en nuestra relación.

The Barrett-Lennard Relationship:mini

Below are listed a variety of ways that one person may feel or behave in relation to another person. Please consider each numbered statement with reference to your present relationship with _____(name), mentally adding their name in the space provided. Please choose the same person that you answered this questionnaire with last week. If the other person's name is John, for example, then read statement number 1 as "John feels a true liking for me." Mark each statement in the answer column on the right, according to how strongly you feel that it is true, or not true, in this relationship.

EXAMPLE:

Please be sure to mark every one. Write in a plus number (+3, +2, or +1), or a minus number (–1, –2, or –3), to stand for the following answers:

–3:　　NO, I strongly feel that it is not true

–2:　No, I feel it is not true or more true than untrue

–1:　　(No) I feel that it is probably untrue, or more untrue than true

+1:　　(Yes) I feel that it is probably true

+2:　Yes, I feel it is true

+3:　YES, I strongly feel that it is true

1. _____feels a true liking for me.
2. _____nearly always knows exactly what I mean.
3. Whether the ideas and feelings I express are "good" or "bad" seems to make no difference to _____'s feeling toward me.
4._____ expresses their true impressions and feelings with me.
5. I feel that _____ really values me.
6. _____usually senses or realizes what I am feeling.
7. Sometimes I am more worthwhile in 　　_____'s eyes than I am at other times.
8. _____ realizes what I mean even when I have difficulty in saying it.
9. _____ is willing to express whatever is actually in their mind with me, including personal feelings about themself or me.
10. _____ is truly interested in me.
11. _____ usually understands the whole of what I mean.
12. _____ feels affection for me.

Multidimensional Scale of Perceived Social Support (MSPSS)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement. Select the "1" if you Very Strongly Disagree

Select the "2" if you Strongly Disagree
Select the "3" if you Mildly Disagree
Select the "4" if you are Neutral
Select the "5" if you Mildly Agree
Select the "6" if you Strongly Agree
Select the "7" if you Very Strongly Agree

1. There is a special person who is around when I am in need.
2. There is a special person with whom I can share my joys and sorrows.
3. My family really tries to help me.
4. I get the emotional help and support I need from my family.
5. I have a special person who is a real source of comfort to me.
6. My friends really try to help me.
7. I can count on my friends when things go wrong.
8. I can talk about my problems with my family.
9. I have friends with whom I can share my joys and sorrows.
10. There is a special person in my life who cares about my feelings.
11. My family is willing to help me make decisions.
12. I can talk about my problems with my friends.

Socially Desirable Response Set Five-Item Survey (SDRS-5)

Listed below are a few statements about your relationships with others. How much is each statement TRUE or FALSE for you?
Select "1" for Definitely True
Select "2" for Mostly True
Select "3" for Don't Know
Select "4" for Mostly False
Select "5" for Definitely False

1. I am always courteous even to people who are disagreeable.
2. There have been occasions when I took advantage of someone.
3. I sometimes try to get even rather than forgive and forget.
4. I sometimes feel resentful when I don't get my way.
5. No matter who I'm talking to, I'm always a good listener.

The Experiences in Close Relationship Scale – Short Form (ECR-S)

Instruction: The following statements concern how you feel in romantic relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by indicating how much you agree or disagree with it. Mark your answer using the following rating scale: Select "1" for Strongly Disagree
Select "2" for Disagree
Selecrt "3" for Slightly Disagree
Select "4" for Neutral
Select "5" Slightly Agree
Select "6" for Agree
Select "7" for Strongly Agree

1. It helps to turn to my romantic partner in times of need.
2. I need a lot of reassurance that I am loved by my partner.
3. I want to get close to my partner, but I keep pulling back.
4. I find that my partner(s) don't want to get as close as I would like.
5. I turn to my partner for many things, including comfort and reassurance.
6. My desire to be very close sometimes scares people away.
7. I try to avoid getting too close to my partner.
8. I do not often worry about being abandoned.
9. I usually discuss my problems and concerns with my partner.
10. I get frustrated if romantic partners are not available when I need them.
11. I am nervous when partners get too close to me.
12. I worry that romantic partners won't care about me as much as I care about them.

The Authenticity Scale

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement. Select the "1" if it does not describe you at all; Select the "7" if it describes you very well.

1. "I think it is better to be yourself, than to be popular."
2. "I don't know how I really feel inside."
3. "I am strongly influenced by the opinions of others."
4. "I usually do what other people tell me to do."
5. "I always feel I need to do what others expect me to do."
6. "Other people influence me greatly."

7. "I feel as if I don't know myself very well."

8. "I always stand by what I believe in."

9. "I am true to myself in most situations."

10. "I feel out of touch with the 'real me.'"

11. "I live in accordance with my values and beliefs."

12. "I feel alienated from myself."

The Femininity Ideology Scale

We are interested in how you feel about the following statements. How well do you think these statements fit in with your personal view of what societal norms are? Read each statement carefully. Indicate how you feel about each statement. Select the "1" if you Strongly Disagree; Select the "2" if you Disagree; Select the "3" if you are Neutral;   Select the "4" if you Agree;   Select the "5" if you Strongly Agree.

1. An appropriate female occupation is nursing.

2. When someone's feelings are hurt, a woman should try to make them feel better.

3. A woman should know how people are feeling.

4. Women should be gentle.

5. A woman's natural role should be the caregiver of the family.

6. A woman should be responsible for teaching family values to her children.

7. A woman should be responsible for making and organizing family plans.

8. It is expected that a women will be viewed as overly emotional.

9. It is expected that women will have a hard time handling stress without getting emotional.

10. It is expected that women in leadership roles will not be taken seriously.

11. It is expected that a single woman is less fulfilled than a married woman.

12. It is expected that a women will engage in domestic hobbies such as sewing and decorating.

13. It is likely that a woman who gives up custody of her children will not be respected.

14. It is expected that women will discuss their feelings with one another.

15. It is expected that women will not think logically.

The 7-item Abbreviated Dyadic Adjust Scale

Most persons have disagreements in their relationships. Please indicate below the

approximate extent of agreement or disagreement between you and your partner for each item on the following list.

1. Philosophy of life
2. Aims, goals, and things believed important
3. Amount of time spent together

How often would you say the following events occur between you and your partner?

1. Have a stimulating exchange of ideas
2. Calmly discuss something
3. Work together on a project

The circles on the following line represent different degrees of happiness in your relationship. The middle point, "happy," represents the degree of happiness of most relationships. Please fill in the circle which best describes the degree of happiness, all things considered, of your relationship with your partner.

Extremely Unhappy
Fairly Unhappy
A Little Unhappy
Happy
Very Happy
Extremely Happy
Perfect

The Revised Internalised Homophobia Scale

We are interested in how you feel about the following statements. How well do you think these statements fit in with your thoughts? Read each statement carefully. Indicate how you feel about each statement. Select the "1" if you Strongly Disagree; Select the "2" if you Disagree; Select the "3" if you are Neutral; Select the "4" if you Agree; Select the "5" if you Strongly Agree.

1.I wish I weren't lesbian/gay/bisexual.
2.I have tried to stop being attracted to the same sex in general.
3.If someone offered me the chance to be completely heterosexual, I would accept the chance.
4.I feel that being lesbian/gay/bisexual is a personal shortcoming for me.
5.I would like to get professional help in order to change my sexual orientation

from lesbian/gay/bisexual to straight.

The Perceived Relationship Quality Components Inventory

Please indicate what your current relationship is like, answering each question that follows. Use this scale when answering each question: 1 = (not at all) to 7 = (extremely).

1.How satisfied are you with your relationship?
2.How committed are you to your relationship?
3.How intimate is your relationship?
4.How much do you trust your partner?
5.How passionate is your relationship?
6.How much do you love your partner?
7.How romantic is your relationship?

Appendix 4: Supplementary Tables and Figures

Table S1. Item Parameter Estimates of the English, Chinese and Spanish Versions of the B-L RI: OS-64

Items	English Version							Chinese Version							Spanish Version						
	a	b_1	b_2	b_3	b_4	b_5	$b(m)$	a	b_1	b_2	b_3	b_4	b_5	$b(m)$	a	b_1	b_2	b_3	b_4	b_5	$b(m)$
R1	2.88	-3.18	-2.96	-2.19	-1.58	-0.55	-2.09	1.82	-3.47	-2.50	-1.85	-0.65	0.97	-1.50	3.07	-2.57	-2.03	-1.79	-1.13	-0.24	-1.55
E2	1.87	-3.19	-2.60	-2.04	-1.14	0.02	-1.79	1.55	-4.28	-2.78	-1.88	-0.93	0.76	-1.82	1.76	-3.81	-2.82	-2.14	-1.32	0.17	-1.98
U3N	0.67	-3.61	-1.89	-0.50	0.34	2.09	-0.71	-0.65	2.97	-0.57	-2.38	-4.03	-6.92	-2.19	0.74	-3.09	-1.11	-0.05	0.89	2.05	-0.26
C4	1.61	-4.40	-3.24	-2.48	-1.74	-0.40	-2.45	2.20	-3.34	-2.94	-2.15	-1.10	0.16	-1.87	2.55	-2.78	-2.57	-2.14	-1.39	-0.32	-1.84
R5	2.52	-2.99	-2.81	-2.29	-1.69	-0.62	-2.08	1.88	-3.36	-2.66	-2.00	-1.28	0.09	-1.84	2.51	-2.82	-2.60	-2.12	-1.47	-0.65	-1.93
E6N	1.43	-3.08	-1.62	-0.81	-0.27	1.01	-0.95	0.88	-3.16	-1.10	0.05	1.50	4.33	0.32	1.25	-2.54	-1.37	-0.71	0.07	1.22	-0.67
U7	1.18	-3.28	-2.73	-2.07	-1.47	-0.08	-1.92	0.63	-6.35	-3.81	-2.06	-0.27	3.08	-1.88	0.64	-4.47	-2.97	-2.04	-0.76	1.09	-1.83
C8N	1.47	-3.65	-2.27	-1.84	-1.15	-0.12	-1.81	2.05	-3.08	-2.51	-1.83	-0.93	0.08	-1.66	2.18	-2.96	-2.18	-1.85	-1.36	-0.55	-1.78
R9N	1.37	-3.53	-2.65	-1.88	-1.20	-0.23	-1.90	1.75	-3.30	-2.34	-1.61	-0.66	0.65	-1.45	1.44	-3.08	-2.22	-1.86	-0.96	0.09	-1.61
E10	3.04	-2.77	-2.20	-1.69	-1.01	0.07	-1.52	2.74	-2.74	-2.10	-1.45	-0.46	0.92	-1.17	3.77	-3.20	-2.28	-1.74	-0.96	-0.02	-1.64
U11N	1.20	-2.96	-1.44	-0.68	-0.11	1.10	-0.82	-0.58	4.21	0.32	-2.40	-4.86	-7.29	-2.00	0.38	-5.31	-1.80	0.58	2.30	4.40	0.03
C12	2.38	-2.45	-1.99	-1.70	-0.91	0.20	-1.37	2.46	-2.88	-2.24	-1.63	-0.71	0.73	-1.35	2.62	-2.46	-2.02	-1.67	-1.08	-0.06	-1.46
R13	2.66	-2.60	-2.16	-1.68	-1.04	-0.27	-1.55	1.68	-4.30	-2.92	-1.71	-0.35	1.21	-1.62	3.17	-2.56	-2.44	-1.86	-1.16	-0.29	-1.66
E14N	0.20	-8.60	-1.22	4.92	9.65	16.86	4.32	0.42	-6.30	-1.13	1.96	5.21	9.93	1.93	0.07	-25.35	-3.43	12.41	24.43	46.25	10.86
U15	0.98	-3.18	-2.37	-1.82	-1.16	0.34	-1.64	0.70	-5.67	-3.09	-1.42	0.01	3.08	-1.42	0.69	-5.26	-3.75	-2.06	-0.78	1.29	-2.11
C16N	1.35	-2.81	-1.75	-0.97	-0.53	0.48	-1.12	0.98	-3.52	-1.69	-0.55	0.90	2.96	-0.38	1.27	-2.48	-1.73	-1.09	-0.33	0.85	-0.95
R17N	1.16	-3.55	-2.67	-2.30	-1.74	-0.59	-2.17	2.20	-4.10	-2.67	-1.89	-0.96	0.19	-1.89	2.50	-3.25	-2.76	-2.09	-1.36	-0.54	-2.00
E18	1.58	-4.37	-2.90	-2.18	-1.49	-0.37	-2.26	1.78	-3.85	-2.95	-1.88	-0.69	0.64	-1.75	1.95	-3.31	-2.63	-1.94	-1.25	-0.20	-1.87
U19N	1.21	-3.40	-2.63	-1.60	-0.81	0.44	-1.60	0.76	-5.05	-2.94	-1.70	-0.10	2.26	-1.50	1.48	-2.89	-2.22	-1.54	-0.91	0.20	-1.47
C20	1.38	-3.66	-2.51	-1.40	-0.69	0.79	-1.49	1.42	-3.83	-3.01	-1.79	-0.56	1.29	-1.58	1.36	-3.90	-2.79	-2.08	-0.75	0.73	-1.76
R21N	1.60	-3.04	-2.25	-1.45	-0.30	1.15	-1.18	1.65	-3.28	-2.46	-1.36	-0.08	1.72	-1.09	1.55	-3.10	-2.43	-1.56	-0.51	0.92	-1.34
E22N	1.74	-3.12	-1.79	-1.06	-0.63	0.43	-1.23	2.00	-2.96	-2.18	-1.34	-0.37	1.04	-1.16	1.53	-3.38	-2.84	-1.78	-0.85	0.45	-1.68
U23	1.53	-3.10	-2.12	-1.37	-0.45	0.88	-1.23	1.48	-3.27	-2.13	-1.34	-0.39	1.20	-1.19	1.57	-3.29	-2.26	-1.68	-0.84	0.46	-1.52
C24N	1.96	-2.48	-2.01	-1.39	-0.83	0.23	-1.30	0.11	-27.33	-10.66	-0.83	10.29	24.21	-0.86	1.36	-2.73	-1.82	-1.07	-0.41	0.41	-1.12

R25	3.44	-2.60	-2.22	-1.91	-1.25	-0.42	-1.68	2.40	-3.02	-2.22	-1.42	-0.48	0.77	-1.27	4.37	-2.31	-2.06	-1.55	-1.03	-0.22	-1.43
E26N	1.21	-3.51	-2.02	-0.98	-0.19	1.19	-1.10	-1.17	3.03	0.68	-0.91	-2.37	-4.23	-0.76	0.41	-6.59	-2.67	0.25	2.13	4.72	-0.43
U27N	0.43	-4.98	-1.92	0.85	2.34	5.29	0.31	0.82	-3.65	-1.44	0.24	1.73	4.29	0.23	-0.42	3.12	0.14	-2.78	-4.97	-9.38	-2.77
C28	1.69	-2.52	-2.13	-1.36	-0.50	0.48	-1.21	1.91	-2.84	-2.07	-1.30	-0.53	0.92	-1.16	1.40	-3.37	-2.42	-1.68	-0.77	0.55	-1.54
R29N	2.07	-3.01	-2.30	-1.52	-0.76	0.68	-1.38	2.13	-3.13	-2.21	-1.44	-0.21	1.33	-1.13	2.15	-3.26	-2.19	-1.68	-0.77	0.51	-1.48
E30	1.82	-3.25	-2.19	-1.52	-0.50	0.85	-1.32	1.59	-3.85	-2.60	-1.52	-0.12	1.59	-1.30	1.76	-3.17	-2.59	-1.72	-0.72	0.76	-1.49
U31	0.00	838.08	475.46	143.19	-249.51	-825.76	76.29	1.87	-2.62	-2.04	-1.53	-0.65	0.89	-1.19	-0.68	0.96	0.07	-0.36	-1.22	-2.91	-0.69
C32N	1.63	-2.73	-2.07	-1.21	-0.70	0.26	-1.29	0.83	-4.56	-2.30	-0.72	0.77	3.00	-0.76	1.49	-2.89	-2.10	-1.13	-0.50	0.46	-1.23
R33N	2.16	-2.94	-2.40	-1.90	-1.38	-0.63	-1.85	2.22	-3.51	-2.69	-1.82	-0.92	0.21	-1.75	1.55	-3.44	-2.81	-2.31	-1.54	-0.56	-2.13
E34	2.28	-2.86	-2.42	-1.75	-1.38	-0.66	-1.81	2.66	-3.24	-2.28	-1.57	-0.65	0.48	-1.45	2.22	-2.66	-2.17	-1.79	-1.24	-0.34	-1.64
U35N	0.97	-3.18	-2.01	-1.05	0.13	1.47	-0.93	0.11	-19.66	-4.63	6.46	17.12	31.87	6.23	0.59	-4.42	-1.95	-0.07	1.29	2.85	-0.46
C36	2.53	-2.64	-2.23	-2.10	-1.26	-0.43	-1.73	3.05	-3.28	-2.34	-1.78	-1.03	0.13	-1.66	3.32	-2.90	-2.41	-2.05	-1.27	-0.48	-1.82
R37	2.76	-2.62	-2.53	-2.23	-1.67	-0.71	-1.95	3.06	-2.89	-2.40	-1.93	-0.91	0.19	-1.59	2.90	-3.41	-2.62	-2.27	-1.28	-0.37	-1.99
E38N	1.71	-2.37	-1.71	-1.20	-0.55	0.62	-1.04	1.15	-3.11	-1.30	0.04	1.39	3.37	0.08	1.38	-2.79	-1.73	-0.73	0.03	1.12	-0.82
U39	1.47	-3.03	-2.49	-1.74	-1.04	0.15	-1.63	1.68	-3.51	-2.35	-1.68	-0.50	1.24	-1.36	0.61	-5.40	-3.86	-2.56	-1.05	1.37	-2.30
C40N	1.96	-2.42	-1.76	-0.98	-0.38	0.57	-1.00	1.35	-2.93	-1.62	-0.58	0.62	2.16	-0.47	1.92	-2.45	-1.94	-1.19	-0.57	0.36	-1.16
R41	3.04	-3.41	-2.35	-2.13	-1.43	-0.54	-1.97	2.45	-2.94	-2.48	-1.74	-0.82	0.44	-1.51	4.01	-2.50	-2.22	-1.92	-1.09	-0.42	-1.63
E42	2.15	-2.91	-1.96	-1.39	-0.64	0.54	-1.27	2.80	-2.79	-2.14	-1.49	-0.36	0.97	-1.16	1.68	-3.42	-2.63	-1.92	-0.70	0.70	-1.59
U43N	0.97	-3.44	-2.27	-1.28	-0.40	1.01	-1.27	-0.87	2.06	-0.78	-2.91	-4.48	-7.86	-2.80	-0.37	2.76	-1.09	-4.00	-5.74	-8.06	-3.23
C44	2.60	-2.74	-2.63	-1.89	-1.33	-0.32	-1.78	2.39	-2.98	-2.44	-1.93	-0.98	0.22	-1.62	3.27	-2.89	-2.32	-1.79	-1.25	-0.39	-1.73
R45N	3.27	-2.90	-2.36	-2.00	-1.40	-0.86	-1.90	1.80	-4.09	-2.83	-2.10	-0.94	0.56	-1.88	2.14	-2.90	-2.50	-2.09	-1.29	-0.43	-1.84
E46N	0.87	-3.33	-1.90	-0.69	0.38	2.05	-0.70	-0.04	60.36	18.18	-11.60	-47.17	-105.46	-17.14	0.38	-5.63	-2.40	0.28	2.97	5.31	0.11
U47	2.31	-2.88	-2.03	-1.69	-1.12	-0.14	-1.57	2.40	-3.85	-2.11	-1.38	-0.36	1.00	-1.34	1.47	-2.85	-2.30	-1.82	-0.90	0.13	-1.55
C48	1.85	-2.57	-2.06	-1.50	-0.90	0.29	-1.35	2.23	-3.32	-2.27	-1.48	-0.57	0.84	-1.36	3.57	-2.60	-2.20	-1.77	-1.03	-0.30	-1.58
R49N	1.80	-3.26	-2.57	-1.59	-1.09	-0.34	-1.77	1.16	-3.48	-2.27	-1.16	0.01	1.68	-1.04	1.83	-2.72	-2.18	-1.50	-0.86	-0.08	-1.47
E50N	1.69	-2.11	-1.58	-0.73	-0.35	0.41	-0.87	1.52	-3.67	-2.19	-1.26	-0.16	1.49	-1.16	1.09	-3.85	-2.31	-1.33	-0.69	0.75	-1.49
U51	1.81	-2.86	-2.45	-1.68	-0.98	0.16	-1.56	1.76	-3.49	-2.53	-1.67	-0.41	1.36	-1.35	1.47	-3.19	-2.55	-1.90	-0.92	0.41	-1.63
C52N	1.37	-3.20	-1.79	-1.08	-0.61	0.46	-1.24	1.99	-2.55	-1.90	-1.18	-0.47	0.77	-1.07	0.73	-3.69	-2.05	-1.20	-0.59	0.85	-1.34
R53N	1.36	-3.33	-2.40	-2.00	-1.60	-1.05	-2.08	2.75	-2.92	-2.19	-1.65	-1.06	-0.22	-1.61	2.37	-2.76	-2.30	-1.83	-1.50	-0.78	-1.83
E54	1.62	-3.15	-2.47	-1.72	-0.68	0.75	-1.45	1.73	-3.33	-2.28	-1.36	-0.04	1.57	-1.09	1.38	-4.04	-2.65	-1.78	-0.26	1.20	-1.50

U55N	1.67	-2.67	-2.03	-1.17	-0.68	0.24	-1.26	1.63	-2.92	-1.73	-0.79	0.10	1.48	-0.77	1.87	-2.50	-1.80	-1.27	-0.69	0.18	-1.22
C56	1.52	-2.76	-2.03	-1.17	-0.41	0.76	-1.13	1.89	-2.92	-2.02	-1.18	-0.27	1.20	-1.04	1.37	-2.86	-2.33	-1.54	-0.80	0.45	-1.42
R57	2.19	-2.75	-2.15	-1.51	-0.89	0.12	-1.43	2.19	-2.75	-2.08	-1.35	-0.45	0.85	-1.16	2.08	-3.03	-2.19	-1.57	-0.92	0.05	-1.53
E58N	1.99	-2.61	-2.12	-1.75	-1.21	-0.24	-1.59	2.27	-2.83	-2.26	-1.62	-0.86	0.26	-1.46	1.76	-3.24	-2.72	-1.90	-1.28	-0.35	-1.90
U59	0.78	-4.51	-3.14	-2.08	-0.77	1.17	-1.87	1.32	-3.72	-2.28	-1.40	-0.28	1.58	-1.22	0.95	-4.48	-2.43	-1.46	-0.41	1.09	-1.54
C60N	3.29	-2.56	-2.30	-1.82	-1.07	-0.12	-1.57	1.98	-3.00	-2.19	-1.51	-0.30	1.30	-1.14	3.20	-2.57	-1.95	-1.70	-0.94	-0.11	-1.45
R61	2.28	-3.41	-2.74	-2.16	-1.11	-0.20	-1.92	1.83	-4.09	-2.90	-2.09	-0.73	0.59	-1.84	1.98	-2.97	-2.37	-1.83	-0.95	0.10	-1.60
E62	1.39	-3.19	-2.50	-1.74	-0.89	0.59	-1.55	1.71	-3.19	-2.34	-1.46	-0.23	1.56	-1.13	1.78	-3.09	-2.24	-1.59	-0.77	0.45	-1.45
U63N	1.42	-2.96	-2.23	-1.71	-1.15	-0.17	-1.64	1.75	-3.53	-2.29	-1.47	-0.36	1.11	-1.31	1.90	-2.51	-2.13	-1.58	-0.93	0.11	-1.41
C64N	2.05	-2.65	-1.88	-1.37	-0.89	-0.18	-1.39	1.54	-2.78	-1.60	-0.67	0.07	1.42	-0.71	2.27	-2.42	-1.69	-1.14	-0.72	0.04	-1.19

Note. B-L RI = Barrett-Lennard Relationship Inventory; N = Negatively Worded Items; a = discrimination parameter; b1-5 = difficulty parameters; b(m) = means across b1-5;

Table S2. Differential item functioning (DIF) analysis comparing the English, Chinese and Spanish language versions of the B-L RI: OS-64.

Items	a & $b_{1\text{-}5}$		a		b_1		b_2		b_3		b_4		b_5	
	χ^2	p	χ^2	p	χ^2	p	χ^2	p	χ^2	p	χ^2	p	χ^2	p
R1	91.567	< .001	10.734	.005	**.630**	**.730**	8.369	.015	**.255**	**.880**	11.174	.004	51.377	< .001
E2	**15.934**	**.194**	**2.839**	**.242**	**2.829**	**.243**	**.073**	**.964**	**.697**	**.706**	**5.632**	**.060**	**3.109**	**.211**
U3N	333.891	< .001	188.454	< .001	8.919	.012	12.620	.002	**2.910**	**.233**	14.720	.001	23.742	< .001
C4	45.665	< .001	17.801	< .001	**3.190**	**.203**	**1.201**	**.549**	2.900	.235	**.128**	**.938**	6.563	.038
R5	**8.739**	**.725**	**.890**	**.641**	**2.400**	**.301**	**1.309**	**.520**	**.611**	**.737**	**2.940**	**.230**	**2.875**	**.238**
E6N	71.253	< .001	17.280	< .001	**4.233**	**.120**	**1.210**	**.546**	3.851	.146	12.217	.002	32.245	< .001
U7	129.176	< .001	32.232	< .001	10.113	.006	**5.326**	**.070**	**.446**	**.800**	9.043	.011	55.715	< .001
C8N	103.470	< .001	27.621	< .001	**1.839**	**.399**	11.094	.004	**1.889**	**.389**	**2.578**	**.276**	17.633	< .001
R9N	67.962	< .001	5.617	.060	**1.451**	**.484**	6.797	.033	6.066	.048	**5.051**	**.080**	6.304	.043
E10	**14.185**	**.289**	**2.846**	**.241**	**2.007**	**.367**	**.193**	**.908**	1.317	.518	**.154**	**.926**	**2.880**	**.237**
U11N	376.257	< .001	222.690	< .001	11.432	.003	**.380**	**.827**	4.486	.106	43.866	< .001	9.287	.010
C12	60.433	< .001	8.019	.018	**1.667**	**.434**	3.287	.193	**.892**	**.640**	10.475	.005	12.210	.002
R13	90.292	< .001	30.126	< .001	7.877	.019	**2.455**	**.293**	1.212	.546	8.668	.013	45.221	< .001
E14N	57.801	< .001	12.546	.002	22.111	< .001	**.520**	**.771**	2.897	.235	**5.588**	**.061**	**2.428**	**.297**
U15	85.161	< .001	13.525	.001	13.949	.001	**4.291**	**.117**	**.695**	**.707**	**3.663**	**.160**	39.561	< .001
C16N	84.338	< .001	16.346	< .001	11.856	.003	**.011**	**.995**	10.953	.004	14.573	.001	29.802	< .001
R17N	125.471	< .001	24.890	< .001	7.112	.029	1.276	.006	**1.444**	**.486**	**.323**	**.851**	**2.674**	**.263**
E18	32.494	.001	**1.575**	**.455**	**1.109**	**.574**	3.043	.218	4.163	.125	1.291	.524	**5.137**	**.077**
U19N	38.175	< .001	19.133	< .001	**5.007**	**.082**	3.531	.171	4.724	.094	2.405	.300	13.822	.001
C20	68.473	< .001	**5.156**	**.076**	**.460**	**.795**	6.102	.047	19.487	< .001	9.466	.009	**.704**	**.703**
R21N	54.322	< .001	9.935	.007	**.557**	**.757**	**2.780**	**.249**	**2.209**	**.331**	10.988	.004	**3.579**	**.167**
E22N	110.907	< .001	10.323	.006	**4.082**	**.130**	9.750	.008	25.590	< .001	**1.151**	**.562**	**.035**	**.983**
U23	50.354	< .001	15.012	.001	**.268**	**.875**	**.666**	**.717**	**1.165**	**.559**	10.037	.007	9.502	.009
C24N	270.936	< .001	168.656	< .001	9.103	.011	**4.069**	**.131**	**.812**	**.666**	32.504	< .001	35.503	< .001
R25	43.024	< .001	6.743	.034	**2.637**	**.268**	**.460**	**.794**	**2.932**	**.231**	**4.780**	**.092**	20.227	< .001
E26N	531.358	< .001	369.605	< .001	**5.914**	**.052**	**1.409**	**.494**	**5.740**	**.057**	38.076	< .001	18.317	< .001
U27N	219.247	< .001	140.245	< .001	24.379	< .001	**3.345**	**.188**	9.095	.011	**3.877**	**.144**	9.467	.009

C28	98.418	< .001	18.061	< .001	**5.475**	**.065**	**2.189**	**.335**	**.663**	**.718**	28.252	< .001	**.634**	**.728**
R29N	35.107	< .001	6.850	.033	**.808**	**.668**	**2.674**	**.263**	8.740	.013	**.040**	**.980**	**5.829**	**.054**
E30	27.643	.006	**2.114**	**.347**	**2.599**	**.273**	**3.244**	**.198**	**2.077**	**.354**	4.087	.130	**2.009**	**.366**
U31	661.438	< .001	323.039	< .001	16.784	< .001	10.959	.004	9.282	.010	9.847	.007	6.849	.033
C32N	74.122	< .001	32.794	< .001	6.568	.037	**2.699**	**.259**	**3.256**	**.196**	8.600	.014	29.909	< .001
R33N	57.607	< .001	9.979	.007	**1.611**	**.447**	**3.656**	**.161**	**1.600**	**.449**	**.381**	**.827**	**5.322**	**.070**
E34	85.940	< .001	**1.437**	**.487**	**5.304**	**.071**	**3.322**	**.190**	8.230	.016	**.927**	**.629**	25.262	< .001
U35N	129.052	< .001	60.557	< .001	**2.236**	**.327**	**.831**	**.660**	13.035	.001	**4.818**	**.090**	16.559	< .001
C36	57.170	< .001	**3.201**	**.202**	**4.215**	**.122**	**2.582**	**.275**	**2.705**	**.259**	14.894	.001	**4.051**	**.132**
R37	45.692	< .001	9.072	.011	6.400	.041	**1.275**	**.529**	**.444**	**.801**	**5.690**	**.058**	9.863	.007
E38N	116.511	< .001	29.008	< .001	8.479	.014	**.769**	**.681**	5.895	.052	25.952	< .001	22.875	< .001
U39	154.104	< .001	40.041	< .001	7.950	.019	**1.456**	**.483**	15.148	.001	**1.220**	**.543**	18.767	< .001
C40N	49.158	< .001	10.986	.004	**5.508**	**.064**	**2.730**	**.255**	**3.512**	**.173**	8.275	.016	18.086	< .001
R41	27.760	.006	**3.287**	**.193**	**5.768**	**.056**	**4.494**	**.106**	**4.425**	**.109**	**5.408**	**.067**	8.979	.011
E42	142.920	< .001	36.515	< .001	**.275**	**.871**	**2.863**	**.239**	12.857	.002	11.790	.003	8.938	.011
U43N	692.670	< .001	390.609	< .001	21.478	< .001	15.492	< .001	33.134	< .001	20.986	< .001	17.284	< .001
C44	25.107	.014	**3.297**	**.192**	**3.581**	**.167**	**4.328**	**.115**	6.883	.032	**.102**	**.950**	7.833	.020
R45N	85.995	< .001	16.932	< .001	**4.051**	**.132**	**.121**	**.941**	**.084**	**.959**	**1.401**	**.496**	67.663	< .001
E46N	140.094	< .001	64.466	< .001	8.783	.012	**.546**	**.761**	**.220**	**.896**	18.331	< .001	33.031	< .001
U47	127.307	< .001	10.173	.006	20.810	< .001	**5.306**	**.070**	**.209**	**.901**	**5.429**	**.066**	20.591	< .001
C48	123.284	< .001	34.120	< .001	6.655	.036	**1.198**	**.549**	10.333	.006	**2.727**	**.256**	38.123	< .001
R49N	85.921	< .001	20.725	< .001	**1.335**	**.513**	**2.336**	**.311**	**3.282**	**.194**	**2.364**	**.307**	55.752	< .001
E50N	159.599	< .001	6.804	.033	18.714	< .001	**2.987**	**.225**	43.705	< .001	**2.094**	**.351**	17.035	< .001
U51	55.969	< .001	**2.924**	**.232**	**4.212**	**.122**	**1.734**	**.420**	7.631	.022	**.706**	**.702**	15.433	< .001
C52N	241.147	< .001	39.211	< .001	**4.544**	**.103**	20.559	< .001	11.743	.003	**.541**	**.763**	**1.672**	**.434**
R53N	116.674	< .001	16.071	< .001	**1.712**	**.425**	**5.857**	**.053**	**3.788**	**.150**	**3.082**	**.214**	**3.760**	**.153**
E54	51.688	< .001	20.138	< .001	**1.985**	**.371**	**1.063**	**.588**	**.824**	**.662**	14.248	.001	**1.014**	**.602**
U55N	46.176	< .001	**3.601**	**.165**	**5.302**	**.071**	**2.440**	**.295**	6.824	.033	**1.336**	**.513**	17.768	< .001
C56	105.038	< .001	14.708	.001	6.975	.031	**.487**	**.784**	8.518	.014	6.649	.036	6.351	.042
R57	31.388	.002	**3.546**	**.170**	**.442**	**.802**	**.942**	**.624**	**3.661**	**.160**	**1.337**	**.513**	**1.605**	**.448**

E58N	58.107	< .001	9.896	.007	**.577**	**.750**	**3.698**	**.157**	**2.946**	**.229**	**1.565**	**.457**	**3.688**	**.158**
U59	82.731	< .001	12.985	.002	**5.495**	**.064**	**3.109**	**.211**	**3.849**	**.146**	**3.981**	**.137**	6.674	.036
C60N	57.599	< .001	16.410	< .001	**1.321**	**.517**	**5.279**	**.071**	**1.501**	**.472**	**3.365**	**.186**	38.220	< .001
R61	36.103	< .001	**1.802**	**.406**	**2.166**	**.339**	**.528**	**.768**	**3.795**	**.150**	**3.210**	**.201**	**5.752**	**.056**
E62	48.208	< .001	**3.736**	**.154**	**1.427**	**.490**	**1.704**	**.427**	6.225	.044	**.086**	**.958**	9.874	.007
U63N	88.304	< .001	**.781**	**.677**	11.412	.003	**3.215**	**.200**	**5.445**	**.066**	**.672**	**.715**	25.137	< .001
C64N	45.340	< .001	10.046	.007	**.319**	**.852**	**.539**	**.764**	**.427**	**.808**	**.857**	**.651**	31.690	< .001

Note. B-L RI = Barrett-Lennard Relationship Inventory; N = Negatively Worded Items; a = discrimination parameter; b1-5 = difficulty parameters; $\Delta\chi^2$ = difference in chi-square statistics between constrained model and free model; bold text indicates nominal significance at $p \geq .05$.
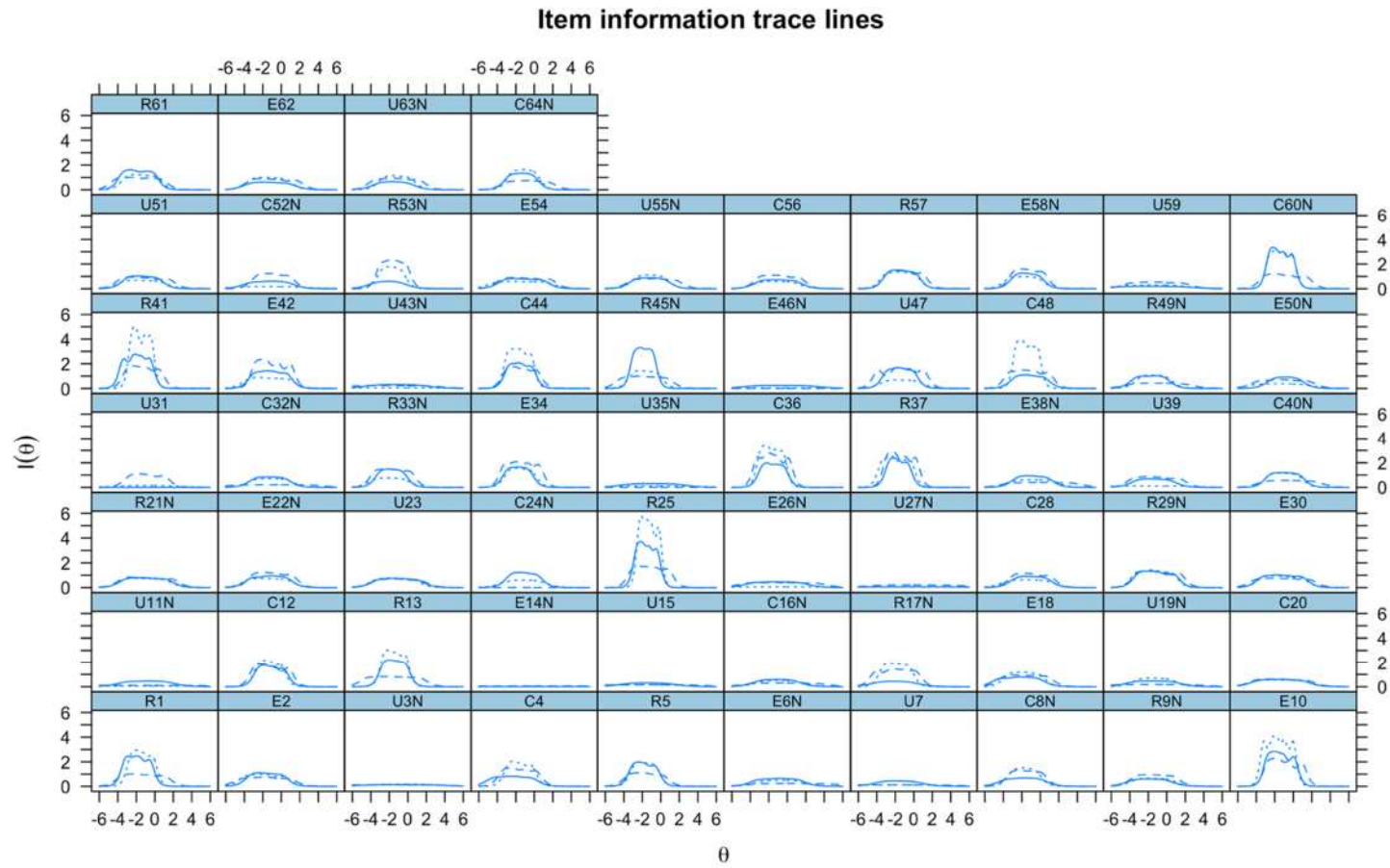
Figure S1. Item information curves (ICC) for the English version (solid lines), Chinese version (dashed lines), and Spanish version (dotted lines) of the B-L RI: OS-64.
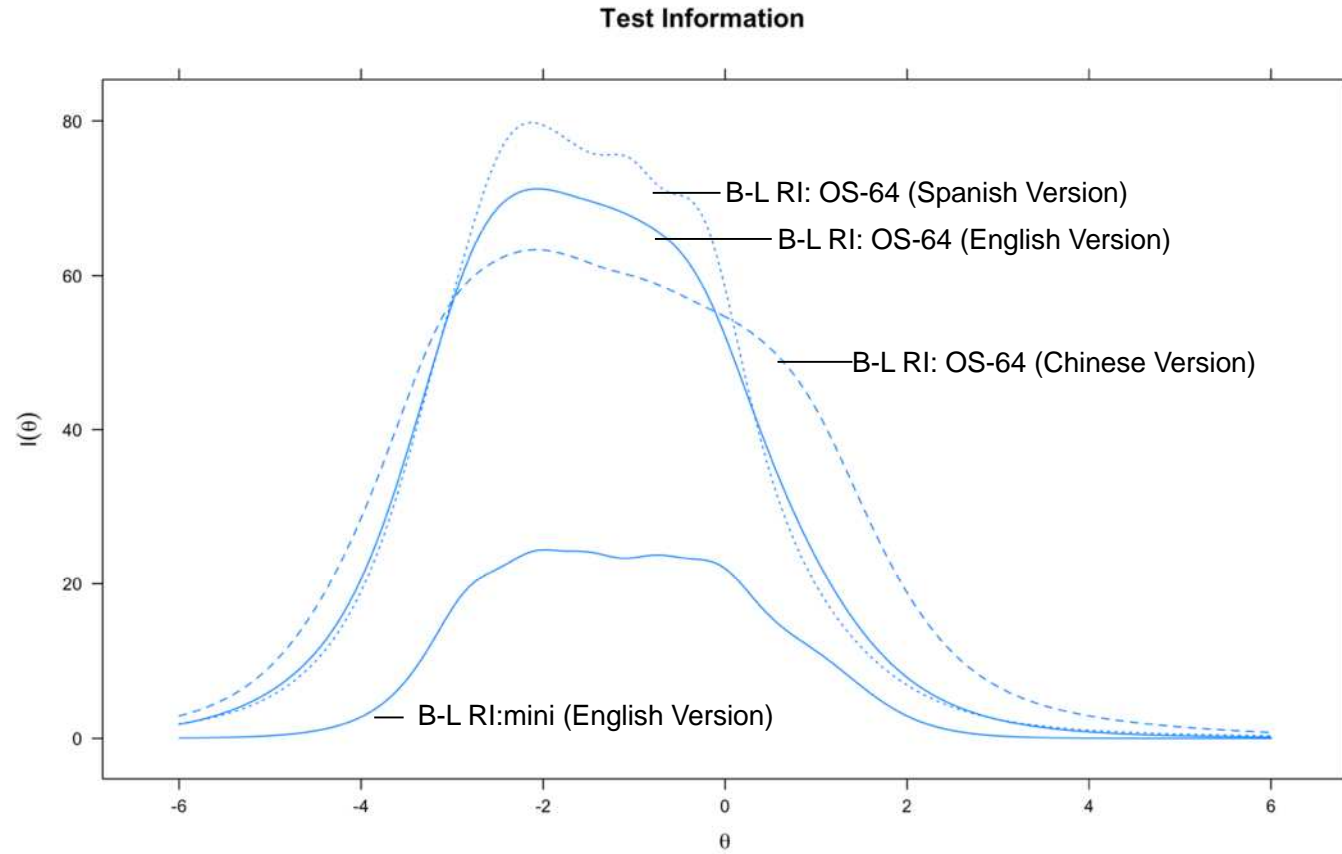
Figure S2. Test Information Curves for the English, Chinese, and Spanish versions of the B-L RI: OS-64 and the English version of the B-L RI:mini.
Note. Solid lines, the English version of the B-L RI; Dashed line, the Chinese version of the B-L RI: OS-64; Dotted line, the Spanish version of the B-L RI: OS-64. B-L RI = Barrett-Lennard Relationship Inventory.

Appendix 4: Published Version of the Publications

Measurement Invariance of the English, Chinese, and Spanish Versions of the Barrett-Lennard Relationship Inventory

Measurement Invariance of the English, Chinese, and Spanish Versions of the Barrett-Lennard Relationship Inventory

Shun Chen, Faith Liao, David Murphy & Stephen Joseph

Routledge
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ASSESSMENT, DEVELOPMENT, AND VALIDATION

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Measurement Invariance of the English, Chinese, and Spanish Versions of the Barrett-Lennard Relationship Inventory

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ABSTRACT

The Barrett-Lennard Relationship Inventory was designed to assess the extent to which a person experiences unconditional positive regard, empathic understanding, and genuineness in a relationship. This study ($N = 1,286$) investigated measurement invariance between English, Chinese, and Spanish language versions of the inventory and partial scalar invariance was established.

Humans are social animals. Interpersonal relationships not only supply materials and protection for survival, but also can foster a facilitative social environment for the development of psychological maturity. In one of the most influential papers in the field of counseling, Carl Rogers (1957) proposed an integrative theoretical view that when six conditions persistently exist in a therapeutic relationship, they are necessary and sufficient to initiate the process of constructive personality change. First, there must be psychological contact between two persons. Second, one of the persons must be in a state of incongruence, which is the initial state before the change. The third, fourth, and fifth conditions are attitudes expressed by another person, which are also known as the core conditions: congruence, unconditional positive regard, and empathic understanding. The sixth condition is a minimal degree of the core conditions that needs to be perceived by the person who was mentioned in the second condition. Rogers was interested in finding the common variables related to successful outcome for all therapies. Although the necessity and sufficiency of these conditions remains a topic for discussion and research, it is widely accepted that these relationship qualities of congruence, unconditional positive regard, and empathic understanding are basic therapeutic ingredients for effectiveness in all therapies (see, Bozarth & Motomasa, 2017). Indeed, Rogers' theory remains the foundation for the person-centered approach to counseling in the humanistic tradition today (Murphy & Joseph, 2016).

Furthermore, the conditions are not thought to be exclusive to the therapeutic relationship. Rogers (1959) also theorized that these conditions can exist and are important in any relationship involving psychological contact. As long as the three core conditions are perceived through another person's behaviors and words, continuously over time, constructive personality development follows. In this way, Rogers' theory can also be applied to parenting, education, management, leadership, and any other context involving human relationships in which the aim is to promote personal development and human flourishing. For research to take place into Rogers' theory of constructive personality development it is necessary to have the appropriate tools with which to measure the extent to which people experience the core conditions of congruence, unconditional positive regard, and empathic understanding. One psychometric tool developed specifically for this purpose is the Barrett-Lennard Relationship Inventory (B-L RI).

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Barrett-Lennard Relationship Inventory (B-L RI: OS-64)

The B-L RI (Barrett-Lennard, 1962) assesses the perception of the core conditions in a relationship. The B-L RI has been revised several times since its first publication; the 64-item and 40-item (shorter) renditions are the most up-to-date versions of the B-L RI (Barrett-Lennard, 2015). Parallel forms of B-L RI were developed for respondents who receive (other to self; OS), provide (me/myself to other; MO) or observe (Obs) the facilitative conditions in a relationship. This study will focus on the 64-item version of the B-L RI for receiver (B-L RI: OS-64). The 64 items of the B-L RI: OS-64 are scored to produce four subscales: level of regard (R), empathic understanding (E), congruence (C), and unconditionality of regard (U). As well as yielding subscale scores, the B-L RI can also be used to produce an overall total score. The construct measured by the total scale has been referred to as "facilitativeness" (Cramer, 2003; Davis et al., 2015), which is used to represent the core conditions as a whole. The four subscales in the 64-item B-L RI have demonstrated high internal consistency and temporal stability reliabilities (Barrett-Lennard, 2015; Doran et al., 2016); the means of internal consistency coefficients across a number of studies were .91 for R, .84 for E, .88 for C, and .74 for U. Mean test-retest reliability coefficients for each subscale were R, .83; E, .83; C, .88; and U, .80; and for the total B-L RI, .90 (Gurman, 1977). Previous studies reported correlations between subscales for the English version of the B-L RI: OS-64 ranged from .31 to .74. The U subscale showed relatively lower correlations with other subscales (Barnicot et al., 2014). Some studies, especially those investigating marital relationships, have excluded U due to its poorer performance compared to the other subscales in terms of score reliability and validity (Sherman & Robert, 2013).

For almost 60 years, the total scale and subscales of the B-L RI have been widely applied in various research fields, such as counseling psychology (Davis et al., 2015; Dolev & Zilcha-Mano, 2019; Murphy & Cramer, 2014), forensic psychology (Hearn et al., 2021), sport psychology (Oh et al., 2012), medicine (Chu & Tseng, 2013; Moghaddasian et al., 2013), education (Bockmier-Sommers et al., 2017; Swan et al., 2020), and business (Janssen, 2012). Previous studies reported that the total scale and subscales of the B-L RI were significantly correlated with a range of psychological and behavioral outcomes, such as positive client outcomes in psychotherapeutic relationships (Bell et al., 2016), greater authenticity as a client outcome in counseling (Bayliss-Conway et al., 2020), prisoners' post-traumatic growth in staff-prisoner relationships (Hearn et al., 2021), women athletes' body appreciation and eating style in coach-athlete relationships (Oh et al., 2012), and students' learning experience in student-teacher relationships (Swan et al., 2020). Studies published between 2012 and 2019 that used the English, Chinese, or Spanish version of the B-L RI: OS-64 were summarized in Table 1.

The B-L RI, as a measurement instrument that assesses the relationship conditions, plays an important and potentially indispensable role in the evaluation of facilitativeness/quality of relationships. For example, the B-L RI can provide psychotherapists and counselors with significant information on the effectiveness of practice by measuring the level of the relationship conditions that are perceived by clients (Murphy & Cramer, 2014). Such information, when available, is valuable to help foster a strong therapeutic relationship and is also a reminder of how well the psychotherapist or counselor experiences the facilitative conditions in the relationship (Wilkins, 2016). Recent studies suggested that both therapeutic relationship and social support have an impact on therapy outcome (Price et al., 2013; Zimmermann et al., 2021). The B-L RI can be used to assess the perceived relationship conditions/facilitativeness in both therapeutic relationships and social support relationships (Barrett-Lennard, 2015). The B-L RI is a useful measurement tool for a comprehensive assessment of quality of clients' social and clinical supports, with a specific focus of the key ingredients for constructive personality development, which can be used to help better predict therapy outcome. Moreover, the B-L RI has been translated into over 20 languages, including Arabic, Chinese, Dutch, French, German, Greek, Hebrew, Italian, Japanese, and Spanish (Barrett-Lennard, 2015; Liao et al., 2018).

Table 1. Summary of Studies Conducted Using the English/Chinese/Spanish Version of the B-L RI: OS-64 (2012–2019).

Study	Discipline	Language	Participants	Summary of Findings
Oh et al. (2012)	Sport Psychology	English	One-hundred and sixty women athletes; Between 18 and 23 years.	Perceived unconditional acceptance was significantly correlated with body function ($r = .31$) and body appreciation ($r = .21$).
Chu & Tseng (2013)	Medicine	Chinese	Fifty-eight men and eighty-six women; Over 18 years.	$\alpha = .67$; Patients' perceived empathy moderated the effect of health-literacy capabilities on understanding of information.
Barnicot et al. (2014)	Clinical Psychology	English	One-hundred and fifty-seven patients.	Intercorrelations between subscales $r = .16$-$.87$. Perceived relationship conditions were significantly correlated with therapy outcome ($r = .24$–$.31$), except for unconditionality of regard.
Elkin et al. (2014)	Clinical Psychology	English	Two-hundred and fifty patients.	$\alpha = .85$; Patients' perceived facilitativeness was significantly correlated with positive therapeutic atmosphere ($r = .28$).
Davis et al. (2015)	Clinical Psychology	English	One-hundred two African American women; Between 23 and 65 years.	$\alpha = .84$; Clients' perceived facilitativeness was significantly correlated with working alliance ($r = .68$). Perceived facilitativeness mediated the effect of population-sensitive therapist characteristics on working alliance.
Gimeno Peón (2015)	Clinical Psychology	Spanish	Eight men and twenty-two women;	The personality trait extraversion was significantly correlated with the level of perceived empathy ($r = .04$).
Fulton (2016)	Clinical Psychology	English	Forty-eight women and seven men; Between 23 and 50 years.	$\alpha = .75$; Counselors' self-report mindfulness was significantly correlated with client's perceived empathy ($r = .35$).
Dufey & Wilson (2017)	Social Psychology	Spanish	Fourteen men and thirteen women; Between 18 and 32 years.	$\alpha = .81, .90$; Perceived empathy has an immediate positive effect on self-explorative attitude.
Hara et al. (2017)	Clinical Psychology	English	Forty women and three men; Mean age of 34.8 years.	$\alpha = .84, .91$; Clients' perceived empathy in early session predicted mid-treatment homework compliance.
McClintock et al. (2017)	Clinical Psychology	English	Sixty-five women and fourteen men; Mean age of 19.3 years.	$\alpha = .73$; Clients' perceived empathy was significantly correlated with outcome expectations after first session ($r = .43$).
Dolev & Zilcha-Mano (2019)	Clinical Psychology	English	Two-hundred and fifty outpatients; Between 21 and 60 years.	$\alpha = .95$; Therapeutic relationship moderated the effect of interpersonal behavior on therapy outcome.
Suzuki et al. (2019)	Clinical Psychology	English	Four-hundred and thirty-nine women, ninety-six men and sixty-two 'other'. Over 18 years.	$\alpha = .94$; Clients' perceived positive regard was significantly correlated with psychotherapists' expressions of positive regard ($r = .12$–$.61$).

Testing Measurement Invariance

Although the B-L RI has been used in a wide range of research fields and translated into a variety of languages for many years (Barrett-Lennard, 2015), to our best knowledge, its measurement invariance has never been evaluated. The establishment of measurement invariance allows valid comparisons across groups (Khojasteh & Lo, 2015). In this study, measurement invariance among English, Chinese, and Spanish versions of the B-L RI: OS-64 was tested. These

three language versions were selected due to availability issues and large native-speaker populations worldwide. An investigation of language equivalency within the B-L RI determines whether the questions are interpreted and responded to in a similar manner across language versions (Dimitrov, 2010).

Prior to testing measurement invariance, a model that is acceptable among all of the groups should be chosen from the previous proposed models of the scale to conduct the analysis (Brown, 2015). The B-L RI was originally designed with four subscales (Barrett-Lennard, 2015). Cramer (1986) found support for the postulated four dimensions of the model using exploratory factor analysis (EFA). However, additional studies that examined the underlying latent construct of the 64-item B-L RI, have suggested one- and three-factor solutions for the scale (Lanning & Lemons, 1974; Mills & Zytowski, 1967; Walder & Little, 1969). A confirmatory factor analysis (CFA) confirmed the four-factor structure of the Chinese version of the 64-item B-L RI (Liao et al., 2018). However, to our best knowledge, the structure of the original English and other language versions (except for the Chinese version) of the scale have never been confirmed via CFA: neither the four-factor solution nor the alternative ones. The goal of CFA is to evaluate models identified by EFA, which would provide comparative information between competing factor models (Brown, 2015).

A multidimensional model of the B-L RI was originally assumed. The total and subscale scores have been used to represent facilitativeness/relationship quality and the core conditions, respectively (e.g., total score: Bell et al., 2016; Dolev & Zilcha-Mano, 2019; subscale score: Moghaddasian et al., 2013; Suzuki et al., 2019). An evaluation of the dimensionality of the scale is necessary to avoid conceptual ambiguity that may cause misinterpretation of the association with outcome variables. When subscale scores are used to predict outcome variables, the unique aspect of the facet is assumed to be the source of contribution, and the general effect shared by all interrelated facets is overlooked. It is meaningless to use a subscale score when it mainly reflects the general construct. Scores from the subscales of the B-L RI were reliable in terms of internal consistency and temporal stability, but they may be derived from the reliability of the general factor. In using a total score approach, the specific effects of individual facets on an outcome variable cannot be distinguished from the effects of the shared general construct, and they may cancel each other out when a total score is used (Chen & Zhang, 2018). The bifactor model offers important information in terms of dimensionality assessment by allowing each indicator to load onto both general (facilitativeness) and specific factors (R, E, C, U). The factor loadings on the general factor and the specific factors can be inspected simultaneously within the same model. The precision of total scale and subscale scores can be tested by partitioning out the variance attributable to each other's latent construct. Based on the three proposed models, including the one-, three-, and four-factor models, two bifactor models with three (R, E&C, U) and four (R, E, C, U) specific factors were tested.

Aim of the Current Study

The aim of this study was to examine the measurement invariance of the optimal model for the B-L RI: OS-64 across English, Chinese, and Spanish language versions. The optimal model was selected based on results from factor and dimensionality analyses. The person-centered approach has been considered as the synthesis influenced by Eastern and Western philosophies (Jooste et al., 2015). However, to consider the number of items of the B-L RI: OS-64, we hypothesized that only partial invariance exists across the three language versions. The literature now supports the positive contribution that relationship variables such as empathy, unconditional positive regard and congruence make for positive outcomes. Having a measurement instrument that measures these constructs within a single instrument is important for both researchers and practitioners. Much of the research to date has been concerned with English language samples; however, as Spanish and Chinese are also very widely spoken languages it is also important for measurement instruments to be able to be used meaningfully across these language-culture

differences. As the measurement invariance can be established across language-cultures the tool will be highly utilized.

This is the first study to evaluate language equivalency of the B-L RI, which would allow both academics and practitioners to recognize that the core conditions may be perceived and understood differently by individuals who speak different language or from different cultures. Therefore, findings from this study would help counselors, educators, and service providers to interpret the B-L RI appropriately, raise cultural awareness and deliver the core conditions effectively in cross-cultural settings. The establishment of scalar invariance is required for meaningful comparisons among the means of the latent variables. Testing language equivalency would be necessary for future studies that use multiple language versions of the B-L RI. The results from this study could also provide information for researchers working on revision of the B-L RI: OS-64.

Method

Participants and Procedures

Six-hundred and fifty-eight native speakers of Chinese, 330 native speakers of Spanish, and 298 native speakers of English participated in this study (see Table 2). The Chinese-speaking sample was all taken from Liao et al. (2018). In their study, stratified random sampling (Wolf et al., 2016) by age was utilized to recruit participants in six age strata (18–25, 26–35, 36–45, 46–55, 56–65, >65 years) and data were collected via online survey. In this study, the Spanish-speaking sample and the English-speaking sample were recruited using social media websites. For the Spanish-speaking and the English-speaking samples, data were collected using Jisc Online Surveys (www.jisc.ac.uk) during June and July 2020. Prior to completing the B-L R I, participants were asked to think about their relationship with a friend and to respond to each of the items with that friend in mind.

The Chinese-speaking sample included 495 (75.2%) females, 162 (24.6%) males and one other. Of the participants, 32.1% were between the age of 18 and 25 years, 33.6% of the participants ranged from age 26 to 35, 16.7% of the participants ranged from age 36 to 45, 12.3% of the participants ranged from age 46 to 55, 5% of the participants ranged from age 56 to 65 and 0.3% of the participants were over 65 years old. Regarding occupation, 28% were students, 21.4% were professional occupations, 11.6% were sales and customer service workers, and 10.2% were administrative and secretarial occupations. Of the participants, 1.7% had friendships lasting less than 6 months, 6.2% of the participants had friendships lasting from 6 to 12 months, 12.5% of the participants had friendships lasting from 1 to 3 years, 16% of the participants had friendships lasting from 3 to 5 years, and 63.7% of the participants had friendships lasting more than 5 years.

The English-speaking sample was predominantly female, consisted of 261 (87.6%) females, 36 (12.1%) males, and one transgender person. Participants ranged in age from 18 to 79 years old. The mean age was 38 years old ($SD = 12.9$); 47.0% of the participants were aged from 18 to 35, 43.3% of the participants aged from 36 to 55, and 9.7% of the participants were over 56 years old. In terms of occupation, 26.8% of participants were professionals, 14.8% were students, 10.4% were educators, 7% were researchers, and 41% did not indicate their occupation. Participants were in-relationship with their friends for an average of 15.4 years ($SD = 12.7$), with the shortest length of friendship being 0.5 and the longest 62.9 years.

The Spanish-speaking sample included 284 (86.1%) females and 46 (13.9%) males. The participants were aged 18 to 74 years old, and their mean age was 35 years old ($SD = 10.5$). Of the participants, 61.1% were aged from 18 to 35 years old, 32.2% of the participants were aged from 36 to 55 years old, and 6.7% were 56 years of age and over. Participants' friendships had lasted on average for 14.6 years ($SD = 9.2$). The shortest length of friendship was 2.2 years; the longest, 30.5 years. Regarding occupation, 37.0% were researchers, 11.5% were professionals, 10.6% were teachers, 4.3% were students, and 36.6% did not indicate their occupation.

Table 2. Demographic Characteristics.

Demographic Variables	English (n = 298)	Chinese (n = 658)	Spanish (n = 330)	Total (N = 1286)
	n (%)	n (%)	n (%)	n (%)
Gender				
Male	36 (12.08)	162 (24.62)	46 (13.94)	244 (18.97)
Female	261 (87.58)	495 (75.23)	284 (86.06)	1040 (80.87)
Transgender	1 (0.34)	0 (0)	0 (0)	1 (0.07)
Other	0 (0)	1 (0.15)	0 (0)	1 (0.07)
Age (years)				
18–25	58 (19.46)	211 (32.07)	52 (15.76)	321 (24.96)
26–35	82 (27.52)	221 (33.59)	149 (45.15)	452 (35.15)
36–45	67 (22.48)	110 (16.72)	78 (23.64)	255 (19.83)
46–55	62 (20.81)	81 (12.31)	29 (8.79)	172 (13.37)
56–65	24 (8.05)	33 (5.01)	19 (5.76)	76 (5.91)
>65	5 (1.68)	2 (0.30)	3 (0.90)	10 (0.78)
Duration of friendship (years)				
<0.5	0 (0)	11 (1.67)	0 (0)	11 (0.86)
0.5–1	7 (2.35)	41 (6.23)	0 (0)	48 (3.73)
1–3	19 (6.38)	82 (12.46)	16 (4.85)	117 (9.10)
3–5	35 (11.74)	105 (15.96)	25 (7.58)	165 (12.83)
>5	237 (79.53)	419 (63.7)	289 (87.58)	945 (73.48)

Measures

The B-L RI: OS-64 (Barrett-Lennard, 2015) was developed to assess the necessary and sufficient conditions for constructive personality change deemed important in Rogers' theory (1957). The B-L RI: OS-64 includes four 16-item subscales: (1) level of regard; (2) empathy; (3) congruence; and (4) unconditionality. Items on each subscale are written in a way that the participant is asked to reflect on their experience of being in a relationship with a particular person, and to think of that person when answering each item (e.g., "___ respects me as a person," "___ wants to understand how I see things," "___ is comfortable and at ease in our relationship," and "___'s interest in me depends on the things I say or do": these are example items from the level of regard, empathy, congruence, and unconditionality subscales, respectively).

Each item is answered on a six-point Likert-type scale (–3 = NO, I strongly feel that it is not true; –2 = No, I feel it is not true; –1 = (No) I feel that it is probably untrue, or more untrue than true; +1= (Yes) I feel that it is probably true, or more true than untrue; +2 = Yes, I feel it is true; +3 = YES, I strongly feel that it is true). Half of the items in each of the subscales are negatively worded. The necessity of negatively worded items has been vigorously challenged in recent years. Some researchers found that the negatively worded items not only did not prevent acquiescent bias and extreme response as expected, but also caused confusion and inattention (Chyung et al., 2018; van Sonderen et al., 2013). After reverse scoring negatively worded items, the final score for each subscale is calculated by summing item scores. The higher scores suggest higher levels of perceived regard, empathy, unconditionality, and congruence in a relationship.

In this study, three language versions of the B-L RI: OS-64 were used, namely English, Chinese, and Spanish. Both the Chinese and Spanish versions of the B-L RI: OS-64 were translated from the original English version with back-translation procedures (Barrett-Lennard, 2015; Celis, 1999; Liao et al., 2018). In the current studies, the alpha coefficients for scores from the subscales in the three versions of the B-L RI: OS-64 ranged between .70 and .94, and between .95 and .96 for scores from the total scales (see Table 3).

Statistical Analysis

Descriptive Analysis

Descriptive data for each language version of the B-L RI: OS-64 are shown in Tables 3 and 4. SPSS version 26.0 was used for reliability and correlation analyses.

Confirmatory Factor Analysis

Prior to testing for measurement invariance of the B-L RI: OS-64 scores, single-group confirmatory factor analyses (CFA) were conducted to determine the optimal model by comparing model fit among three potential models: (1) a unidimensional model with the 64 items loading on a single latent variable, facilitativeness; (2) a correlated four-factor model, in which the four latent variables are represented by R, E, C, and U; (3) a correlated three-factor model include R, U and a composite of E and C as three separate factors.

All confirmatory factor analyses were conducted in Rstudio (version 1.3.1056), using the semTools (Jorgensen et al., 2020) and latent variable analysis (lavaan; Rosseel, 2012) package. All models were estimated with the unweighted least squares mean and variance adjusted estimation (ULSMV) due to the small sample sizes and the ordered categorical nature of the Likert-type scoring methods (Muthén & Muthén, 2017).

For assessing goodness of model fit, the following indices were utilized (Brown, 2015): the comparative fit index (CFI), Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). For CFI and TLI, the suggested cutoff for a good fit is >.95 and for acceptable fit is between .90 and .95. For RMSEA and SRMR, values close to or below .06 are considered indicators of a good fit, values close to .07 and below .08 suggest a moderate fit, values close to .08 and less than .10 are considered as a marginal fit, and values greater than .10 suggest poor fit. The upper bound of the 90% RMSEA confidence intervals should not exceed the cutoff value indicating poor fit (.10; Kline, 2015). These fit indices are also applicable for ordered categorical data, but the traditional cutoff criteria were proposed based on maximum likelihood estimation. However, up to now, to our best knowledge, the cutoff values in the context of ULSMV has not been proposed. The cutoff values mentioned above can be taken into account in the model selection by using ULSMV, but the reasons why the models were adopted or not adopted should be explained (Xia & Yang, 2019).

Bifactor Model Evaluation

In the bifactor model, all items load on a single common latent variable and there are specific factors, each of which accounts for unique variance in its own separate set of domain-related items. Bifactor analysis provided information on the utility of forming subscales because it allows for the calculation of different indexes that represent the degree to which the percent of variance in total or subscale scores is attributable to the general factor only (Neff et al., 2017). Two bifactor models were examined: bifactor models (1) with three specific factors; and (2) with four specific factors.

Using the Bifactor Indices Calculator (Dueber, 2017), the following statistical indices were calculated. The omega index (ω) is a factor-analytic "model-based" estimate of the proportion of total score variance that can be attributed to all sources of common variance. By the same logic, omega subscale (ω_s) is an estimate of the proportion of each subscale score's total variance attributable to the blend of general and group factor variance. Omega hierarchical (ω_h) is an index used to estimate the percentage of variance in the total scores that can be attributed to the general factor after partitioning out variance explained by the specific factors. Omega hierarchical subscale (ω_{hs}) is an index reflecting the reliability of a subscale score after partitioning out variability attributed to the general factor (Watkins, 2017).

The construct replicability (H; Rodriguez et al., 2016a) informs the degree to which a set of indicators represent a latent factor and a cutoff value of greater than .70. Factor determinacy (FD; Rodriguez et al., 2016a) indicates validity of factor scores for independent use. The values of FD exceeding .90 demonstrate trustworthy factor score estimates (Gorsuch, 2013). Explained common variance (ECV) is the ratio of the variance attributable to the general factor divided by the variance attributable to both the general and the subgroup factors. Percent of uncontaminated correlations (PUC) is computed by dividing the number of correlations between items from different group factors by the total number of correlations (Rodriguez et al., 2016a).

Table 3. Means, Standard Deviations and Scale Reliabilities Between Subscales of the B-L RI: OS-64.

Subscale	English ($n = 298$)			Chinese ($n = 658$)			Spanish ($n = 330$)		
	M	SD	α	M	SD	α	M	SD	α
Level of regard	37.15	13.92	.93	28.68	14.41	.94	35.72	14.41	.94
Empathic understanding	21.54	15.96	.89	13.69	12.50	.84	19.81	13.97	.85
Unconditionality	19.87	14.23	.79	9.53	10.95	.75	11.92	11.20	.70
Congruence	28.27	16.94	.92	20.50	14.61	.89	28.47	16.03	.91
Facilitativeness	106.84	54.73	.96	72.39	46.53	.96	95.92	49.05	.95

Rodriguez et al. (2016b) recommended the criteria for the essential unidimensionality: both ECVs and PUCs are greater than .70.

Measurement Invariance

Multigroup confirmatory factor analyses (MG-CFA) for the optimal model were used to study measurement invariance among the three language versions of the B-L RI: OS-64. All of the three samples reached the desired sample size of 200 participants per group (Dimitrov, 2010), thus the statistical power to evaluate measurement invariance should be sufficient. MG-CFAs were assessed using the lavaan package (Rosseel, 2012) in Rstudio version 1.3.1056. Specifically, following the procedure outlined by Svetina et al. (2020). Variables were declared as ordinal using the function "ordered."

By restricting the baseline model increasingly, three measurement invariance models were tested one-by-one. To establish configural invariance, only the equivalent factorial structure was specified for each group. To test threshold invariance, thresholds were constrained to be equal across groups. In the scalar invariance model, both factor loadings and item thresholds were constrained to equality across groups. If full measurement invariance did not hold, partial invariance was tested. In this study, the English group was selected as the reference group because the Chinese and Spanish versions of the B-L RI: OS-64 were translated from the original English version. Two statistics were used to evaluate invariance at different levels of constraints, change in CFI (ΔCFI) and change in RMSEA (ΔRMSEA). These two statistics are more sensitive to a lack of invariance and less insensitive to sample size and model complexity as compared to chi-square (Rutkowski & Svetina, 2017). They are also equally sensitive to different types of invariance tests. SRMR was found more sensitive to noninvariance in the metric invariance test than in other tests, so it was not used (Chen, 2007). Previous studies have recommended that ΔCFI $\leq -.010$ and ΔRMSEA $\geq$ .015 can be taken as indication of measurement noninvariance (Chen, 2007; Dimitrov, 2010).

Results

Factor Scale Intercorrelations

Table 4 shows the results of the correlational analysis using Pearson correlation coefficients between subscales and the total scale of the B-L RI: OS-64. For the three language versions of the scale, the total score strongly correlated with the scores on the subscales, with r ranging from .748 to .938. Subscale scores were moderately to highly correlated with each other, with r between .547 and .838. Consistent with previous studies, U showed relatively lower associations with other subscales ranging from .547 to .695. All the above correlations were statistically significant at the $p < 0.01$ level.

Confirmatory Factor Analysis

Table 5 shows the CFA results comparing model fit between five competing models of the B-L RI: OS-64. The three- and four-factor models showed good fit indices of CFI and TLI with the values close to .95, but the values of RMSEA and SRMR indicated a marginal/poor fit. The fit

indices of the unidimensional models indicated an acceptable fit with CFI and TLI values ranging from .969 to .985, RMSEA and SRMR values ranging from .054 to .081. Both of the bifactor models exhibited good fits for all three samples: CFI and TLI values were greater than .95, the RMSEA values were below .07, and the SRMR values were below .08. The bifactor model with four specific factors as the best fitting model showed a slightly better fit than the bifactor model with three specific factors, which support our hypothesis.

Bifactor Model Evaluation

Table 6 displays a series of reliability statistics for bifactor model scores in the three samples. The omega index (ω) ranged from .975 to .982, indicating that about 98% of total score variance could be attributed to both the general factor (relationship quality) and the specific factors (four facilitative conditions). The proportion of variance in each subscale's score explained by both the general and the specific factors were high, with ω_s ranging from .704 to .968. After partitioning out variance explained by the specific factors, the percentage of variance in the total scores that can be attributed to the general factor was still high (ω_h ranging from .946 to .978). On the contrary, only a small proportion of the item's unique variance was due to the specific factors (ω_{hs} ranging from .000 to .304). Within the bifactor models, ECVs ranged between .834 and .866 and PUCs were .762 and .635, which suggested a unidimensional rather than a multidimensional conceptualization for the B-L RI: OS-64. The general factor showed high construct replicability with H ranging from .982 to .986, which suggested that the general factor was a well-defined latent variable.

The FD values for the general factor ranged from .989 to .994, which were greater than the cutoff of .90. However, the values of H and FD for the specific factors failed to meet their criteria, which suggested that the specific factors are invalid and unreliable. The specific factors for both bifactor models cannot be treated as meaningful subconstructs, so the bifactor model appeared not to be applicable. Therefore, the unidimensional solution was adopted as the optimal model for evaluating measurement invariance of the B-L RI: OS-64, since it was theoretically tenable and fit the data well.

Measurement Invariance

Table 7 displays the model fit indices from the test of measurement invariance between English, Chinese, and Spanish language versions of the B-L RI: OS-64. The results for the configural model indicated a good fit, with RMSEA < .06, and CFI and TLI > .95. This implies the unidimensional model is acceptable across language versions. Imposing equality constraints on thresholds led to a minor decrease in fit. Changes in CFI and RMSEA were only −.001, which were not enough to indicate a lack of invariance across groups. Then, scalar measurement invariance was tested, which indicated a poor fit to the data across groups. Modification indices showed that factor loadings of several items were noninvariant across the samples. Successively, the equality constraints of loadings of item U3 U11 U43 U27 E26 C24 E46 and U31 were freed until partial invariance was reached. The assumption of partial invariance was supported. The CFI and TLI indicated a good fit and the RMSEA showed a moderate fit. ΔCFI (−.008) was slightly above −.010 and ΔRMSEA (.011) was below .015.

Discussion

To the best of our knowledge, this is the first study to investigate the measurement invariance of the B-L RI. We tested the measurement invariance of the English, Chinese, and Spanish language versions of B-L RI: OS-64. The optimal model to test measurement invariance was chosen via CFA and bifactor model evaluation. Five models were estimated and compared using

Table 4. Intercorrelations Among Factors for the English, Chinese and Spanish Versions of the B-L RI: OS-64.

Factor	English (n = 298)					Chinese (n = 658)					Spanish (n = 330)				
	R	E	U	C	F	R	E	U	C	F	R	E	U	C	F
Level of Regard (R)		.793	.688	.783	.907		.779	.591	.786	.905		.768	.547	.838	.911
Empathy (E)			.695	.792	.919			.614	.787	.902			.554	.790	.895
Unconditionality (U)				.664	.843				.668	.793				.615	.748
Congruence (C)					.912					.926					.938
Facilitativeness (F)															

Note. All correlations were significant at *p* < .001.

Table 5. Goodness of Fit Indices for Competing Models of the B-L RI: OS-64 Across Three Samples.

Model	χ^2(df)	CFI	TLI	RMSEA [90% CI]	SRMR	Model Comparison	$\Delta\chi^2$(Δdf)	ΔCFI
English version ($n = 298$)								
(E1) Unidimensional	3652.01 (1953)	.985	.985	.054 [.051 .057]	.077	–	–	–
(E2) Four-factor	5583.42 (1950)	.968	.967	.079 [.077 .082]	.095	E1-E2	1033.40 (3)	-.017
(E3) Three-factor	4506.23 (1952)	.972	.971	.074 [.072 .076]	.091	E1-E3	836.90 (1)	-.013
(E4) Bifactor (four specific factors)	3078.08 (1893)	.990	.989	.046 [.043 .049]	.071	E1-E4	710.63* (70)	.005
(E5) Bifactor (three specific factors)	3435.40 (1892)	.990	.989	.046 [.043 .049]	.070	E1-E5	657.71* (67)	.005
Chinese version ($n = 658$)								
(C1) Unidimensional	8571.55 (1953)	.970	.969	.072 [.070 .073]	.079	–	–	–
(C2) Four-factor	14421.15 (1950)	.944	.942	.099 [.097 .100]	.103	C1-C2	4374.30 (3)	-.026
(C3) Three-factor	13156.55 (1952)	.948	.946	.095 [.093 .096]	.099	C1-C3	3693.90 (1)	-.022
(C4) Bifactor (four specific factors)	7202.86 (1893)	.976	.975	.065 [.064 .067]	.073	C1-C4	1954.00* (70)	.006
(C5) Bifactor (three specific factors)	8648.47 (1892)	.976	.974	.066 [.064 .067]	.073	C1-C5	1866.00* (67)	.006
Spanish version ($n = 330$)								
(S1) Unidimensional	4484.34 (1953)	.979	.979	.063 [.060 .065]	.081	–	–	–
(S2) Four-factor	7539.29 (1950)	.955	.953	.093 [.091 .096]	.105	S1-S2	1983.10 (3)	-.024
(S3) Three-factor	5698.22 (1952)	.962	.960	.086 [.083 .088]	.099	S1-S3	1658.00 (1)	-.017
(S4) Bifactor (four specific factors)	3398.00 (1893)	.983	.982	.058 [.056 .061]	.076	S1-S4	746.29* (70)	.004
(S5) Bifactor (three specific factors)	4161.76 (1892)	.984	.983	.057 [.054 .059]	.076	S1-S5	714.68* (67)	.005

Note. χ^2 = chi-square; df = degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual. *$p < .001$.

Table 6. Bifactor Evaluation Indices for Bifactor Models With Three and Four Specific Factors.

Bifactor model with four specific factors

Statistics	English Version					Chinese Version					Spanish Version				
	R	E	U	C	F	R	E	U	C	F	R	E	U	C	F
ω/ω_s	.963	.928	.871	.950	.982	.954	.900	.822	.933	.975	.969	.908	.705	.952	.979
ω_h/ω_{hs}	.018	.022	.148	.152	.959	.066	.120	.301	.012	.946	.002	.100	.004	.000	.972
H	.492	.595	.654	.691	.984	.613	.640	.595	.553	.982	.459	.608	.643	.506	.986
FD	.845	.870	.848	.904	.991	.874	.872	.817	.834	.989	.853	.869	.836	.840	.993
ECV	–	–	–	–	.836	–	–	–	–	.834	–	–	–	–	.842
PUC	–	–	–	–	.762	–	–	–	–	.762	–	–	–	–	.762

Bifactor model with three specific factors

Statistics	English Version				Chinese Version				Spanish Version			
	R	E&C	U	F	R	E&C	U	F	R	E&C	U	F
ω/ω_s	.962	.966	.871	.981	.955	.956	.822	.975	.968	.964	.704	.978
ω_h/ω_{hs}	.033	.020	.157	.965	.074	.027	.304	.945	.003	.001	.005	.978
H	.513	.696	.655	.984	.625	.688	.598	.982	.460	.687	.643	.986
FD	.841	.901	.849	.991	.878	.887	.820	.990	.850	.895	.836	.994
ECV	–	–	–	.862	–	–	–	.849	–	–	–	.866
PUC	–	–	–	.635	–	–	–	.635	–	–	–	.635

Note. R = level of regard; E = empathy; U = unconditionality; C = congruence; F = facilitativeness (general factor); ω = omega; ω_s = omega subscale; ω_h = omega hierarchical; ω_{hs} = omega hierarchical subscale; FD = factor determinacy; ECV = Explained common variance; PUC = Percent of uncontaminated correlations.

Table 7. Fit Statistics for Measurement Invariance Across Language Versions of the B-L RI: OS-64.

Model	χ^2	df	CFI	TLI	RMSEA	Model Comparison	$\Delta\chi^2$	Δdf	ΔCFI	ΔRMSEA
English (n = 298) vs. Chinese (n = 658) vs. Spanish (n = 330)										
M0: Configural: baseline	14,494.61	5856	.981	.981	.059	—	—	—	—	—
M1: Equal thresholds	15,351.09	6240	.980	.981	.058	M1-M0	401.82	384	-.001	.001
M2: Scalar: equal thresholds and loadings	38,320.25	6366	.931	.934	.108	M2-M1	1131.10*	126	-.049	.050
M2P1: Free U3	35,031.85	6364	.938	.941	.103	M2P1-M1	996.87*	124	-.042	.045
M2P2: Free U3 U11	31,637.56	6362	.945	.948	.096	M2P2-M1	858.36*	122	-.035	.038
M2P3: Free U3 U11 U43	29,199.15	6360	.950	.953	.092	M2P3-M1	746.31*	120	-.030	.034
M2P4: Free U3 U11 U43 U27	27,466.11	6358	.954	.956	.088	M2P4-M1	678.52*	118	-.026	.030
M2P5: Free U3 U11 U43 U27 E26	22,872.62	6356	.964	.966	.078	M2P5-M1	447.64*	116	-.016	.020
M2P6: Free U3 U11 U43 U27 E26 C24	21,316.98	6354	.968	.969	.074	M2P6-M1	368.04*	114	-.012	.016
M2P7: Free U3 U11 U43 U27 E26 C24 E46	20,476.30	6352	.969	.971	.072	M2P7-M1	328.53*	112	-.011	.014
M2P8: Free U3 U11 U43 U27 E26 C24 E46 U31	19,219.73	6350	.972	.973	.069	M2P8-M1	262.75*	110	-.008	.011

Note. χ^2 = chi-square; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; U = unconditionality; E = empathy; C = congruence. *p < .001.

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CFA. Two bifactor models showed to be the best fitting, which may be affected by the tendency of complex models to overfit data (Reise et al., 2016). And the unidimensional model indicated an acceptable fit. As the bifactor model evaluation suggested that the specific factors of B-L RI: OS-64 reflect only theoretical perspectives rather than distinct constructs, the unidimensional model of the B-L RI: OS-64 was chosen as the optimal model to test the measurement invariance. The B-L RI: OS-64 was partially invariant for scalar invariance across three language versions. It is noteworthy that only 8 out of 64 items were found to be noninvariant, and the rest was invariant across three language versions. More than half of these noninvariant items were from the U subscale, and 4 were negatively worded statements (e,g., "___'s interest in me depends on the things I say or do"; "___ approves of me in some ways or sometimes, and plainly disapproves of me in other ways/other times"; Barrett-Lennard, 2015, p. 101). Participants were native speakers of the three languages; cultural differences may result in different interpretations of conditionality of regard. To the contrary, all items describing level of regard were invariant across the three language versions of the B-L RI: OS-64. It seems the experience of love, affection and respect is a common language across cultures.

As far as we know, this is the first study to investigate the factor structure of the English and Spanish language versions of the B-L RI using CFA techniques, and it is also the first study to compare competing models of the factor structure of the B-L RI. The current evidence does not support the use of subscale scores in a non-clinical setting across English, Chinese, and Spanish language versions of the B-L RI: OS-64. The use of the total score may be more suitable to assess facilitativeness in a relationship, which is consistent with Ponterotto and Furlong's view (1985). Both the 64-item and 40-item B-L RI are considered redundant to measure a single construct; as such, our findings are consistent with previous suggestions that a shorter version of the B-L RI should be developed (Cramer, 1986; Lanning & Lemons, 1974). As partial measurement invariance was established across language versions of the B-L RI: OS-64, the noninvariant items are suggested to be eliminated while shortening the scale in order to ensure the invariance of the new scale.

Future studies could investigate measurement invariance of the B-L RI across different settings. As the application of the B-L RI is common across different types of relationships, it is worthwhile to explore if an individual interprets and experiences the facilitativeness in a same manner in different relationships.

Implications for Practice and Research

First, a clear unidimensional structure for the English, Chinese, and Spanish versions of the B-L RI: OS-64 was confirmed by CFA and bifactor model evaluation. It is recommended that only using the total score of the English, Chinese, and Spanish versions of the B-L RI: OS-64 (facilitativeness) in practice and research. Second, measurement invariance was not fully established for the English, Chinese, and Spanish versions of the B-LRI: OS-64, data collected from these language versions of the inventory are not comparable to each other. Third, conditionality of regard may have different meanings in different languages and cultures. Practitioners are encouraged to be aware of the cultural differences in perception of the core conditions. It will be important for future studies to understand why the core conditions are perceived differently in different languages.

Limitations

The findings in this study are subject to at least two limitations. First, the three samples are predominantly female and aged 18 to 55 years. The participants were recruited via social media and the data were collected only through online survey. The participant recruitment and data collection methods may limit the generalizability of the results and potentially lead to sampling bias. Second, the primary focus of the study was to investigate the language equivalency of the B-L RI: OS-64. The factor structure and dimensionality of the inventory were examined to ensure the best model to represent the data across the three language groups. A future study with more

focus on the longitudinal construct validity and the external validity of the B-L RI is therefore suggested. Third, we assumed that noninvariance may be caused by cultural difference, which could be investigated by including scales that measure individualism/collectivism and independent/ interdependent self-construal. Fourth, we only used MG-CFA to assess measurement invariance, this method may be less powerful in detecting differential item functioning (DIF) of individual items. DIF in an item response theory context should be examined in future studies.

Conclusion

The Barrett-Lennard relationship inventory (B-L RI) is one of the most widely used measurement tools for the assessment of the perception of human relationships. The B-L RI: OS was designed to assess a person's experiences with the facilitative conditions that are implicit in another person's words and behaviors. Through MG-CFA, the current study tested measurement invariance between English, Chinese, and Spanish language versions of the B-L RI. The results of bifactor analysis refuted the purported multidimensionality of the inventory; instead, a single factor model was supported. Findings indicated that the factor structure and the thresholds were fully invariant across the three language versions, and partial scalar invariance was met.

Disclosure Statement

The authors have no known conflict of interest to disclose.

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
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
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Development and validation of a 12-item version of the Barrett-Lennard Relationship Inventory (B-L RI:mini) using item response theory

Development and validation of a 12-item version of the Barrett-Lennard Relationship Inventory (B-L RI:mini) using item response theory

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Abstract

The Barrett-Lennard Relationship Inventory (B-L RI; Barrett-Lennard, (2015). The Relationship Inventory A Complete Resource and Guide. http://nbn-resolving.de/urn:nbn:de:101:1-201602103917) is the most widely used measure of the facilitative conditions described by Carl Rogers as important for constructive personality development in his person-centered theory. At with 64 items it is however time consuming for participants to complete, and even in its shorter form, the B-L RI is 40-items long. In order to improve its utility, a mini form of the B-L RI was developed. In study 1, we used item response theory to select 12 out of the full 64 items to form the B-L RI:mini based on their discrimination, difficulty, information, and measurement invariance across the English ($n=298$), Chinese ($n=658$), and Spanish ($n=330$) language versions of the inventory. In study 2 ($N=362$), we validated the reliability and validity of the new 12-item measure. It was found that the B-L RI:mini showed excellent total internal consistency, temporal stability, and construct validity. According to the results of the study, the B-L RI:mini maintains optimal psychometric properties with a small number of items. This scale is recommended for use in further studies.

Keywords Barrett-Lennard Relationship Inventory · Short form · Item response theory · Person-centered theory · Bifactor model

Introduction

Genuineness (congruence), empathic understanding, and unconditional positive regard are well-known as Carl Rogers' facilitative relationship conditions/core conditions. Rogers (1957) theorized that constructive personality development happens when a minimal degree of the facilitative conditions are perceived through psychological contact with another person. The facilitative conditions are widely accepted as common factors that make psychotherapy effective (Bozarth & Motomasa, 2017; McAleavey & Castonguay, 2015). Their positive effects in enhancing personal development and human flourishing are equally applicable in any relationship involving psychological contact (Rogers, 1959, 1961). The Barrett-Lennard Relationship Inventory (B-L RI; Barrett-Lennard, 1962) was developed as a measurement tool to specifically evaluate the extent to which people experience the facilitative conditions of congruence, unconditional positive regard, and empathic understanding. The B-L RI score consists of four subscales: level of regard (R), empathic understanding (E), congruence (C), and unconditionality of regard (U). The subscales can be summed to produce an overall total score that has been referred to as 'facilitativeness' (Cramer, 2003; Davis et al., 2015). Since the 1960s, the B-L RI has wide application in various fields ranging from counseling psychology (Davis et al., 2015; Dolev & Zilcha-Mano, 2019; Murphy & Cramer, 2014), medicine (Chu & Tseng, 2013; Moghaddasian et al., 2013), forensic psychology (Hearn et al., 2020), sport psychology (Oh et al., 2012), education (Bockmier-Sommers et al., 2017; Swan et al., 2020), to business (Janssen, 2012).

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The B-L RI has been modified many times since its first publication; its length reduced from 92 to 85 items (Barrett-Lennard, 1962), then to 72 items, and finally to 64 and 40 items (Barrett-Lennard, 2015). Although the 64 and 40 item current versions of the B-L RI were greatly shortened compared to its first version, researchers still considered the B-L RI lengthy and suggested a further reduction based on the results of exploratory factor analysis (Cramer, 1986; Gurman, 1977; Wiebe & Barnett Pearce, 1973). Several abbreviated versions of the B-L RI were developed based on the specific purposes of the studies (e.g., Schacht et al., 1988; Schumm, et al., 1980a, b), which were not subject to any validity testing. There has long been a need of a shorter measure of the facilitative conditions for more practical application. An even shorter version than the 40-items of the B-L RI is necessary, especially when research participants have only limited patience or attention span, there is a fixed time period for testing, or there are financial limits for conducting a study (Donnellan et al., 2006). Participants' experience and motivation for completing questionnaires may be improved by providing a shorter measurement scale. Thus, an even shorter form of the B-L RI is warranted to alleviate the burden of completing the questionnaire and enhance its practicality. This study aims to fill the gap by developing and validating a very short scale based on the 64-item B-L RI to measure the facilitative conditions.

Psychometric Properties of the B-L RI

Barrett-Lennard developed the B-L RI to measure the facilitative conditions to test Rogers' theory of constructive personality change (1957) in the clinical setting (Barrett-Lennard, 1962). The current versions of the inventory (the 64-item/40-item B-L RI; Barrett-Lennard, 2015) consist of four subscales: level of regard (R), empathic understanding (E), congruence (C), and unconditionality of regard (U). Each subscale has the same number of items (16/10 items). Parallel forms of the B-L RI were developed for respondents who receive (OS:other to self), provide (MO:me/myself to other), or observe (Obs) the facilitative conditions in a relationship (Barrett-Lennard, 2015). Research has consistently shown that the scores of the B-L RI are statistically significantly correlated with a range of psychological and behavioral outcomes, such as positive client outcomes in psychotherapeutic relationships (Bell et al., 2016), greater authenticity as a client outcome in counseling (Bayliss-Conway et al., 2020), women athletes' body appreciation and eating style in coach-athlete relationships (Oh et al., 2012), students' learning experience in student–teacher relationships (Swan et al., 2020), and prisoners' post-traumatic growth in staff-prisoner relationships (Hearn et al., 2020).

The B-L RI has been translated into more than 20 different languages, including Arabic, Chinese, Dutch, French, German, Greek, Hebrew, Italian, Japanese, and Spanish (Barrett-Lennard, 2015; Liao et al., 2018).

The B-L RI has consistently shown high internal consistency and temporal stability reliabilities. For the B-L RI: OS-64, the means of internal consistency coefficients across a number of studies have been found to be 0.93 for R, 0.82 for E, 0.88 for C, 0.74 for U, and 0.85 for the total scale (Chu & Tseng, 2013; Davis et al., 2015; Dolev & Zilcha-Mano, 2019; Dufey & Wilson, 2017; Elkin et al., 2014; Fulton, 2016; Gurman, 1977; Hara et al., 2017; McClintock et al., 2017; Suzuki et al., 2019). For the B-L RI: OS-40, the means of alpha coefficients were reported to be 0.85 for R, 0.89 for E, and 0.82 for C, 0.76 for U, and 0.92 for the total scale (Barrett-Lennard, 2002; Greason & Welfare, 2013). Mean test–retest reliability coefficients for each subscale in the B-L RI: OS-64 were R, 0.83; E, 0.83; C, 0.88; U, 0.80 and for the total scale, 0.90 (Gurman, 1977).

The factor structure of the B-L RI has long been controversial. A detailed discussion can be found in the Electronic Supplementary Material. Both the 64-item and the 40-item B-L RI are considered too lengthy to measure a single construct.

Cross-language equivalency is an important psychological property for a measurement tool with multiple language versions. The presence of language equivalency determines whether comparisons between scores of different language versions of the B-L RI are statistically meaningful (Khojasteh & Lo, 2015). A multigroup CFA demonstrated that the partial scalar invariance was supported across the English, Chinese, and Spanish language versions of the B-L RI: OS-64, and the noninvariant items were recommended to be removed during development of a shorter version of the inventory to ensure the language equivalency of the new scale (Chen et al., 2021).

Current Research

The first goal of this paper was to develop (Study 1) a shorter version of the B-L RI (B-L RI:mini) with a unidimensional construct of facilitativeness based on data collected from English, Chinese, and Spanish language versions of the B-L RI: OS-64 using item response theory (IRT) approaches. The English, Chinese, and Spanish language versions were selected because they were the most widely spoken languages worldwide. Additionally, English, Chinese, and Spanish are spoken by three completely different cultures, items that perform well and consistent across these three language versions of the B-L RI are more likely to be shared understanding in human relationships. To our best knowledge, the psychometric properties of the B-L RI have never

been examined in the context of IRT. As a modern approach to item and test analysis, IRT is recommended for questionnaire development, evaluation, and refinement, which can overcome some of the limitations of classical test theory (CTT; Paek & Cole, 2020). First, IRT models outcomes at the item level, instead of the test level as in CTT. IRT was considered as a more informative and thorough approach to evaluate the items and the person's latent trait (θ). Second, IRT takes into account the specific item characteristics and how a person responds to it when estimating the person's latent trait. Item parameter estimation is dependent on the specific sample that responds to the item, and the estimation of the person's latent trait depends on the specific set of items that were answered within a CTT framework. Unlike IRT, the estimations of person and item parameters are independent to each other. B-L RI is an instrument that has been translated into multiple languages, and its item/test psychometric properties may vary across different language versions. Considering that the B-L RI:mini will also certainly have multiple language versions in the future, only items that show consistently good measurement properties and are invariant across different language versions of the B-L RI: OS-64 should be retained in the new scale. The item and scale properties of the English, Chinese, and Spanish language versions of the B-L RI: OS-64 were analyzed, since they are the most spoken languages in the world.

The second goal of this paper was to validate (Study 2) the English language version of the B-L RI:mini in a new set of samples. The characteristics of the items in the inventory were thoroughly examined using IRT. In the scale-level analysis, internal consistency, test–retest reliability, construct validity, convergent validity, and criterion-related validity were evaluated for the newly developed scale.

Study 1

Method

Participants and Procedures

Two-hundred and ninety-eight native speakers of English, 658 native speakers of Chinese, and 330 native speakers of Spanish participated in this study. The English-speaking sample and the Spanish-speaking sample were all taken from Chen et al. (2021), which were recruited using social media websites, and Jisc Online Surveys (www.jisc.ac.uk) were used for data collection from June to July 2020. The Chinese-speaking sample was all taken from Liao et al. (2018). In their study, a stratified random sampling technique (Eckman & West, 2016) was used to draw samples in six age strata (18–25, 26–35, 36–45, 46–55, 56–65, > 65) and data

were collected via an online survey. Prior to completing the B-L RI: OS-64, participants were asked to respond to each of the items with reference to a present relationship with a friend.

The English-speaking sample included 261 (87.6%) females, 36 (12.1%) males and one transgender person. The participants were aged 18 to 79 years old, and their mean age was 38 years old ($SD = 12.9$). Of the participants, 47.0% were aged from 18 to 35 years old, 43.3% of the participants were aged from 36 to 55 years old, and 9.7% were 56 years of age and over. Participants' friendships had lasted on average for 15.4 years ($SD = 12.7$). The shortest length of friendship was 0.5 years; the longest, 62.9 years. Regarding occupation, 7.0% were researchers, 10.4% were teachers, 14.8% were students, 26.8% were professionals, and 41.0% did not indicate their occupation.

The Spanish-Speaking sample included 284 (86.1%) females and 46 (13.9%) males. Of the participants, 61.1% were between the age of 18 and 35 years, 32.2% of the participants ranged from age 36 to 55, and 6.7% of the participants were over 65 years old. In terms of occupation, 37.0% were researchers, 11.5% were professionals, 10.6% were teachers, 4.3% were students, and 36.6% did not indicate their occupation. Participants' friendships had lasted on average for 14.6 years ($SD = 9.2$). The shortest length of friendship was 2.2 years; the longest, 30.5 years.

The Chinese-speaking sample was also predominantly female, consisted of 495 (75.2%) females, 162 (24.6%) males, and one other. With regard to age, 32.1% of the participants were aged from 18 to 25, 33.6% of the participants aged from 26 to 35, 16.7% of the participants were aged from 36 to 45, 12.3% of the participants ranged from age 46 to 55, 5% of the participants ranged from age 56 to 65, and 0.3% of the participants were over 65 years old. In terms of occupation, 28.0% of participants were students, 21.4% were professional occupations, 11.6% were sales and customer service workers, 10.2% were administrative and secretarial occupations, 8.7% were elementary occupations, 5.8% were skill trades, and 4.4% were unemployed. Of the participants, 1.7% were in-relationship with their friends for less than six months, 6.2% had friendships lasting from 6 to 12 months, 12.5% had friendships lasting from 1 to 3 years, 16% had friendships lasting from 3 to 5 years, and 63.7% had friendships lasting more than five years.

Measures

The B-L RI: OS-64 (Barrett-Lennard, 2015) was developed to assess the experience of the facilitative conditions in a relationship. The facilitative conditions were deemed important for constructive personality change in Rogers' theory (1957). The B-L RI: OS-64 is composed of four 16-item subscales: 1) level of regard (R); 2) empathic understanding

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(E); 3) congruence (C); and 4) unconditionality of regard (U). Examples of items from the subscales include: R, "___ respects me as a person"; E, "___ wants to understand how I see things"; C, "___ is comfortable and at ease in our relationship"; and U, "___'s interest in me depends on the things I say or do" (negatively worded item). The participant is asked to think about their relationship with a particular person and to answer each of the items with that person in mind.

Participants answer each item on a six-point Likert-type scale (-3 = NO, I strongly feel that it is not true; -2 = No, I feel it is not true; −1 = (No) I feel that it is probably untrue, or more untrue than true; + 1 = (Yes) I feel that it is probably true, or more true than untrue; + 2 = Yes, I feel it is true; + 3 = YES, I strongly feel that it is true). Each subscale includes an equal number of positively and negatively worded items. After responses to negatively worded items are reverse-coded, sum scores for each subscale are calculated with higher scores representing higher levels of perceived regard, empathy, congruence, and unconditionality in a relationship.

In this study, three language versions of the B-L RI: OS-64 were used, namely English, Chinese, and Spanish. The original English version of the B-L RI: OS-64 was back-translated into the Chinese and Spanish versions by bilingual translators (Barrett-Lennard, 2015; Celis, 1999; Liao et al., 2018). In the previous study (Chen et al., 2021), the alpha coefficients in the range of 0.70 to 0.94 were reported for scores from the subscales in the English, Chinese, and Spanish language versions of the B-L RI: OS-64, and ranging from 0.95 to 0.96 for scores from the total scales. The unidimensional model was confirmed through CFA and bifactor model evaluation for the three language versions of the B-L RI: OS-64. Eight (U3, U11, C24, E26, U27, U31, U43, and E46) out of sixty-four items were reported to be noninvariant across the three language versions of the B-L RI: OS-64.

Data Analysis

Assumptions of IRT First, the basic assumptions of IRT include unidimensionality and local independence. As mentioned above, unidimensionality for the B-L RI: OS-64 (the English, Chinese, and Spanish language versions) was previously supported in CFA and bifactor model evaluation (Chen et al., 2021). The datasets used in this study were taken from Chen et al. (2021). The one-factor CFA showed satisfactory fit across the three language versions: the comparative fit index (CFI) ranged from 0.970 to 0.985, the Tucker-Lewis index (TLI) ranged from 0.969 to 0.985, the root mean square error of approximation (RMSEA) ranged from 0.054 to 0.072, and the standardized root mean square residual (SRMR) ranged from 0.077 to 0.081. The bifactor model evaluation rejected the existence of the specific factors (R, E, C, and U) beyond the general factor

(facilitativeness) across the three language versions of the inventory: omega hierarchical (ω_h) was ranged from 0.946 to 0.978, but omega hierarchical subscale (ω_{hs}) was ranged from 0.000 to 0.304, explained common variance (ECV) was reported ranging between 0.834 and 0.866, percent of uncontaminated correlations (PUC) were 0.762 and 0.635, and high construct replicability (H) ranging from 0.982 to 0.986. Local independence means that when latent trait is held constant across respondents, the observed responses are statistically independent (Samejima, 2015). The inter-item residual correlations (Yen's Q3; Yen, 1984) were evaluated to test local independence. Christensen et al. (2017) recommended the criterion for high likelihood of local dependence was greater than |.30|. At least one item in a pair of locally dependent items was suggested to be trimmed in order to strengthen the unidimensionality of the scale.

IRT Second, we used the graded response model (GRM; Samejima, 2015) to assess the scale and item-level functioning since the item responses are ordered, polytomous, and categorical. The sample size needed to estimate the GRM is 250 (Reeve & Fayers, 2004); thus the requirement was met in this study. In the GRM, one common item slope (a/ item discrimination) and a set of k-1 location (b/item difficulty) parameters are estimated. k is the number of response categories; hence five b parameters for each item can be produced from the six response options in the B-L RI. Item discrimination is the degree to which an item differentiates respondents with similar levels of the same latent trait (Embretson & Reise, 2013). According to Baker's (Baker, 2001) discrimination classification: very high discrimination, $a > 1.7$; high discrimination, $1.35 < a < 1.69$; moderate discrimination, $0.65 < a < 1.34$; low discrimination, $0.35 < a < 0.64$; very low discrimination, $0.01 < a < 0.34$; no discrimination, $a = 0$. Only items with high or very high discrimination across the three language versions of the inventory were considered for retention. Item difficulty is the amount of the latent trait that is necessary for the respondent to have a 50% chance to endorse a given category (Embretson & Reise, 2013). The means of b parameters (b1-b5) for each item were calculated. Items with different levels of difficulty were retained to best differentiate respondents with different levels of latent trait. Then, the location and slope parameters were used to compute item information curves, which describe how much information an item relative to the total information of the latent construct. Items that have high discrimination and have a difficulty parameter close to the respondents' latent trait will provide relatively high information, whereas items that have low discrimination and have a difficulty parameter far away from the respondents' latent trait will provide relatively low information (Zickar & Broadfoot, 2009). The item information curves across items can be aggregated as the test information curve. In IRT, the

information curves were used to depict measurement precision. In order to maximize the precision of measurement at different levels of the latent trait, items with high information levels at different parts along the continuum were retained (Reeve & Fayers, 2004).

Differential item functioning (DIF) Third, DIF was conducted to detect item equivalence across the English, Chinese, and Spanish language versions of the B-L RI: OS-64 by using likelihood-ratio tests (Lopez Rivas et al., 2009). For accurate DIF detection, all others as anchors approach (Thissen et al., 1993) was used: a baseline model with all the parameter (item difficulty and discrimination) constrained to be equal across groups was specified first; then the parameters of each item, in turn, were freed and constraints on the parameters of the other items remained; and changes in model fit compared to the baseline model was examined. Those items with significant chi-square values ($p < 0.05$) are considered to exhibit differential functioning——the opposite of measurement invariance. Both uniform and non-uniform DIF can be detected using the method. Uniform DIF indicates that a consistent systematic difference in the response to the item between the groups across levels of the latent trait spectrum. The inequivalence of the magnitude of focal item difficulty across groups indicates the presence of uniform DIF. Whereas non-uniform DIF indicates varying differences across levels of the trait and the inequivalence of the magnitude of focal item discrimination across groups indicates the presence of non-uniform DIF (Tay et al., 2015). Items exhibiting non-uniform DIF across the three language versions of the B-L RI: OS-64 were suggested to be removed from the scale (O'Neill & McPeek, 1993). Items that display measurement invariance or only uniform DIF across the three language versions of the B-L RI: OS-64 were considered to be retained.

All the analyses mentioned above were conducted in R statistics (R Core Team, 2020) using the RStudio interface (version 1.3.1093; RStudio Team, 2020), using the multidimensional item response theory (MIRT) package (Chalmers, 2012).

Results

Local Independence

Out of the 4096 item pairs, only forty-six (1.12%) in the English version of the B-L RI: OS-64, twenty-eight (0.68%) in the Chinese version, and twenty-two (0.54%) in the Spanish version had Q3 values greater than |.30|. For example, the Q3 value, between item U27 ("___likes or accepts certain things about me, and there are other things s/he does not like

in me") and item U43 ("___approves of me in some ways or sometimes, and plainly disapproves of me in other ways/other times"), was 0.43. The violation of local independence may be resulting from the similar content, and the amount of locally dependent item pairs were small, the local independence assumptions might not hold strictly but closely enough for using IRT advantageously (Kolen & Brennan, 2004). Besides, locally dependent items were removed to ensure the unidimensionality of the B-L RI:mini.

Item Discrimination and Difficulty

Table S1 presents the discrimination and difficulty parameters from the GRM for the English, Chinese, and Spanish language versions of the B-L RI: OS-64. The values of the discrimination parameters for the English version fell within the range 0 to 3.44; for the Chinese version, the range was between -1.17 and 3.06; for the Spanish version, the range was from -0.68 to 4.37. Item R25 ("___ cares for me"; Barrett-Lennard, 2015, p. 102) demonstrated the highest discrimination values in both the English and Spanish language versions of the inventory. The most discriminative item in the Chinese version of the inventory was Item R37 ("___ is friendly and warm with me"; Barrett-Lennard, 2015, p. 102). Twenty-three items had *a* parameters less than 1.35 at least in one of the three language versions of the inventory, which were considered for removal from the B-L RI:mini.

The means of difficulty parameters ranged from -2.45 to 75.69 in the English version of the B-L RI: OS-64; ranged from -17.14 to 6.23 in the Chinese version; ranged from -3.23 to 10.86 in the Spanish version of the inventory. Further inspection of the b values for each item showed that the item difficulties were well spread out across the latent continuum. Items with extreme values (e.g., Item E46 in the Chinese version of the inventory had b_{1-5} values ranged from -105.46 to 60.36) were not considered to be included in the new scale. Item C4 ("___ is comfortable and at ease in our relationship"; Barrett-Lennard, 2015, p. 102) was the 'easiest' item across the three language versions of the inventory. Item E14 ("___ looks at what I do from their own point of view"; Barrett-Lennard, 2015, p. 101) was the most 'difficult' item in both the English and Spanish versions of the inventory. In the Chinese version, item U35 ("If I show I am angry with ___ they become hurt or angry with me, too"; Barrett-Lennard, 2015, p. 102) was the most 'difficult' item.

Item and Test Information Curves

Figure S1 displays item information curves (IIC) for all the 64 items across the English, Chinese and Spanish versions of the B-L RI: OS-64. The 64 items provided the most information at the middle to lower levels of facilitativeness across the three language versions of the inventory. Most of the

items had the highest information in the range between $\theta = -4$ and $\theta = -2$. Items that showed peak information values less than 1 in any one of the language versions of the inventory were removed (e.g., Item U3, "___'s interest in me depends on the things I say or do." (Barrett-Lennard, 2015, p. 101), yielded almost no information across the three language versions of the inventory). The test information curves (TIC) for the three language versions of the inventory were shown in Figure S2, which peaked in the range of -3 SD and 0/1 SD from the mean. The Spanish version of the inventory appeared to have the highest test information of all the three versions at $\theta = -2$.

Differential Item Functioning

We conducted tests of DIF across the English, Chinese and Spanish language versions of the B-L RI: OS-64. As shown in Table S2, both the item discrimination and difficulty parameters of E2, R5, and E10 are equivalent across the three language versions of the inventory. Forty-nine items showed non-uniform DIF as indicated by the significant discrimination parameters, and fifty-seven items showed uniform DIF as indicated by the significant difficulty parameters. This is consistent with the previous study (Chen et al., 2021) that examined the measurement invariance of the three language versions of the inventory by using multigroup CFA. The noninvariant items found in their study showed both uniform and non-uniform DIF.

Item Selection

As a result, 12 items, R5, E10, E18, E30, E34, C36, R41, C44, U51, U55, R57, and R61 were retained to form the B-L RI:mini (see Appendix 1). These 12 items were highly discriminative and sufficiently informative across the English, Chinese, and Spanish language versions of the B-L RI: OS-64. Besides, they did not exhibit non-uniform DIF across the languages.

Study 2

The aim of study 2 was to analyze the dimensionality, reliability, and construct validity of the B-L RI:mini. It was expected that the scale shows acceptable reliability and validity. Specifically, the value of the Cronbach's alpha coefficient should be greater than 0.70 with regard to internal consistency reliability (Onwuegbuzie & Daniel, 2002), the intraclass correlation coefficient should be greater than 0.75 in terms of test–retest reliability (Koo & Li, 2016). Regarding validity, the factor structure of the B-L RI:mini should be unidimensional, the scale should be moderately related to other measure of the same construct (convergent validity)

and meaningful outcome (criterion-related validity), and the scale should not related be to measure that is conceptually unrelated to it (discriminant validity).

Method

Participants and Procedures

Participant demographics are shown in Table 1. The average duration of participants' relationship was 108.14 months ($SD = 102.28$).

Participants were recruited using social media (Benfield & Szlemko, 2006). Two longitudinal surveys were administered via Jisc Online Surveys (www.jisc.ac.uk). The first survey included all the measurements mentioned below,

Table 1 Demographic characteristics

Demographic Variables	Count (N=362)	Percentage
Gender		
Male	316	87.3
Female	30	8.3
Trans	4	1.1
Genderqueer	6	1.7
Prefer not to say	6	1.7
Ethnicity		
Caucasian	274	75.7
Asian	46	12.7
Latino/Hispanic	6	1.7
Mixed	12	3.3
Other	24	6.6
Age (years)		
18–25	81	22.4
26–35	143	39.5
36–45	73	20.2
46–55	47	13.0
56–65	16	4.4
>65	2	.6
Types of relationship		
Spouse	122	33.7
Partner	195	53.9
Friend	39	10.8
Other	6	1.6
Duration of relationship (years)		
<.5	9	2.5
.5–1	18	5.0
1–3	102	28.2
3–5	43	11.9
5–10	87	24.0
10–20	64	17.7
20–50	39	10.8

whereas the second survey only included the B-L RI:mini. Participants were asked to provide their email addresses in order to receive the invitation to complete the B-L RI:mini again within seven days of initial administration for assessment of test–retest reliability. We included measures of social support and experiences in close relationship in order to establish convergent validity and criterion-related validity, respectively. Empathic understanding, unconditional positive regard, and genuineness can be seen as a form of emotional support. And people who continuously and consistently perceive the facilitative conditions in their close relationships tend to feel more comfortable and secure, less anxious and avoidant in relationships, and to be more authentic (Rogers, 1961). We would expect the B-L RI:mini to be moderately associated with higher ratings of social support and closeness of relationship (Rogers, 1957, 1961). Whereas the BL-RI: mini is developed on the basis of Rogers' (1957) theory, other measures are derived from different theoretical perspectives, such as attachment theory. We also included a test for social desirability in order to establish that the B-L RI:mini discriminant validity.

Measures

B-L RI: mini The new 12-item B-L RI measure was developed from the 64-item B-L RI (Barrett-Lennard, 2015) in Study 1. Cronbach's alpha for B-L RI:mini was 0.91 in Study 2.

Multidimensional Scale of Perceived Social Support (MSPSS) We used the MSPSS scale (Zimet et al., 1988) to measure perceived social support from family (e.g., My family really tries to help me), friends (e.g., My friends really try to help me) and significant others (e.g., There is a special person who is around when I am in need). The scale consists of 12 items, all measured on a Likert scale ranging from 1 (very strongly disagree) to 7 (very strongly agree). The mean rating across all items is computed. Higher scores indicate greater perceived social support. A Cronbach alpha of 0.88 was reported by Zimet et al. (1988).

Socially Desirable Response Set Five-Item Survey (SDRS-5) The SDRS-5 (Hays et al., 1989) measures the extent to which participants respond in a socially desirable manner (e.g., No matter who I'm talking to, I'm always a good listener). This scale contains five items scored using a Likert scale from 1 (definitely true) to 5 (definitely false). Only some extreme responses are scored 1, and all other responses are scored 0. The alpha coefficients in the previous study ranged from 0.66 to 0.68 (Hays et al., 1989).

The Experiences in Close Relationship Scale – Short Form (ECR-S) The ECR-S (Wei et al., 2007) is a 12-item scale derived from the original 36-item ECR (Brennan, Clark, & Shaver, 1998). The ECR-S was used to assess a general pattern of adult attachment by measuring the level of attachment anxiety (e.g., I need a lot of reassurance that I am loved by my partner) and attachment avoidance (e.g., I want to get close to my partner, but I keep pulling back). Each subscale contains six items. The response is scored using a Likert scale from 1 (Strongly Disagree) to 7 (Strongly Agree). According to the previous study, the alpha coefficients for the anxiety subscale was 0.77 and 0.78 for the avoidance subscale. Also, 1-month test–retest reliability = 0.80 and 0.83 for anxiety and avoidance subscales, respectively (Wei et al., 2007).

Data Analysis

Reliability The internal consistency reliability and test–retest reliability of the B-L RI:mini were examined using Cronbach's alpha and intra-class correlation coefficient, respectively. SPSS version 26.0 was used to conduct correlation and reliability analyses.

Factor Structure CFA is commonly used to evaluate the internal construct validity and dimensionality of assessments (Harrington, 2009). A common rule of thumb is that the minimum sample to variable ratio of 10:1 is necessary for performing factor analysis, while the ideal ratio might be 15:1 or 20:1 (Clark & Watson, 1995). The ratio between the number of participants and the items turned out to be as high as 30:1 ($N = 362$). CFA was conducted to evaluate the adequacy of three potential models: (1) a unidimensional model with the 12 items loading on a single latent variable, facilitativeness; (2) a correlated four-factor model that includes R, E, C, and U; (3) a bifactor model with a general factor (facilitativeness), along with four specific factors (R, E, C, and U). Multiple indices of fit were used to evaluate and compare these models: The Root Mean Square Error Approximation (RMSEA), the Confirmatory Fit Index (CFI), and finally by the Standardized Root Mean Square Residual (SRMR). The acceptable fit was evaluated based on the following standards (Hooper et al., 2008; Kline, 2015): RMSEA < 0.08, CFI ≥ 0.90, and SRMR ≤ 0.08.

Unidimensionality Bifactor model analysis was used to examine the unidimensionality of the B-L RI:mini (Neff et al., 2017), which allows each item to load on a general factor (facilitativeness) and a group factor (R, E, C, and U). The following statistical indices were calculated using the Bifactor Indices Calculator (Dueber, 2017). The omega index (ω) indicates the proportion of total score variance that is attributable to all sources of common variance included in the model (Reise et al., 2013). By the same logic, the omega subscale (ω_s) indicates the amount of each subscale score's

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total variance that is attributable to the blend of general and group factor variance (Watkins, 2017). Omega hierarchical (ω_h) indicates the ratio of variance in the total scores that is attributable to the single general factor (McDonald, 2013). Omega hierarchical subscale (ω_{hs}) is a reliability estimate that gives the proportion of a subscale score variance that is attributable to the specific factor after accounting for the general factor (Reise et al., 2013). ω_h values greater than 0.80 suggest that the most of the explained variance was attributed to the general factor, rather than a specific factor. High ω_{hs} values and low ω_h values suggest that the scale is multidimensional, instead of unidimensional. The construct replicability (H; Rodriguez et al., 2016a) informs the degree to which a latent factor is well defined by a set of items, and a cut-off value of greater than 0.70 was recommended. Factor determinacy (FD; Rodriguez et al., 2016a) represents the correlation between factor scores and the factors, which indicates the validity of factor scores for independent use. The values of FD greater than 0.90 demonstrate the factor score estimates are trustworthy (Gorsuch, 2013). Explained common variance (ECV) is an indicator of unidimensionality, which is calculated by dividing the variance attributable to the general factor by the variance attributable to both the general and the subgroup factors. Percent of uncontaminated correlations (PUC) represents the percentage of item correlations contaminated by variance that is attributed to the general factor and specific factor, which is computed by dividing the number of correlations between items from different group factors by the total number of correlations (Rodriguez et al., 2016a). Rodriguez and colleagues (2016b) recommended the criteria for the essential unidimensionality: both ECVs and PUCs are greater than 0.70.

Convergent and Criterion-Related Validity As a part of construct validity, convergent and criterion-related validity of the B-L RI:mini were also tested in this study. MSPSS (Zimet et al., 1988) was used to test the convergent validity of B-L RI:mini and ECR-S (Wei et al., 2007) was used for the test of criterion-related validity. Theoretically, perceived facilitativeness should be positively related to perceived social support and negatively related to attachment-related anxiety and avoidance. Thus, the convergent validity and criterion-related validity were examined by assessing associations between B-L RI:mini, MSPSS and ECR-S. Social desirability bias is a common threat to the validity of self-report data (King & Bruner, 2000). Therefore, social desirability was evaluated to check and control for its impact on participants' responses.

Results

Internal Consistency Reliability

The internal consistency reliability of the B-L RI:mini was examined using a Cronbach's alpha index. The alpha coefficient for total B-L RI:mini score was 0.91. The item-total correlation coefficients ranged from 0.25 to 0.84 (See Table 2). The score of item U55N displayed a low but significant correlation ($r = 0.25$, $p < 0.001$) with the total score. Another unconditionality item, U51's score, presented the second least correlation ($r = 0.64$, $p < 0.001$) with the total score.

Table 2 B-L RI:mini scale items, mean (M), standard deviation (SD), and item-total correlation (r)

(n = 362)	M	SD	r
1. "_____ feels a true liking for me." (R5)	2.40	1.07	.73*
2. "_____ nearly always knows exactly what I mean." (E10)	1.36	1.44	.79*
3. "Whether the ideas and feelings I express are "good" or "bad" seems to make no difference to _____'s feeling toward me." (U51)	1.63	1.58	.64*
4. "_____ expresses their true impressions and feelings with me." (C36)	1.68	1.48	.77*
5. "I feel that _____ really values me." (R41)	1.98	1.36	.83*
6. "_____ usually senses or realizes what I am feeling." (E18)	1.26	1.62	.80*
7. "Sometimes I am more worthwhile in _____'s eyes than I am at other times." (U55N)	-.03	2.09	.25*
8. "_____ realizes what I mean even when I have difficulty in saying it." (E30)	.81	1.69	.80*
9. "_____ is willing to express whatever is actually in their mind with me, including personal feelings about themself or me." (C44)	1.22	1.70	.75*
10. "_____ is truly interested in me." (R57)	2.12	1.32	.84*
11. "_____ usually understands the whole of what I mean." (E34)	1.31	1.58	.82*
12. "_____ feels affection for me." (R61)	2.31	1.19	.72*

Total alpha = .91; N = negatively worded item; In parenthesis: the 64-item B-L RI item number (Barrett-Lennard, 2015, pp. 101–103); * significant at the .01 level

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Test–Retest Reliability

The test–retest interval was one week and resulted in 216 verifiably matchable responses. The B-L RI:mini showed excellent test–retest reliability ($r = 0.87$).

Confirmatory Factor Analysis

The factorial validity and unidimensionality of the B-L RI:mini were investigated using CFA techniques, and confirmatory bifactor modeling. We could not confirm a good fit for the model with the significance of χ^2 (< 0.05) for all solutions. However, the previous study has demonstrated that this statistic is very sensitive to sample size (Kline, 2015). Thus, other fit indices were analyzed. The results indicate that all the models fitted the data sufficiently well (Unidimentional model: $\chi^2(54) = 388.127$, $p < 0.001$, CFI $= 0.952$, RMSEA $= 0.051$, SRMR $= 0.061$; Four-factor model: $\chi^2(48) = 130.883$, $p < 0.001$, CFI $= 0.988$, RMSEA $= 0.069$, SRMR $= 0.030$; Bifactor model: $\chi^2(37) = 58.213$, $p = 0.015$, CFI $= 0.997$; RMSEA $= 0.040$; SRMR $= 0.016$). However, the bifactor model had the best overall fit indices.

Bifactor Model Evaluation

The overall omega index (ω) was 0.95, indicating that 95% of total score variance could be attributed to both the general factor (facilitativeness) and specific factors (R, E, C, and U). Thus, the proportion of error score in the total score was only 5%. The omega hierarchical (ω_h) index was 0.87 greater than 0.80 (Reise et al., 2013), indicating that the B-L RI:mini's total score predominantly reflects the general factor (See Table 3).

In contrast, omega hierarchical subscale (ω_{hs}) scores were low for all four factors (0.19—0.20); none of them met the minimum standard of 0.50 suggested by Reise (2012). This result indicates that most of the reliable variance of each subscale score was due to the general factor rather than the specific factors. Even though the omega subscale for R, E, and C were high, there were only small proportions of variance in subscale scores that were attributed to the group factors alone. Within the bifactor model, H of the general factor was greater than 0.70, and no specific factor met the criteria for adequate construct replicability, which suggested that only the general factor was considered well defined by its items. Additionally, only the general factor showed FD value greater than 0.90, which suggested that only the total scale score should be used. On the scale level, both ECV and PUC were greater than 0.70, supporting the unidimensional nature of the B-L RI:mini.

Convergent and Criterion-Related Validity

Both convergent and criterion-related validity were supported by the significantly moderate correlations between B-L RI:mini and relative measures. Social desirability was controlled in convergent and criterion-related validity analyses. Convergent validity was demonstrated by a positive correlation between the B-L RI:mini and the MSPSS ($r = 0.34$, $p < 0.001$). For criterion-related validity, the B-L RI:mini was found to be negatively related to both the anxiety subscale ($r = -0.25$, $p < 0.001$) and the avoidance subscale ($r = -0.36$, $p < 0.001$) of the ECR-S.

Discriminant Validity

There were only low and non statistically significant correlations found between the B-L RI:mini and the SDRS-5, indicating that no social desirability bias is present. Pearson's correlation between the total B-L RI:mini scale and the SDRS-5 was—0.07 ($p = 0.193$).

Discussion

The B-L RI is a well-known instrument to measure facilitative conditions for constructive personality development, which has been used in various fields and been translated into a variety of languages (Barrett-Lennard, 2015; Liao et al., 2018). The B-L RI provides information which can help us to improve the quality of relationships with others and our interpersonal and communication skill to facilitate

Table 3 Bifactor Evaluation Indices for Bifactor Model with Four Specific Factors

Factors	ω/ω_s	ω_h/ω_{hs}	H	FD	ECV	PUC
F	.945	.867	.934	.944	.765	.788
R	.921	.204	.468	.740	-	-
E	.914	.188	.425	.719	-	-
C	.816	.194	.282	.650	-	-
U	.365	.177	.190	.461	-	-

R = level of regard, E = empathy, U = unconditionality, C = congruence, F = facilitativeness (general factor), ω = omega, ω_s = omega subscale, ω_h = omega hierarchical, ω_{hs} = omega hierarchical subscale, FD = factor determinacy, ECV = Explained common variance, PUC = Percent of uncontaminated correlations

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other's personal growth. In psychotherapy research, the B-L RI has generally been used to measure the facilitativeness of the therapeutic relationship and the supervisory relationship (e.g., Carey & Williams, 1986; Lawson, 1982; Wade & Bernstein, 1991). The B-L RI enables counselors, counseling students, and educators to examine if counselors: 1) have perceived sufficient facilitative conditions for their personal/professional development in counselor education/supervision/group settings; 2) have provided sufficient facilitative conditions for an effective therapeutic relationship. Noteworthily, the application of the B-L RI is common across different types of relationships, both clinical and non-clinical, which enables us to evaluate the facilitative conditions that individuals perceived in their relationships with several significant others by a single instrument.

However, the length of the B-L RI may be seen as excessive by researchers and practitioners who want to use the B-L RI in combination with a large battery of instruments, particularly when the B-L RI needs to be administered on multiple occasions. The short measurement instrument has the advantage of reducing the difficulty for participants to remain focused on completing the questionnaire, so the research compliance rate and participants' motivation in responding to the questionnaire can be improved.

To meet the practical need for a short form of the B-L RI, this study aimed to develop a mini form of the B-L RI in a scientifically meaningful manner. This research involved two studies: 12 items were selected from the 64-item B-L RI to be included in the shortest form of the B-L RI using IRT in Study 1. Following the numbering of the 64-item B-L RI, the abbreviated B-L RI included items R5, E10, E18, E30, E34, C36, R41, C44, U51, U55, R57, and R61. To our best knowledge, this is the first study that employed IRT-based techniques to investigate the psychometric properties of the English, Chinese, and Spanish language versions of the B-L RI: OS-64. IRT provides more detailed information on the item level comparing to CTT, which is more suitable for scale development. Besides, DIF analysis revealed that most of the items function differently across the three language versions of the inventory. In Study 2, the validation process was implemented for the B-L RI: mini. With the reduced structure, the reliability analyses showed good results for the inventory, with a Cronbach's alpha of 0.91. All of the items showed high item-total correlations except for the *U55*, which may be caused by the ambiguous wording and the reverse scoring. Da Rocha Bastos et al., (1979) argued that a high degree of unconditionality of regard could be represented either as unconditional acceptance or as inexorable rejection. The semantic ambiguity is more likely to occur in the real-life setting because the therapist is expected to be related to the client in a positive way. Besides, *U55* was the only reverse worded item in the B-L RI:mini, which may increase the difficulty for participants to understand the

statement. This finding was consistent with the context of B-L RI literature, indicating that significant and relatively high correlations between *R, E,* and *C* except for *U* (Da Rocha Bastos et al., 1979). The test–retest reliability of the inventory after one week was 0.87. In summary, both the internal consistency and test–retest reliabilities of the B-L RI:mini were proved to be satisfactory.

The B-L RI:mini was demonstrated to be unidimensional using CFA and bifactor model evaluation. Empathic understanding, congruence, and unconditional positive regard are meaningful in theory, but not in psychometric testing. The prior research has only used EFA to examine the factor structure of the B-L RI. Several possible models have been explored, but they have never been confirmed and compared. With the help of CFA, the bifactor model evaluation showed that most of the variances in the subscales' scores were attributed to the general factor (facilitativeness), and the specific factors are invalid and unreliable. Even though previous research found that the subscales scores were internally consistent and temporally stable, which can be derived from the reliability of the general factor. The facilitative conditions are conceptually distinguishable, but also synchronous in close relationships. Both total scale and subscale scores revealed only the overall facilitativeness of relationships, the use of subscale score is meaningless. Consistent with the only previous report for bifactor model evaluation of the B-L RI: OS-64 (Chen et al., 2021), this new form of B-L RI can be considered as an efficient and useful tool to evaluate the levels of perceived facilitativeness instead of measuring the relationship conditions separately.

Assessments of convergent validity and criterion-related validity further supported the construct validity of the B-L RI:mini. Facilitativeness is a special form of social support that serves to promote personality change (Rogers, 1957). Perceiving facilitativeness constantly in a relationship would reduce the experience of anxiety and avoidance (Rogers, 1961). As expected, we found a positive association of relationship quality with perceived social support as well as the negative associations of relationship quality with attachment avoidance and anxiety. Also, low and non statistically significant correlations between scores on the B-L RI:mini and the measure of social desirability suggested no evidence of social desirability bias in our study.

Scoring Methods

The use of the B-L RI:mini is convenient and can save administration time, especially for longitudinal study and monitoring of the maturity of personality development where the participant may be required to complete the form on a number of occasions. We recommend using a total score for the B-L RI:mini. Based on the bifactor model

evaluation, it was concluded that it was not appropriate to use the subscales independently.

On the one hand, B-L RI can be used to measure one's perceived facilitativeness in various types of relationships. On the other hand, the wide application of the inventory makes the establishment of norms and standards difficult. After reversing negatively worded item U55 (-3/-2/-1 = 3/2/1), a total score varying from -36 to 36 can be obtained by summing all the item scores. For psychotherapy relationships, Barrett-Lennard (2015) suggested to "utilize a three-fold approach to assembling comparison data and working standards." (p.42). The first two components of this approach can be directly applied in the B-L RI:mini. First, means and variance data can be organized from available studies that reporting such data from the B-L RI:mini. Second, a local data pool should be built up by gathering data systematically from participants in the same local setting. Then, the mean and variance of the local data could be selected and organized. The standard scoring method was suggested as a complementary or alternative to the two components above. Comparison standards for the 64-item B-L RI were established by this method. Applying the same method to establish scoring interpretation for the B-L RI:mini: a total score of 30 and above are "as high as one could plausibly expect in any relationship context, in terms of honest, discriminating perception." (p.42); a total score of 24 implies that the facilitative conditions were substantially perceived in the referent relationship; a total score of 18 is probably the minimal level that should be achieved in fruitful helping relationships; any score below 12 "would be expected to represent a less than adequate level in therapy relationships." (p.42).

Strengths and limitations

The interpretation of the findings should take the strengths and limitations of this study into account. Alternative confirmatory analytic models of the B-L RI have been little explored; we compared the original correlated four-factor model with unidimensional and bifactor models in this study. The bifactor modeling approach was used to further our understanding of the scoring of the B-L RI. The findings demonstrated that the B-L RI:mini produces the same unidimensional structure as the B-L RI: OS-64. Further strengths are its large sample size, as it provided an ideal participant sample ratio to conduct factor analysis. However, like all research, this study had limitations. The homogeneous nature of the sample might limit the findings of this study. A majority of the participants were female Caucasian. Another limitation might be that only one negatively worded item was contained in the scale; the use of alternating item wording in questionnaires has been recommended in order to reduce acquiescent bias and extreme response bias (Rorer,

1965). The necessity of negatively worded items is still under discussion. Sonderen et al. (2013) found the negatively worded items not only did not prevent such bias but also caused confusion and inattention. Despite controversial opinions regarding the inclusion of reverse-worded items, the B-L RI:mini showed adequate reliability and validity.

Conclusions

In summary, the results from these studies indicated that the 12-item B-L RI is a valid and reliable instrument of facilitativeness in the non-clinical setting. The B-L RI: mini was proven to retain the good psychometric properties of the 64-item B-L RI and to require less time to complete. Our findings indicated that the B-L RI:mini should only be used to obtain a total score for facilitativeness and should not be separated into its subscales. It is recommended that future studies assess the reliability and validity of the B-L RI:mini in the clinical setting.

Appendix 1

The Barrett-Lennard Relationship Inventory:Mini (B-L RI:mini).

"Below are listed a variety of ways that one person may feel or behave in relation to another person. Please consider each numbered statement with reference to your present relationship with _____ (name), mentally adding their name in the space provided. If the other person's name is John, for example, then read statement number 1 as "John feels a true liking for me."

Mark each statement in the answer column on the right, according to how strongly you feel that it is true, or not true, in this relationship. EXAMPLE: Please be sure to mark every one. Write in a plus number ($+3, +2,$ or $+1$), or a minus number ($-1, -2,$ or -3), to stand for the following answers:

−3: NO, I strongly feel that it is not true.

−2: No, I feel it is not true.

−1: (No) I feel that it is probably untrue, or more untrue than true.

+1: (Yes) I feel that it is probably true, or more true than untrue.

+2: Yes, I feel it is true.

+3: YES, I strongly feel that it is true.

1. _____ feels a true liking for me	
2. _____ nearly always knows exactly what I mean	

1. _____ feels a true liking for me

3. Whether the ideas and feelings I express are "good" or "bad" seems to make no difference to _____'s feeling toward me

4. _____ expresses their true impressions and feelings with me

5. I feel that _____ really values me

6. _____ usually senses or realizes what I am feeling

7. Sometimes I am more worthwhile in _____'s eyes than I am at other times

8. _____ realizes what I mean even when I have difficulty in saying it

9. _____ is willing to express whatever is actually in their mind with me, including personal feelings about themself or me

10. _____ is truly interested in me

11. _____ usually understands the whole of what I mean

12. _____ feels affection for me

" (Barrett-Lennard, 2015, pp. 101–103).

Scoring Instructions.

A total score can be obtained by summing up item scores after reversing of the item 7.

Data Availability The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to terms of General Data Protection Regulation (GDPR).

Declarations

Informed Consent Informed consent was obtained from all individual participants included in the study.

Ethics Approval Ethical approval was obtained at the School of Education Research Ethics Committee of the University of [blind note] (2018/52). The study was performed in compliance with GDPR and the Code of Research Conduct and Research Ethics at the University of [blind note].

Conflicts of Interest The authors have no conflict of interest.

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