Research Project Portfolio

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Measuring Psychological Flexibility Across the Lifespan: Validation of the Adult and Adolescent Psychological FlexibiliTy Scale (ADAPTS)

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Portfolio abstract

Psychological flexibility is regarded as a key component of mental wellbeing. It is the proposed mechanism of change underpinning Acceptance and Commitment Therapy (ACT) and is thought to be composed of six core processes: acceptance, present moment awareness, defusion, self-as-context, values, and committed action. These are further grouped to form the triflex processes of openness to experience, behavioural awareness, and valued action. Psychological inflexibility is the inverse of psychological flexibility involving experiential avoidance and cognitive fusion and has been found to have associations with poor mental health outcomes. Accurate measurement of constructs thought to underpin mental wellbeing, such as psychological flexibility, is key to the evaluation of interventions and development of recommendations regarding treatment for mental health difficulties.

The AAQ-II is a widely used measure of psychological flexibility in ACT research. However, it has been noted to not provide a comprehensive measure of the six proposed core processes and demonstrates multicollinearity with anxiety scores. The AFQ-Y is a youth measure of psychological flexibility developed from the AAQ-II. The Adult and Adolescent Psychological FlexibiliTy Scale (ADAPTS) has been developed in order to address some of the issues found with existing measures and provides a comprehensive measure of psychological flexibility across youth and adult populations. The ADAPTS uses plain English making it appropriate for those who could benefit from accessible language.

Exploratory factor analysis (EFA) was used to understand the structure of the ADAPTS in youth and adult samples. The ADAPTS was also compared to existing measures to assess concurrent, convergent, and discriminant validity. EFA indicated a three-factor structure (Openness to experience (5 items), behavioural awareness (5 items), and valued action (8 items)) across 18 items for the ADAPTS in both populations. The ADAPTS demonstrated good concurrent, convergent, and discriminant validity across both populations. Subscale validity for the three factors is provided and further project data, analysis, and materials are provided in the extended paper.

This project supports the ADAPTS as an accessible, reliable, and valid measure of psychological flexibility for use across the lifespan in both clinical and research settings.

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Statement of contribution

I, Safia Agrippa, declare that this research project is my own original work conducted since undertaking the Trent Doctorate in Clinical Psychology in 2020. The idea for the project was developed and proposed to me by Dr Nima Golijani-Moghaddam and Dr David Dawson, building on the original development work of Dr Matt Lewis. As the Principal Investigator for the youth sample, I took responsibility for developing the methodology, advertising the study, collecting youth data, scoring youth questionnaires, analysing youth and adult data and completing the final thesis and journal article write up. Existing data was used for the adult sample and was collected by Dr Nima Golijani-Moghaddam. Dr Nima Golijani-Moghaddam, Dr David Dawson, and Dr Matt Lewis provided supervision to help with project development, guidance on methodological processes and data interpretation virtually and via email correspondence. They also provided feedback on draft versions of the journal article and extended paper.

JOURNAL ARTICLE

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Abstract

Psychological flexibility is regarded as a key component of mental wellbeing. It is the proposed mechanism of change underpinning Acceptance and Commitment Therapy (ACT) and is thought to be composed of six core processes: acceptance, present moment awareness, defusion, self-as-context, values, and committed action. Accurate measurement of constructs thought to underpin mental wellbeing, such as psychological flexibility, is key to the evaluation of interventions and development of recommendations regarding treatment for mental health difficulties.

The Adult and Adolescent Psychological FlexibiliTy Scale (ADAPTS) has been developed in order to address some of the issues found with existing measures and provides a comprehensive measure of psychological flexibility across youth and adult populations. It has undergone cognitive interviewing stages of scale development for suitability for youth audiences. The ADAPTS also uses plain English making it appropriate for those with needs for accessible language.

In the present study, exploratory factor analysis (EFA) was used to understand the structure of the ADAPTS in two samples of 352 young people and 400 adults. The ADAPTS was also compared to existing measures to assess concurrent, convergent, and discriminant validity in the youth and adult samples. EFA indicated a three-factor structure (Openness to experience (5 items), behavioural awareness (5 items), and valued action (8 items)) across 18 items for the ADAPTS in both populations. The ADAPTS demonstrated good concurrent, convergent, and discriminant validity across both populations.

This project supports the ADAPTS as an accessible, reliable, and valid measure of psychological flexibility for use across the lifespan in both clinical and research settings.

Introduction

Psychological Flexibility

Psychological flexibility has been purported to be a key factor in mental health outcomes (Kashdan & Rottenburg, 2010)[1]. It can be defined as one moving towards meaningful outcomes in life, despite the presence of potential difficulties (notably in the form of distressing events, emotions, or experiences)[2]. Higher levels of psychological flexibility have been found to relate to better quality of life, emotional wellbeing, relationships, and physical health (Fledderus et al., 2010; Gloster et al., 2017; Marshall & Brockman, 2016). The inverse of psychological flexibility is psychological inflexibility, defined by the maintenance of a restricted repertoire of avoidance behaviours that prevent awareness of and living in line with one's values. Psychological inflexibility has been found to have associations with psychopathology such as depression, anxiety, and somatisation (Kashdan et al., 2006; Masuda & Tully, 2011; Stange et al., 2017). Clear empirical associations with mental and physical health have garnered much attention for how best to manage and intervene with psychological flexibility to bring about improved health outcomes.

Acceptance and commitment therapy (ACT) targets psychological flexibility as a mechanism of change (Hayes et al., 2011)[3]. This is achieved through promoting six core processes that, in ACT terms, are thought to constitute psychological flexibility: openness to experiences (acceptance), contact with the present moment (present moment awareness), knowing what matters (values), acting in line with those values (committed action), establishing an observer awareness of internal processes (self-as-context), and taking a less literal perspective of one's thoughts (defusion). Practically, ACT employs the use of metaphor and experiential exercises to explain and promote sometimes counter-intuitive practices such as turning towards painful

[1] See Extended Paper Section 1.1 for summary of mental health prevalence
[2] See Extended Paper Section 1.4 and 1.5 for extended overview of psychological flexibility and the six core processes
[3] See Extended Paper Section 1.2 for overview of the development of ACT

experiences, if doing so might lead to more adaptive outcomes[4]. The six processes can be distilled into three dyads comprised of the original six core processes: opening up (acceptance and defusion), doing what matters (values and committed action), and being present (present moment awareness and self-as-context).

A review of meta-analyses indicated that ACT can be effective across a range of mental health disorders, transdiagnosis populations, and physical health populations (e.g., chronic pain) (Gloster et al., 2020). While a range of outcomes were measured across studies, psychological flexibility was found to have generally larger controlled effect sizes than symptoms measured, supporting its theoretical basis within ACT.

Adapted versions of ACT are increasingly being used in children and young people populations with promising efficacy across a range of outcomes including wellbeing, quality of life, and physical and mental health conditions (Fang & Ding, 2020; Hayes & Ciarrochi, 2015). There is evidence for ACT's adaptability and efficacy for those with intellectual disabilities and autism spectrum conditions (Byrne & Mahoney, 2020) and growing evidence of the use of ACT in those with neurological disorders and brain injury (Soo et al., 2011; Thompson et al., 2022).

Measuring psychological flexibility[5]

While the evidence base for the efficacy of ACT and support of the association between psychological flexibility and wellbeing grow, there have been notable criticisms of the measure widely used to measure psychological flexibility within adult populations: The Acceptance and Action Questionnaire (AAQ-II; Bond et al., 2011)[6]. Wolgast (2014) questioned the construct validity of the AAQ-II, suggesting that it measured psychological distress rather than psychological flexibility or experiential avoidance with its original validation demonstrating high correlations with the Beck Depression Inventory-II (BDI-II;

[4] See Extended Paper Section 1.3 for an overview of relational frame theory that is said to underpin ACT and psychological flexibility through language and internal mechanisms and Section 1.7 for discussion of functional contextualism that provides a broader theoretical basis for ACT and psychological flexibility
[5] See Extended Paper Section 1.8 for a summary of outcome measurement in mental health
[6] See Extended Paper Section 1.6 for further critique of the AAQ-II

Beck et al., 1996). Further evidence supported that the AAQ-II lacked discriminant validity from depression, anxiety, and stress (Tyndall et al., 2019). Despite values and committed action being described as core processes of psychological flexibility, the AAQ-II does not include items that explicitly explore a respondent's values or actions towards them. Items appear to reference valued living in a hypothetical or non-specific manner (Doorley et al., 2020). Given these shortcomings and the widespread use of the AAQ-II, it is suggested that a large degree of literature may not accurately support what it suggests about the concept of psychological flexibility (Cherry et al., 2021; Doorley et al., 2020).

It has been noted that adolescents experience lower levels of psychological flexibility than other age groups raising interesting questions about the potential impact of interventions targeting psychological flexibility on youth mental health (Okayama 2024). However, research extending to psychological flexibility in youth populations or transition from adolescence to adulthood is limited by a lack of developmentally appropriate and robust measures of psychological flexibility for youth or maturational transition. With transitional services and interventions becoming more widespread in the treatment and prevention of mental health issues, apt measurement tools that have validity throughout ages and transitions are required (Kwan & Rickwood, 2015). To date, there are no psychological flexibility measures validated across youth and adult populations. Using existing child and adult scales for the purposes of understanding transition is problematic as changes in psychological flexibility over time cannot be accurately captured due to a lack of standardisation across measures.

The stage of adolescence is a period of physical, cognitive, and psychosocial growth between the ages of 10 to 24 years old existing between the stages of childhood and adulthood (Sawyer et al., 2018). The onset of puberty, that is occurring earlier but at varied rates across the world, has been regarded as the "beginning" of adolescence with completing biological growth and role transitions such as marriage, becoming parents, and completing education being thought of as the "end". With developments in understanding of biological growth, different cultural influences, and shifts in societal norms, reaching consensus around a global definition of adolescence is problematic. It

was generally thought that adolescents have limited insight and ability to reflect on and therefore share their cognitive and emotional worlds which could have implications for the reliability of self-report measures in this population (Piaget, 1971). However, further research continues to suggest that older children and adolescents are able to reliably report their internal experiences (Loeber et al., 1990). Despite some tendency for young children to respond to measures related to their immediate state of mind rather than more broadly, there is also growing evidence for the ability of children to self-report information that is unique and insightful (Deighton et al., 2014). Recent models suggest that from a neurocognitive perspective, adolescent self-concept and self-evaluation – key factors in the ability to self-report on mental processes – develop from the ages of 12 or 13 (Crone et al., 2022).

The Avoidance and Fusion Questionnaire for Youth (AFQ-Y; Greco et al., 2008) is a youth measure of psychological flexibility modelled on the items of the AAQ-II with adaptations made to simplify instructions and items. However, it is not reported whether standard guidelines (e.g., COSMIN checklist (Mokkink et al., 2012)) for the development of psychometric measures were followed or with what rigour raising questions regarding content validity[7]. Greco and colleagues (2011) discuss a further limitation of the AFQ-Y lacking coverage of the "present moment awareness" core process while being used as a measure of psychological flexibility. The Children's Acceptance and Mindfulness Measure (CAMM; Greco et al., 2011) is often used alongside the AFQ-Y to encompass the complete core processes of psychological flexibility.

The Children's Psychological Flexibility Questionnaire (CPFQ) is presented as a psychological flexibility measure of the six core processes for use across adults and children populations (Dixon & Paliliunas, 2018). However, information on the scale's development is not readily available and it is not possible to ascertain whether best practice guidelines for scale development were followed or how/whether factor structure was statistically analysed. Attempts at validation against existing measures were conducted in very small samples, it is therefore not possible to draw conclusions on the scale's psychometric properties (Bachmann et al., 2021; Lenoir et al., 2022).

[7] See Extended Paper Section 1.9 for best practice guidelines for scale development

The widespread use of psychometrically and theoretically limited measures has major implications for the existing evidence base and the future of research in psychological flexibility (Doorley, 2020). It can hinder progress in reliable and accurate evaluation of interventions and the development of empirically grounded recommendations across populations (Petersen et al, 2023). The 23-item Comprehensive Assessment of Acceptance and Commitment Therapy Processes (CompACT; Francis et al., 2016) was developed to address the issues of existing measures. It was developed using Delphi consensus methods providing a measure of the six core processes of PF. The CompACT presented a three-factor structure that aligns with the three dyads of core ACT processes and demonstrated strong psychometrics. However, subsequent studies have not replicated the original factor structure. An 18-item CompACT was tested in Portuguese and UK-based populations and presented strong psychometric properties after the removal of five items of the openness to experience subscale (Trindade, 2021). The 18-item CompACT was found to perform well across military (Tynan, 2022), French, and Spanish (Giovannetti, 2024) populations[8].

Doorley and colleagues (2020) argue that the CompACT includes values but only at an abstract level that does not account for their relation to PF, i.e., the pursuit of value guided activity in the context of challenges or distress in life. However, this is a limited view of the measure demonstrated by the chosen item cited: “my values are really reflected in my behaviour”, at the omission of items that clearly show the concept of values considered and measured in relation to the presence of distress (e.g., “I get so tangled up in my thoughts that I don’t do the things that really matter to me”, “I do things that matter to me even when it is difficult”, and “I choose to do what’s important to me, even if it brings up difficult emotions”).

The Adult and Adolescent Psychological FlexibiliTy Scale (ADAPTS), a psychological flexibility measure designed for youth and adult populations, has recently been presented (Lewis et al., 2020). The measure is derived from the original CompACT and comprises 23-items. Initial stages of development have been completed with the draft being administered to groups of experts and

[8] See Extended Paper Section 4.3 for further breakdown of previous CompACT versions

school-aged children for rounds of evaluation through cognitive interviews as per best practice (Boateng et al., 2018; Mokkink et al., 2012)[9]. Items have been refined for suitability and coherence based on feedback. The ADAPTS uses plain language that is understandable for a reading ability above Level 3 (expected level of a 9-11 year old) in the National Curriculum Scale (UK) (Department for Education, 2014).

The accessibility of measures

As well as extending understanding and research in youth populations, there are compelling arguments for the standardisation of accessible information and communication (including psychometric measures) across services. Warde and colleagues (2018) argue that plain language communication should be a key competency in healthcare in a globalised world. The use of plain language ensures increased accessibility for those with lower levels of English language fluency, addressing areas of social injustice and enhancing patient-centred care (Jones & Williams, 2017; Riganti & McKinnon, 2023). This is especially relevant given that recent census data indicates that an increasing number of UK residents use a language other than English as their main language at home (Office for National Statistics, 2022). Broader accessibility also allows increased inclusivity of populations such as those with cognitive impairments (e.g., brain injury, learning disability), or those who have had limited opportunity to access or engage in literacy education (Hansen-Schirra & Maaß, 2020). Furthermore, lower levels of language proficiency are reported to be associated with higher levels of psychological distress meaning it is vital for individuals to be able to engage with research, treatment, and evaluation through accessible means (Hunn, 2023).

Aims

The ADAPTS has undergone Delphi and cognitive interviewing stages of development[10]. The current study seeks to continue development of the scale by exploring its psychometric properties in youth and adult samples. This study

[9] See Extended Paper Section 1.9 for full description of stages of scale development
[10] See Extended Paper Section 1.9 for full stages of scale development

aims to identify the factor structure of the scale in youth and adult populations and assess the concurrent, convergent, and discriminant validity of the scale against existing measures.

Methods

Ethical approval for this study was obtained from the University of Lincoln Ethics Approval Panel (see Appendix A).

The study involved two samples analysed in separate but identical phases. Phase 1 involved the exploratory factor analysis and validation of the ADAPTS in a youth sample and Phase 2 involved the exploratory factor analysis and validation of the ADAPTS in an adult sample. Adequate sample size estimation was guided by empirical power simulations presented by Wolf et al., (2013). The existing CompACT measure involves a three-factor structure with factors loadings of >.85 with 5+ indicator items per factor which was considered in estimations. A minimum sample size of 250 per sample was thought to be adequate for this analysis.

Youth sample

A UK-based community sample of participants aged 13 to 21 was recruited using the Prolific online recruitment platform (via parent/carer recruitment/consent for those aged under 18)[11]. Prolific provides representative samples proportionate to sex, age, and ethnicity demographics of the national population reported by the UK Office of National Statistics (2022) ensuring generalisability of findings (Prolific, 2025). Potential participants, or parent/carers of those aged 13 to 15, followed a link to the Qualtrics questionnaire hosting platform that provided the study information (see Appendix A) including the potential risks and benefits of taking part, participants' right to withdraw, and links to further support if needed. For parents/carers of participants aged 13 to 15, electronically endorsed parental/carer consent was gained. A developmentally appropriate information sheet was then presented

[11] See Extended Paper Section 2.1 for rationale of recruitment design, problems encountered, critiqued, and overcome

prior to electronically endorsed assent being gained from the child participant. For participants aged 16 to 21, electronically endorsed consent was gained. Participants were then presented with the measures for completion.

Participants in the youth sample completed the ADAPTS and a range of other measures. Further measures (see Table 1) were chosen to provide data for analyses of convergent validity with a theoretically similar measure (AFQ-Y8 and CAMM), discriminant validity with a theoretically distinct construct (mobility measured via the EQ-5D), and concurrent validity with adjacent but not theoretically identical constructs (wellbeing via SWEMWBS and distress via the anxiety and low mood subscales of the RCADS).

Adult sample

An existing dataset (Moghaddam et al., 2023 (Sample 2)) provided by a UK-based adult sample (aged 19-80) was used to explore the psychometric properties of the ADAPTS in an adult population. The sample was collected via Prolific online recruitment platform providing a representative sample closely matching UK census information (Office of National Statistics, 2022).

This sample provided responses to the ADAPTS and further measures to provide data for analyses of convergent validity with a theoretically similar measure (AAQ-II), discriminant validity with a theoretically distinct construct (mobility measured via the EQ-5D), and concurrent validity with adjacent but not theoretically identical constructs (wellbeing via SWEMWBS and distress via PHQ-9 and GAD-7). Please see Table 1 for the properties of measures used[12].

Data analysis

Data were exported from Qualtrics to SPSS. Outliers were identified using Mahalanobis distance variables and removed from the data.

Reliability[13]

The internal consistency of the ADAPTS was assessed in each sample using corrected item-total correlations. Included items should exceed the

[12] See Extended Paper Section 2.3 for further information on measures used in the study
[13] See Extended Paper Section 2.2.2 for background and references for reliability and statistical methods followed

recommended threshold of *r* =.30 to ensure they contribute sufficiently towards the intended construct (Nunnally & Bernstein, 1994). Inter-item correlations were assessed to ensure no multicollinearity (r>.80) among the items. Multicollinearity would indicate the redundancy of certain items and support their removal from the measure.

Exploratory Factor Analysis[14]

Data were subject to EFA in each sample. A three-factor structure might be expected due to the underpinning theoretical construct of psychological flexibility and the performance of related measures from which the ADAPTS is derived. However, EFA was favoured over confirmatory factor analysis due to the novelty of the ADAPTS and its items, and the current administration in two contextually and developmentally distinct populations.

To explore the structure of the measure, factors were extracted using Principal Axis Factoring (PAF) with oblique rotation (direct oblimin), a method used in the development of other CompACT versions (e.g., Francis et al., 2016; Moghaddam et al., 2023). Assessment of the adequacy of extraction and number of factors identified followed three recommended principles outlined by Tabachnick and Fidell (2013). Firstly, the Kaiser criterion was applied to retain factors with eigenvalues of >1. Secondly, scree plots were used to identify the number of factors indicated before the inflection point of the slope (Cattell, 1966). Thirdly, parallel analysis was used to identify factors with eigenvalues greater than the averaged eigenvalue of simulated random data based on measure characteristics (Horn, 1965). To refine the definition and stability of factors, items were omitted if they had loading of <0.45 on all factors or cross-loadings on more than one factor (with a difference of <0.20 between loadings).

Validation[15]

Pearson's r was assessed to explore the ADAPTS' convergent, concurrent, and divergent validity against other relevant measures outlined above.

[14] See Extended Paper Section 2.2.1 for background on factor analysis and reasoning for methods used

[15] See Extended Paper Section 2.2.3 for further explanation of validity explored in the study

Table 1

Measures used in the current study

Measure	Variable	Number of items	Responses	Example item	Reliability		Sample
AFQ-Y8	Experiential avoidance and cognitive fusion	8	5-point scale from “not at all” (0) to “very true” (4); range 0-32; higher scores indicate higher psychological inflexibility	“The bad things I think about myself must be true”	Internal consistency: α=.83 (Greco et al., 2008)	Good convergent validity (Greco et al., 2008)	Youth
CAMM	Acceptance and mindfulness	10	5-point scale from “never true” (0) to “always true” (4); range 0-40; higher scores indicate higher degree of mindfulness	“It’s hard for me to pay attention to only one thing at a time”	Internal consistency: α=.80 (Greco et al., 2011)	Good convergent validity (Greco et al., 2011)	Youth
RCADS depression subscale	Distress: Depression	10	4-point scale from “never” (0) to “always” (3); range 0-30; higher scores indicate higher degree of depression	“I feel sad or empty”	α=.87 (Chorpita et al., 2005)	Good convergent and concurrent (Chorpita et al., 2005; Donnelly et al., 2018)	Youth
RCADS anxiety subscale	Distress: Anxiety	6	4-point scale from “never” (0) to “always” (3); range 0-18; higher scores indicate higher degree of anxiety	“I worry that something bad will happen to me”	α=.84 (Chorpita et al., 2005)	Good convergent and concurrent (Chorpita et al., 2005; Donnelly et al., 2018)	Youth
SWEMWBS	Mental wellbeing	7	5-point scale from “none of the time” (1) to “all of the time” (5); range 7-35; higher scores indicate higher wellbeing	“I’ve been feeling optimistic about the future”	α=.84 (Ng Fat et al., 2017)	Good convergent and construct validity (Ng Fat et al., 2017)	Youth & Adult
EQ-5D-5L mobility subscale	Mobility	1	5-point scale from “I have no problem with moving about” (1) to “I am unable to walk about” (5); range 1-5; higher scores indicate greater problem with mobility	“I have no problem with moving about”	ICC = excellent (Feng et al., 2021)	Good convergent validity (Feng et al., 2021)	Youth & Adult
AAQ-II	Psychological inflexibility/ experiential avoidance	7	7-point scale from ‘never true” to “always true”; range 7-49; higher scores indicate higher psychological inflexibility	“My painful experiences and memories make it difficult for me to live a life that I would value”	α=.78 - .87 (Bond et al., 2011)	Associations with distress, questionable construct validity (Bond et al., 2011)	Adult
PHQ-9	Distress: Depression	9	4-point scale from “not at all” (0) to “nearly every day” (3); range 0-27; higher scores indicate greater depression	“Little interest or pleasure in doing things”	α=.86 - .89 (Kroenke et al., 2001)	Good criterion validity (Kroenke et al., 2001)	Adult
GAD-7	Distress: Anxiety	7	4-point scale from “not at all” (0) to “nearly every day” (3); range 0-21	‘Feeling nervous, anxious or on edge”	α=.92 (Spitzer et al., 2006)	Good criterion validity (Spitzer et al., 2006)	Adult

Note. AAQ-II: Acceptance and Action Questionnaire-II; AFQ-Y8: Avoidance and Fusion Questionnaire for Youth-8; CAMM: Child and Adolescent Mindfulness Measure; GAD-7: Generalised Anxiety Disorder-7; ICC=intraclass correlation coefficient; PHQ-9: Patient Health Questionnaire-9; RCADS: Revised Children's Anxiety and Depression Scale; SWEMWBS: Short Warwick-Edinburgh Mental Wellbeing Scale.

Results[16]

Phase 1: Youth sample[17]

Participants

A community sample of 352 young people aged 13 to 21 consented, or assented with parental consent, to take part in the study, with 316 completing all measures in full (see Table 2 for sample characteristics).

Table 2
Sample characteristics

	Youth sample (n=316)	Adult sample (n=400)
Gender - *n* (%)		
Female	166 (52.5)	198 (49.7)
Male	144 (45.6)	197 (49.3)
Transgender	0	1 (0.3)
Non-binary/non-conforming/gender fluid/agender	1 (0.3)	3 (0.8)
Preferred not to say	1 (0.3)	1 (0.3)
Age - *M* (*SD*)	17.20 (2.86)	46.3 (15.2)
Ranges - *n* (%)		
13-15	108 (35.1)	-
16-18	82 (26.6)	-
19-21	118 (38.3)	7 (1.8)
22-35	-	114 (28.5)
36-50	-	107 (26.7)
51-65	-	129 (32.2)
66-80	-	43 (10.8)
Ethnicity - *n* (%)		
White European	226 (71.5)	347 (86.8)
Asian	51 (16.1)	32 (8.1)
Black	21 (6.4)	14 (3.5)
Mixed/multi-ethnicity	12 (3.6)	7 (1.8)
Latino	2 (0.6)	0
Preferred not to say	4 (1.2)	0

Abbreviations: SD (Standard deviation).

[16] See Extended Paper Section 3.1 for information about assessing the normality of the data
[17] See Extended Paper Section 3.2 for further analysis, data and results

Removing multivariate outliers

Cases with a Mahalanobis distance variable of $p < .001$ were removed (n=4) and analysis was conducted on the remaining 312 cases.

Exploratory Factor Analysis

Kaiser Meyer Olkin Test (0.88) and Bartlett's Test of Sphericity ($\chi 2 = 3208.4$, df =253, p <.001) suggested the sample size was more than adequate for EFA. Initial PAF of the 23 items revealed a three-factor structure though several items were cross-loading or loaded poorly onto factors. Weak or cross-loading items were removed in an iterative process until all items were adequate (loading >0.45 and not cross-loading within 0.2 on factors). Five items (2, 6, 13, 20, and 22) were removed in this process. PAF of the remaining 18 items supported a stable three-factor solution (see Table 3) according to the three extraction rules used, which accounted for 58.2% of the variance and 50.3% of the cumulative variance following extraction.

Reliability[18]

Overall internal consistency of the 18-item scale in the youth sample was a=.86. Inter-item correlations were also explored to ensure there was no significant overlap of items which would be indicated by $r > .80$. None of the inter-item correlations exceeded this threshold.

Validity

Table 4 presents the associations observed between the ADAPTS (18-item total and subscales) and measures that are theoretically related (AFQ-Y8, CAMM, SWEMWBS, RCADS anxiety subscale, and RCADS low mood subscale) and unrelated (EQ-5D physical mobility score) to psychological flexibility. Overall, moderate-to-large correlations were found between the ADAPTS and theoretically similar measures (of experiential avoidance, wellbeing, and distress), and minor, non-significant correlations with a theoretically unrelated variable (physical mobility).

Table 3

[18] See Extended Paper Section 3.3 for further results of subscale reliability

EFA of the ADAPTS in youth and adult samples

ADAPTS items	Youth sample			Adult sample		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
OE						
4. I try to distract myself to block out difficult thoughts and feelings.	.61			.59		
8. I tell myself it's wrong to have certain thoughts.	.62			.51		
11. I try to avoid situations that might bring up difficult thoughts or feelings.	.71			.75		
15. I try hard to block the feelings that I don't want.	.66			.81		
18. I avoid things that are important to me, if there is a risk that I will feel upset.	.45			.51		
BA						
3. I rush through activities that are important to me, without really paying attention.		-.47			-.57	
9. I find it hard to focus on the things that I'm doing.		-.52			-.56	
12. Even when I'm doing things that are important to me, I find myself doing them without paying attention.		-.72			-.77	
16. I do things without being aware of what I'm doing.		-.90			-.84	
19. I often seem to do things without much awareness of what I'm doing.		-.79			-.87	
VA						
1. I can work out what matters to me in life and go after these things.			.64			.50
5. I behave in ways that reflect what is important to me.			.70			.68
7. I choose to do what's important to me, even if it brings up difficult emotions.			.68			.61
10. I live my life in a way that matches what I care about.			.66			.76
14. I do things that matter to me, even when it is difficult.			.80			.79
17. I can stick with things that I care about, even when it's difficult.			.65			.71
21. My values are really reflected in my behaviour.			.67			.71
23. I can keep going with something when it is important to me.			.71			.64

Convergent validity. Large and significant correlations were found between the ADAPTS and the AFQ-Y8 (r =− 0.63), supporting convergent validity (negative association reflects opposite scaling of the ADAPTS versus AFQ-Y8)

Concurrent validity. Large and significant correlations were found between the ADAPTS total score and the SWEMWBS (r =0.61). Among the subscales, BA demonstrated a strong association with wellbeing, and VA and OE demonstrated moderate associations. In terms of relation to measures of psychological distress, the ADAPTS total score also showed strong, negative association with depression (r=-.62) and moderate, negative association with anxiety (r=-.48) scores. The ADAPTS subscales showed moderate-to-large, negative associations with depression scores and small-to-moderate, negative associations with anxiety.

Divergent Validity. Minor and non-significant correlations were found between the ADAPTS and physical mobility (as measured using the EQ-5D).

Table 4

Correlations between the ADAPTS and other measures (n=312)

Measure	ADAPTS total score	ADAPTS OE subscale	ADAPTS BA subscale	ADAPTS VA subscale	
Youth sample					AFQ-Y
AFQ-Y	-.63**	-.56**	-.52**	-.35**	-
Mindfulness	.62**	.70**	.57**	.18**	-.71**
Depression	-.62**	-.49**	-.58**	-.33*	.68**
Anxiety	-.48**	-.46**	-.45**	-.19**	.59**
Wellbeing	.61**	.36**	.50**	.47**	-.51**
Mobility	-.08	-.10	-.11	.01	.13*
Adult sample					AAQ-II
AAQ-II	-.67**	-.56**	-.52**	-.47**	-
Depression	-.57**	-.38**	-.53**	-.41**	.71**
Anxiety	-.56**	-.43**	-.49**	-.38**	.78**
Wellbeing	.64**	.36**	.55**	.56**	-.70**
Mobility	-.11*	-.08	-.09	-.07	.13**

Note. *p <.05; **p <.01.

Phase 2: Adult sample[19]

Participants

A community sample of 400 participants aged 19-80 completed all measures in full (see Table 2 for sample characteristics).

Removing multivariate outliers

Outliers were again identified and removed (n=2) using Mahalanobis distance variables with 398 cases included in the analysis.

Exploratory Factor Analysis

Kaiser Meyer Olkin Test (0.90) and Bartlett's Test of Sphericity ($\chi 2$ =4372.8, df =253, p <.001) confirmed the adequacy of the data for analysis. Initial PAF of the 23 items showed that four factors with eigenvalues of >1 were identified. After poorly loading (<0.45) and cross-loading items (items 6, 13, 20, and 22) were deleted in an iterative process, a rerun of analysis revealed that a four-factor structure was not stable, and a three-factor structure was implied. A three-factor structure for the remaining 19-items accounted for 58.9 of the variance and 51.8 of the cumulative variance following extraction (see Table 3).

Reliability[20]

Corrected item-total correlations were explored, and one item (item 2) did not exceed the *r* =.30 threshold to indicate adequate contribution towards the scale construct and was removed at this stage (Nunnally & Bernstein, 1994). Inter-item correlations were also explored to ensure there was no significant overlap of items which would be indicated by *r* >.80. None of the inter-item correlations exceeded this threshold. Overall internal consistency of the resultant 18-item scale in the adult sample was a=.89. The outcome scale was identical to the outcome scale in the youth sample.

Validity

[19] See Extended Paper Section 3.2 for further analysis, data and results
[20] See Extended Paper Section 3.3 for further results of subscale reliability

The associations observed between the ADAPTS (18-item total and subscales) and measures that are theoretically related (AAQ-II, PHQ-9, GAD-7, SWEMWBS) and unrelated (EQ-5D physical mobility score) to psychological flexibility are presented in Table 4. Overall, the ADAPTS showed moderate-to-large correlations with theoretically similar measures (of experiential avoidance, wellbeing, and distress), and small correlations with a theoretically unrelated variable (physical mobility).

Convergent validity. Large and significant correlations were found between the ADAPTS and the AAQ-II (r =− 0.67), supporting convergent validity (negative association reflects opposite scaling of the ADAPTS versus AAQ-II).

Concurrent validity. Large and significant associations were found between the ADAPTS and wellbeing (r =0.64). Among the subscales, VA and BA demonstrated a strong relationship with wellbeing, and OE demonstrated moderate association. In terms of relation to measures of psychological distress, total ADAPTS score also showed moderate, significant association with depression (r=-.57) and anxiety (r=-.56) scores. ADAPTS subscales showed moderate-to-large associations with depression scores and moderate associations with anxiety.

Divergent Validity. The ADAPTS total score demonstrated weak but significant (*p*=0.05) association with mobility. The ADAPTS subscales demonstrated negligible, non-significant correlations with physical mobility.

Discussion

The aim of this study was to validate a recently developed plain English psychological flexibility measure, the Adult and Adolescent Psychological FlexibiliTy Scale (ADAPTS) (Lewis et al., 2020). An EFA in adult and youth samples supported a three-factor structure aligned with ACT's theoretical process dyads of psychological flexibility[21]. The ADAPTS also demonstrated

[21] See Extended Paper Section 4.1 for discussion of subscale results

strong evidence of concurrent, convergent, and discriminant validity, with expected correlations with wellbeing, distress, and other psychological flexibility measures, and negligible association with unrelated constructs like mobility.

As above, the ADAPTS comprises three subscales: Openness to experience, Valued action, and Behavioural awareness (Hayes et al., 2011). In both samples, the Openness to experience subscale was found to be structurally problematic resulting in five items being removed due to cross-loading or not contributing enough to the overall construct. Four of the same items were also removed from analysis in the validation of the CompACT across populations/languages (Giovannetti et al., 2024; Trindade et al., 2021; Tynan et al., 2022). The removed items were developed to contribute towards measurement of the processes of defusion (“I get so tangled up in my thoughts that I don’t do the things that really matter to me” and “thoughts are just thoughts – they don’t have to control what I do”) and acceptance (“something that is really important to me is to not have upset feelings”, “I’m willing to have whatever thoughts and feelings come up, without trying to change or avoid them” and “I can accept how I feel without having to change it”).

There are several suggestions to be made as to why the Openness to experience factor was unstable across populations and in this study. It is possible that the consistency of findings of weak and cross-loading items in the Openness to experience scale indicates something about the psychological flexibility processes. The “hexaflex” and “triflex” models of psychological flexibility suggest the interconnectedness of the processes (Hayes et al., 2011). The techniques of ACT also target multiple processes at once or suggest that by influencing one, others can change concurrently. For example, it may be that the removed items “something that is really important to me is to not have upset feelings” and “I get so tangled up in my thoughts that I don’t do the things that really matter to me” tap into values as well as defusion with the idea of actions being considered “really important/really matter[ing]”. While these items are process/theory consistent, this may suggest that the delineation of processes into subscales in measurement is not truly reflective of the psychological flexibility construct and prompts questions of how it is best conceptualised and/or measured.

Chawla and Ostafin (2007) also note that openness to experience as a lone process and its counterpart, experiential avoidance, are multi-faceted often comprising behavioural, cognitive, and affective elements. It may be challenging to capture such heterogenous processes in one subscale using current analysis methods for internal consistency and factor analysis for a comprehensive psychological flexibility measure. The candidate openness to experience subscale was the longest subscale, originally consisting of ten items reflecting the variety within the process but was reduced to five. It may be that the higher number of items provided more opportunity for variance and instability within the factor compared to the valued action and behavioural awareness subscales. Again, this links to the query of whether psychological flexibility processes are best assessed with scales developed through factor reduction. This highlights a tension between statistical quality and preservation of conceptual breadth in the development of scales for constructs such as psychological flexibility. It may be that openness to experience is best measured with greater coverage of the diverse facets of the construct, however, this would substantially lengthen the scale if guidelines were met for five items minimum per subscale.

EFA and analysis of internal consistency of the measure in the youth and adult samples respectively revealed that the item “something that is really important to me is to not have upsetting feelings” did not appear to contribute towards the psychological flexibility construct. Issues with this item were not reported in studies of the CompACT across different populations. While the ADAPTS items are distinct through adaptation, equivalent items have performed similarly across samples. It may be that this item did not retain the same semantic value after being adapted. The term “really important” could also allude to valued action in some way and thus blur the distinctness of the openness to experience construct being targeted by the item.

The issue of participant knowledge and understanding of openness to experience concepts may also be in part responsible for the performance of the subscale. It has been noted that experiential avoidance techniques can include involuntary and automatic processes (e.g., repression, self-deception, reappraisal) that result in a lack of awareness (Chawla & Ostafin, 2007). Experiential avoidance can also prevent contact with and learning about the necessary phenomena or stimuli referred to in items. It is possible that this lack

of awareness may influence the way that items are understood or responded to within the subscale. Similarly, Francis and colleagues (2016) discuss the challenges of presenting complex ideas such as those related to openness to experience using verbal descriptors, particularly to those without prior orientation to psychological flexibility processes. Again, it may be that awareness, or prior knowledge mediates how items are conceptualised and answered.

The ADAPTS related in expected ways to existing measures in both samples. The strong correlations with the AAQ-II, wellbeing, and psychological distress (measured through anxiety and depression) support the good convergent and concurrent validity of the scale. The strong relationship between the ADAPTS and the AAQ-II and the AFQ-Y8 is at an acceptable level. The associations suggest that they are related but do not measure the same construct which is promising given the issues with the existing measures (Cherry et al., 2021). The AAQ-II showed high correlations with distress measures in the current study as seen in previous reports, especially in the adult sample (Tyndall et al., 2018). While also producing high correlations, the ADAPTS demonstrated lower magnitudes with anxiety and depression than the AAQ-II and the AFQ-Y8. The ADAPTS' correlations with anxiety and depression in the youth and adult samples indicate a relationship between variables but not one strong enough that would suggest they measure the same construct.

No relationship between the ADAPTS and mobility was demonstrated, as expected, in the youth sample suggesting good discriminant validity. In both samples, the AAQ-II and the AFQ-Y8 had significant relationships with mobility, perhaps reflecting a possible relationship with psychological distress (Turner & McLean, 1989). In terms of the weak but significant relationship between the ADAPTS and the single mobility item from the EQ-5D-5L in the adult sample, it may be that this is reflecting a relationship between mobility and distress. However, similar results were not seen in previous studies of the CompACT that used the same item for discriminant validity (Moghaddam et al., 2023). The significance may be an artefact of the current sample rather than a replicable feature of the ADAPTS.

Strengths, limitations and future directions[22]

The evidence base demonstrated the need for a comprehensive and robust measure of psychological flexibility across the lifespan and for populations that may require more accessible language. There is still limited literature regarding the treatment effects of ACT in youth populations measuring psychological flexibility as an outcome. The ADAPTS has been shown to provide coverage of the three dyadic core processes of psychological flexibility while being related to but distinct from psychological distress. The current study presents an 18-item measure that is brief and openly available making it suited to screening and repeated outcome measurement in research populations, clinic, and general settings. In terms of practical application, the ADAPTS has potential to support intervention development, mechanism-based research, and service evaluation in both youth and adult settings. The ADAPTS performed similarly across ages making it apt for use as an outcome measure in transitional services that are becoming more common, addressing an important gap (Kwan & Rickwood, 2015). Use of the measure as a screening tool could help identify and provide preventative intervention to those with low levels of psychological flexibility prior to transition to adulthood where psychopathology is often exacerbated. In addition to the validity and reliability demonstrated in this study, the ADAPTS has known content validity in its age-inclusive wording developed through cognitive interviewing and co-development that ensured each item was comprehensible, meaningful, and interpreted with theoretical consistency.

While research into youth psychological flexibility processes is in its infancy, the similar performance of items across youth and adult populations also presents interesting direction for further research. These findings could inform the exploration of similarities and differences in the way psychological flexibility can be approached across age populations. Another strength is that the ease of language also makes the measure accessible across populations of different English language proficiency and ability.

[22] See Extended Paper Section 4.2 for further suggestions and discussion of future research

A number of limitations should be acknowledged while considering the current findings. The study involved two representative UK-based samples that were predominantly White European (reflecting UK census proportions). This can be considered a strength when exploring UK-based populations but potentially limits the generalisability of the findings across global populations. As with all research recruiting participants online, the effects of digital poverty may skew the demographic of participants. The level of familiarity with the concept of psychological flexibility or ACT was not measured within the samples. The items may have presented unfamiliar or seemingly unusual concepts to participants that may have influenced their responses. Conversely, familiarity with the construct may have had an impact on how questions were answered or increased answering in line with perceived social desirability.

As the under-15s participants were accessed via parental opt-in and due to the online nature of the study, it is not clear to what extent participants may have been helped to complete the online measures by a nearby adult. It is possible that some of the items presented new concepts to participants who may have had questions. It would be useful for further validation to administer the measure in person to a child sample to ensure the validity of responses. In previous measurement of latent constructs in children, there has been a reliance on parental-report measures to corroborate or provide an objective perspective of a child's experience (Greco et al., 2008). However, this is particularly challenging to capture in the case of psychological flexibility due to the internal nature of the processes. It is also possible for a person to have an internal experience that their outward behaviour does not reflect which would result in inaccurate objective reports.

Further validation and factor analysis of the ADAPTS is necessary. Future research should confirm the factor structure using a confirmatory factor analysis (CFA) in a different sample. The usefulness of the ADAPTS as a repeated measure should also be explored using test-retest reliability methods. Cross-validation and replication should also be explored by testing the performance of the ADAPTS in a range of different samples. The measure should also be explored in clinical populations pertaining to different mental and/or physical health issues. The exploration of psychometric properties in clinical populations could provide clinical cut-off scores and valuable

measurement of processes and treatment effects. The current samples included children from ages 13 and up. Further research is needed into how the measure performs in younger children, possibly accompanied by parental or teacher observational reporting, as mentioned above.

With five items from the Openness to experience subscale being removed, it is possible that the measure loses some ability to capture or report changes in defusion and/or acceptance that may raise questions about the content validity of the scale[23]. However, it appears that remaining items tap into both processes with the subscale still comprising five items, as recommended (Nunally & Bernstein, 1994). This supports the brevity of the scale, reducing user burden and ensures balance across subscales.

Conclusion

The ADAPTS (see Appendix E), a novel 18-item measure of psychological flexibility for use across the adolescent and adult populations is presented. The measure comprises three subscales aligning the with three dyadic processes proposed to underlie psychological flexibility: Openness to experience, Valued action, and Behavioural awareness. The prolific use of flawed measures in the evidence base for ACT and psychological flexibility raises significant questions about what we claim to know, with calls for extensive revision and overhaul (Cherry, 2021; Doorley et al, 2020). A brief, psychometrically robust, comprehensive psychological flexibility measure for youth as well as adults and those with needs for accessible language fills an important gap in the literature. The measure is free to access providing a vital tool for the progression of understanding in psychological flexibility across populations. Further research is now required to validate the measure across diverse populations and to assess test-retest reliability.

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[23] See Extended Paper Section 4.3 for further discussion of the openness to experience subscale and processes

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EXTENDED PAPER

1 Extended introduction

1.1 Mental health

The World Mental Health Report (World Health Organisation [WHO], 2023) presents the high prevalence of mental ill health on a worldwide scale causing major human and economic costs as a leading cause of disease burden. The report highlights multiple factors that impact mental health existing on personal, local, and global levels. The onset for a range of the most common mental health conditions was found to be in youth (12 to 24 years of age), though they are often first detected later in life (Kessler et al., 2005; Solmi et al., 2022) supporting arguments for the development of early identification and intervention methods (McGorry & Mei, 2018). Latest survey figures suggest that one in six adults met criteria for a common mental health condition (Baker & Kirk-Wade, 2024). The estimation is higher in young people with one in five thought to experience mental ill health (NHS, 2023). This figure has increased throughout the years with suicide being a leading cause of death among young people. There is a growing focus on how best to support the mental health of school-, college-, and university-aged people (Department for Education, 2023; Lewis & Bolton, 2023).

1.2 Development of Acceptance and Commitment Therapy (ACT)

ACT has developed over many decades out of existing therapeutic modalities that centred around traditional behaviour analysis (Zettle, 2005). Other therapeutic approaches that have a basis in behaviour analysis as well as ACT have become known as a “third wave” therapies, referencing classical behaviour therapy as “first wave”, and the introduction of intervention aimed at cognitions as well as behaviour as “second wave”. Third wave therapies, including functional analytic psychotherapy (Kohlenberg & Tsai, 2007), dialectical behaviour therapy (Linehan, 1993), and mindfulness-based cognitive therapy (Segal et al., 2002), are said to be similar in their focus on context and its relation to psychological responses rather than immediate attempts to change or control the responses themselves. The incorporation of mindfulness into these therapies is said to be a distinct feature of “third-wave” therapies (Hayes, 2012).

In the 70s, Steve Hayes began developing an approach based on the idea that verbal behaviour and language was crucial in the development, maintenance, and treatment of psychological issues (Zettle, 2005). In this approach, prominent directions of the time into cognitive and mechanistic approaches were shunned. Instead, theories of verbal behaviour and rule-governed behaviour (see Skinner, 1957), where internal events (such as thoughts, judgements, beliefs etc.) are viewed as behaviour themselves rather than a causal factor in overt behaviour. In this way, contextual contingencies could be explored for their relationship to all behaviours (internal and overt) including behaviour-behaviour rather than one way thought-behaviour causal processes. The idea of behaviour-behaviour influence allowed for intervention at a relationship-to-thought level rather than focusing in a limited nature on controlling or altering the content of thoughts. Early iterations of therapy were known as “comprehensive distancing” and had similarities to modern-day ACT such as the use of metaphor and defusion exercises. Following this, Hayes presented an overview of Relational Frame Theory (that became the underpinning theory that ACT was built on.

While ACT is generally empirically supported as performing similarly to CBT and better than control groups, there are some populations where ACT research is lacking or demonstrated no effect (Gloster, 2020). Studies exploring the use of ACT for people with psychosis demonstrated that treatment as usual group performed better than ACT at reducing positive symptoms (Tonarelli et al., 2016). A further meta-analysis of ACT in multiple sclerosis populations found no effect on anxiety, depression, or quality of life (Thompson et al., 2022). The use of ACT is being explored in neurodiverse and intellectual disability populations highlighted by a review of single case designs (Byrne & Mahoney, 2020). It is suggested that ACT may be less effective for those who experience high levels of cognitive fusion and are less able to think abstractly. However, the extent of literature is in terms of generalisability is highly limited and further research using more robust methodology would enhance this line of research. While it is evident that ACT literature is of mixed quality and outcome, it is worth noting that ACT does not target symptom reduction. ACT aims for an increase in wellbeing through promotion of psychological flexibility processes so the

expectation of symptom reduction to demonstrate efficacy, as seen in many studies, may be flawed (Hayes et al., 2011; Gloster et al., 2020). This adds to the need for robust measurement of psychological flexibility to aid research exploring the efficacy of ACT.

There is growing evidence that people from minoritised backgrounds experience poorer mental health outcomes supporting the need for relevant and validated treatment for these populations (Versey et al., 2019; Wittgens et al., 2022). A recent review highlighted the underrepresentation of minoritised groups within RCTs of ACT limiting the generalisability of findings. A meta-analysis by Fuchs and colleagues (2013) suggests that ACT has utility for those from marginalised backgrounds. This may occur through empowering them to live a valued life while not minimising their distress or suggesting that sources of discrimination can or should be managed differently. The existence of one meta-analysis involving minoritised backgrounds from over a decade ago suggests there is a gap in knowledge of how different populations may respond to ACT. Within an increasingly globalised world, the scarcity of cultural and ethnic representativeness and truly generalisable findings is damaging and has large implications for mental health treatment and access.

1.3 Relational frame theory

Relational frame theory (RFT) is presented as an overarching psychological framework that attempts to capture the interplay of human language and higher cognition in terms of how individuals learn, understand, and relate to the world around them. Building on operant behavioural principles within a functional contextualist understanding, Hayes and colleagues (2001), describe RFT as the basic science that underpins ACT. RFT can be used as a way of exploring the evolution and success of the human species and seeks to provide explanation for human achievement and suffering (Hayes et al., 2011). In this way, it has a broader application beyond ACT, offering uses in clinical practice involving different psychotherapies (Törneke, 2010), organisational psychology (Hayes et al., 2011), and education (Barnes & Rehfeldt, 2013; Ruiz & Perete, 2015).

According to RFT, any stimuli can be related to each other through a number of ways depending on the learning attached to them based on an individual's experiences and contexts around them (Törneke, 2010). This learning is facilitated by and stored as language (or verbal stimulus) that allows humans to relate the meaning, characteristics, and function of stimuli. Stimuli can be related in many ways that lead to large networks of learning about them. These relations can be about difference, hierarchy, causation, sequence, evaluations, perspective-taking and so on. Beyond traditional behaviourist views where direct stimulus-response relationships exist and dictate behaviour, RFT suggests that individuals can learn complex and flexible networks (relational frames) that stimuli relate to each other within. Relational framing is an abstract verbal and cognitive process that comprises three characteristics: mutual entailment, combinatorial entailment, and transformation of the stimulus function.

Mutual entailment refers to the idea that two stimuli have a bi-directional relationship with each other. For example, if a person learns that a horse is larger than a goat it can be derived that a goat is smaller than a horse. Combinatorial entailment Is when mutual entailment relationships are combined to form derived understanding about stimuli. For example, if an individual learns that a horse is bigger than a goat and an elephant is bigger than a horse, then it can be derived that an elephant is bigger than a goat, even when direct learning of the goat-elephant size relationship has not occurred. Transformation of the stimulus function refers to the ability to derive assumed functions of a stimulus that are related to the characteristics previously learnt or derived about them. If an individual knows that size is related to strength and that a horse is good at pulling a heavy load, they could derive that a goat would not be as good at pulling the same load and that an elephant would be better.

Characteristics and relationships are learnt through reinforcement that may be deliberate and require repetition in childhood learning (through social interaction and language) but becomes more fluid and automatic as an individual grows. In this way, relational framing becomes complex and broadly elaborated across networks. Relational framing in clinical settings can provide

an understanding for how psychological issues can arise. For example, an individual might relate the concept of “self” with “unworthy” through a history of difficult experiences, reinforced by messages from a societal context forming frames about success and worthiness. Relational framing such as this might lead to chronic feelings of low mood and low self-esteem. Hayes and colleagues (2011) argue that once relating has occurred, it can be inhibited but never unlearned.

1.4 Psychological flexibility

ACT posits that suffering is an inevitable part of human experience and it is an individual’s relationship with that suffering that can result in helpful outcomes (living a rich and meaningful life) or unhelpful outcomes (increased psychological distress) (Hayes et al., 2012). Psychological distress is argued to be a function of inflexibility such as an over-reliance on so-called experiential avoidance (pushing away of difficult situations or internal experiences) or cognitive fusion (cognitions having a dominant, negative influence on behaviour). The intention of ACT is to promote psychological flexibility: allowing an individual to behave in ways consistent with their values even when experiencing difficult thoughts or feelings, in order to improve their quality of life. Psychological flexibility is understood in terms of six core ACT processes: openness to experiences (acceptance), contact with the present moment (present moment awareness), knowing what matters (values), acting in line with those values (committed action), maintaining an observer awareness of internal processes (self-as-context), and taking a less involved perspective of one’s thoughts (defusion). Practically, ACT employs the use of metaphor and experiential exercises to explain and promote sometimes counter-intuitive practices such as turning towards painful experiences, if doing so might lead to more adaptive outcomes. Despite being distinct processes, some techniques and therapeutic activities of ACT target multiple processes at once.

1.5 The six core processes of psychological flexibility

1.5.1 Acceptance

Acceptance, also referred to as willingness or openness to experience, has been described as the state of allowing internal experiences to happen

without avoidance or judgement (Hayes et al., 1996). It is proposed that a state of acceptance enables individuals to live a more meaningful life in line with their values despite the presence of discomfort. It is an active stance that promotes a flexible approach to thoughts and feelings without attempting to avoid or change them. The opposite of acceptance is avoidance often referred to as experiential avoidance where an individual is not willing to have a particular internal experience. They may make attempts to alter it or changes their behaviour to avoid it being exacerbated or to reduce it. It is argued that avoidance in this way is widely reinforced by society (or what is known as the verbal community) where attitudes and praise exist for being “strong”, “sucking it up”, and not being a “cry-baby” (Hayes et al., 2012). These messages can result in an individual judging certain emotions as “bad” and deeming their expression to be “weakness”. It is noted that avoidance of painful experience is a natural instinct and may be effective in the short term at relieving distress. Avoidance becomes problematic longer term as it often amplifies or prolongs the suffering it attempts to avoid and is ultimately ineffective at managing the impact of the emotional experience (Abramowitz et al., 2001).

Acceptance, or a lack thereof, in ACT terms can be noted in therapy sessions by listening to the way that a client describes their issues and attitudes towards their emotional experience. Someone experientially avoidant might express a failure to control their emotions or comment on their emotional experiences as unwanted or negative. The process of acceptance is encouraged through use of metaphor (e.g., dropping the rope in an internal tug-of-war), guided mindfulness exercises and invitations to notice, name and sit with internal experiences as they arise.

Experiential avoidance is often measured using the Acceptance and Action Questionnaire II (AAQ-II), however other measures specifically capturing avoidance are the Cognitive-Behavioural Avoidance Scale (CBAS; Ottenbreit & Dobson, 2004) and the White Bear Suppression inventory (WBSI; Wegner & Zanakos, 1994). The CBAS (Ottenbreit & Dobson, 2004) is a multidimensional self-report scale consisting of four factors: behavioural social, behavioural non-social, cognitive social, and cognitive non-social. Respondents rate items about

their tendency to avoid different scenarios involving social interactions, conflict, success, and difficulties. The WBSI is a 15-item self-report rating scale where participants rate their tendency to suppress thoughts resulting in a total score (Wegner & Zanakos, 1994).

Avoidance, or an unwillingness to remain in contact with difficult internal experiences, is implicated as a core component of emotional distress across psychopathologies and is targeted by a range of therapeutic approaches (Fernández-Rodríguez et al., 2018; Hayes et al., 1996). There is growing evidence in support of this, demonstrating that higher levels of avoidance are associated with higher levels of distress (Akbari et al., 2022; Chawla & Ostafin, 2007). However, reviews highlight the lack of definition and consensus on operationalisation of experiential avoidance with a range of constructs such as thought suppression, reappraisal, and emotional control being used interchangeably or as representative of experiential avoidance. Hayes and colleagues (1996) present clear definitions in an attempt to pull together disparate approaches and argue that experiential avoidance should be treated as a transdiagnostic functional dimension that allows therapeutic focus on the behaviour of interest.

1.5.2 Defusion

Defusion is the ability to see potentially distressing or difficult internal experiences without judgement as incidental activity and a response to everyday life and history. Defusion allows an individual to not become “caught up” in the literal content of thoughts or emotion. Becoming “caught up” or entangled in thoughts or emotions by seeing them as true or judging them as bad and to be gotten rid of would be viewed as fusion, the antithesis of defusion.

Fusion is often interrelated with other core processes within psychological flexibility. For example, fusion with worrying thoughts and rumination can often interfere with the ability to connect with the present (present moment awareness). Fusion can often present as an obstacle to assessing and identifying values and can arise when considering steps towards

committed action. In this way, interventions targeting defusion may have a facilitative impact on other processes.

Clinicians might assess cognitive fusion during therapeutic sessions by recognising a client's tendency to repeat fixed/detrimental ideas or stories about themselves. Defusion/fusion can be difficult to capture using measurement tools as it relates to a relationship towards subjective thoughts rather than thought content or frequency. Increasingly, defusion/fusion is measured by asking about the believability of a thought rather than the frequency of its occurrence, in this way individual problem thoughts and their impact can be tracked and rated. Early research in ACT adapted measures such as the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980) to explore a person's relationship to thoughts and demonstrate a relationship between defusion and ACT outcomes (Hayes et al., 2006; Varra, et al., 2008).

General measures of cognitive fusion exist, such as the Cognitive Fusion Questionnaire (CFQ; Gillanders et al., 2014), the Drexel Defusion Scale (DDS; Forman et al., 2012), and the Believability of Anxious Feelings and Thoughts Questionnaire (BAFT; Herzberg et al., 2012). The CFQ is a seven item measure that asks users to rate how true statements about defusion in relation to distress and valued activity are for them (Gillanders et al., 2014). The DDS offers a definition of defusion and asks the user to imagine thoughts or feelings (e.g., feelings of anger, physical pain, thoughts about the future) related to ten example scenarios and rate how defused they would be from each of them (Forman et al., 2012). The BAFT asks users to rate the validity or believability of 16 statements involving attitudes or actions towards emotions and thoughts (Herzberg et al., 2012). The scales above employ different methods of data collection representing some heterogeneity in how defusion/fusion can be measured.

A recent review reports that multiple studies present strong associations between cognitive fusion and a range of outcomes such as depression, anxiety, PTSD, pain, eating disorders, and physical health issues (Ruiz et al., 2023). The efiicacy of defusion exercises have been explored in the literature with

comparisons made to inactive control groups, placebo conditions, and cognitive restructuring exercises. Compared to control and placebo groups, defusion exercises were found to be more effective at decreasing distress, pain intolerance, and thought believability. Across eight studies, defusion was found to be as effective or to have more benefit than cognitive restructuring exercises.

1.5.3 Self-as-context

Self-as-context refers to the “observing self’ that is able to notice internal experiences from a less involved perspective and does not become caught up in the literal meaning or feeling of thoughts and emotions. When self-as-context is practiced, it is thought that an individual can notice difficult thoughts and emotions without being defined by them. Self-as-context runs alongside two counterparts or self-states: self-as-content (the conceptualised self) and self-as-process (ongoing self-awareness) (Hayes et al., 2012). The self-as-context is thought to be consistent and unchanging, providing a stable perspective from which to observe the other two states.

The self-as-content self-state is defined in relation to RFT in that people develop relational frames about the “self” (Hayes et al., 2012). This becomes a descriptive narrative of the self that exists in relation to other objects allowing for comparison and reference. Individuals can become fused to their self-as-content which can become highly problematic. When relational framing about the self is unhelpful or derogatory this can result in a range of processes that might increase distress such as poor coping, critical evaluation, or threat to the idealised version of self. An individual fused to their self-as-content may also distort or misinterpret experiences to better fit their narrative in a form of self-deception. Effecting any change in self-as-content can become difficult as acknowledging a need for change would first need a process of acknowledging the deception.

Promoting self-as-context allows an individual to experience that they do not have to be defined by or powerless to their thoughts or feelings. Gaining this perspective can provide distance from an individual’s self-concept and narratives and reducing the impact of self-criticism and fusion to self-identity.

Creating distance between the self-as-content and self-as-context also gives time for an individual to reflect and respond to situations, thoughts, and/or feelings more flexibly and adaptively. Someone fused to an unhelpful self-identity might act automatically to situations and have a lack of awareness and/or opportunity to act more adaptively. Gaining a self-as-context perspective allows for skills from other processes to be applied in the moment.

A therapist might evaluate an individual's self-processes in how they talk about themselves and their fusion to their self-problem (Hayes et al., 2012). It is most problematic when the self-narrative is rigid, self-critical, and emotive and may be evident that it dominates all other areas of life. Another important factor to note in an individual is their ability to notice and be aware of their ongoing emotional experience and different possible perspectives of their experiences. Developing a self-as-context position can be achieved through a use of imaginal metaphor and guided mindfulness exercises. An assessment tool for the measurement of sense of self was developed by RFT researchers (McHugh et al., 2004; Rehfeldt et al., 2007). However, it is noted that self-states can be more easily assessed for accessibility and flexibility through well delivered clinical interview.

A review of research into self-as-context found a range of correlational, qualitative, and quantitative intervention studies (McHugh & Stapleton, 2023). Self-as-context was found to be associated with wellbeing, pain acceptance, and mindfulness and negatively correlated with depression, stress, neuroticism, and suicidal thinking. Qualitative studies found mixed results with support for self-as-context relating to valued living, perspective-taking, and wellbeing but little evidence of specific "hierarchical self" awareness or reporting. Studies exploring self-as-context interventions found increases in tolerance of aversive stimuli, task performance, and decreases in impulsivity, depressive and anxious thoughts, and inflexibility.

1.5.4 Present moment awareness

Present moment awareness, or mindfulness, involves being consciously aware of and voluntarily attentive to one's immediate internal and external

experiences, without judgement about the experiences. This is thought to allow an individual to be fully engaged in present life without becoming entangled in thought, emotions or the past or future. This also allows the acceptance and presence of difficult experiences without becoming occupied in trying to evaluate or change them.

Within ACT, present moment awareness couples with self-as-context encouraging a client to observe where their attention is at any given moment. Once a client has developed the noticing skill the intention is then to be able to turn their attention to and engage with the world in front of them rather than what is occurring in their internal world. This is achieved through experiential exercises such as guided mindfulness exercises and the encouragement of noticing in different scenarios. It has been noted that increased awareness of difficult internal experiences without the skills to voluntarily shift attention can lead to increased experiential avoidance. It is therefore important that this process is used in conjunction with skills from the other processes, emphasising their interconnected nature.

Mindfulness as a concept and practice has been present in wellbeing practice well before the inception of ACT and can draw its roots from Buddhist ideas. It is present in many different therapeutic modalities such as dialectical behavioural therapy (DBT), mindfulness-based cognitive therapy (MBCT), and mindfulness-based stress reduction (MBSR). The breadth of interest in the area is reflected in the amount of methods that exist to attempt to operationalise and capture it. These involve self-report, observational, biological, and neuropsychological measurement (Sauer, et al., 2013). Mindfulness is measured in two ways in the literature: state-minfulness and trait-mindfulness. The TMS measures state-mindfulness . Well validated scales that are used frequently in research are the Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003) and the KIMS (Baer et al., 2004). The MAAS focuses on measuring the attentional aspect of mindfulness with respondents rating the frequency of 15 items. The KIMS measures the attentional and emotional elements of mindfulness with users rating the truth of 39 items in relation to

them. Short form measures of the KIMS have also been developed (Höfling et al., 2011).

The effectiveness of mindfulness interventions on psychological symptoms has strong support in the literature across populations. Support was found for the use of mindfulness in youth populations in a meta-analysis but studies were found to be mostly school-based, highlighting the need for research in further settings (e.g., clinical) (Zoogman et al., 2015). For working age adults, mindfulness has been found to demonstrate improvements in workplace stress (Virgili, 2015), anxiety (Ren et al., 2018), and depression (Klainin-Yobas et al., 2012) though the longevity of effects and effectiveness above other interventions is unclear. Mindfulness was also found to be effective in improving executive functioning in adults (Im et al., 2021).

1.5.5 Values

Knowing one's values is a core enabler of allowing an individual to make moves towards a meaningful and fulfilling life that supports wellbeing. Values are distinct from goals in that they offer a guiding direction for an individual's actions rather than being an absolute target to be achieved. In this way, values create a possibility of constant progression and active decision making throughout life and the challenges that might arise. The idea that values are freely chosen is important in an ACT context ensuring actions completed in line with values are most intrinsically meaningful to the individual. Distress is thought to increase when an individual is not aware of or living a life in line with their values.

In therapeutic settings, a clinician might explore an individual's day-to-day activities and gently question whether these are in line with what is important to them. A person's can be aided to identify their values through values sorting exercises where a range of common values are ranked and explored in relation to how present they are in an individual's life. Other imaginal exercises might be used such as asking a person to explore how they would like someone describe them in a speech about their life and achievements.

Clarifying values allows assessment of how “values consistent” an individual’s life is and highlight discrepancies that can be explored.

A number of values measures are used across ACT literature with varied psychometric properties (Reilly et al., 2019). The Valued Living Questionnaire (VLQ; Wilson et al., 2010) is the most widely used measure and involves respondents rating ten domains as to how important they are to the individual and how much they feel they live in accordance to such values. Another measure with strong psychometric properties is the Engaged Living Scale (ELS; Trompetter et al., 2013) that involves rating 16 items as to how much an individual agrees with the statement. The Bull’s Eye Value Survey (BEVS; Lundgren et al., 2012) is a visual based measure where respondent mark on a target how close they are living to their identified values and explore what obstacles there are to living in a more values consistent way. All the above measures demonstrated responses to ACT intervention (Reilly et al., 2019). These measures show the varied methods for capturing an individual’s valued living process beyond the questionnaire format.

1.5.6 Committed action

Committed action involves an individual making conscious choices about their behaviour in life that are in line with their values. The aim of this process is to aid an individual to build sustained and meaningful patterns of behaviour that will improve their wellbeing by providing more contact with what is important to them. Committed action may be seen as the culmination of ACT as one is encouraged to live a values-congruent life despite and accepting what difficult internal experiences might arise.

Within a therapeutic context, committed action would take the form of goal setting and activity planning in relation to identified values. This might also involve exploring and planning for what challenging thoughts and feelings are present for an individual alongside those activities. It is sometimes expected that challenging internal experiences will happen when an individual attempts to change habituated patterns of behaviour and as such a range of other skills from processes such as defusion and acceptance are often encouraged here.

Mindful awareness is also an important complementary process as an individual should have skills in identifying when their moment-by-moment behaviour is values-congruent/incongruent and changing accordingly. Committed action is generally measure in tandem with values using the variety of scales described above in the values section.

1.6 Current measures of psychological flexibility

The AAQ-I was developed as a measure of experiential avoidance for use in the context of ACT research (Hayes et al., 2004). It has been argued that items of the AAQ-I measured a range of constructs, some of which were less defined as experiential avoidance, such as functional impairment, beliefs about emotions, and thought suppression (Doorley, 2020). While used widely for a time, it was noted that the items of the measure were complex and somewhat inaccessible to those of lower English language fluency and relied on a respondent's familiarity with ACT concepts (Bond et al., 2011). Overall, data collected using the measure suggested that it appears to measure distress rather than an individual's relationship to distress (Chawla & Ostafin, 2007). These issues prompted the development of the revised AAQ-II (Bond, et al., 2011). However, it was found that the AAQ-II presented with similar issues as well as those outlined in the journal article (Doorley et al., 2020).

The Multidimensional Psychological Flexibility Inventory (MPFI; Rolffs et al., 2016) was designed to measure the six processes of flexibility and six processes of inflexibility. Development of the measure began with 550 items that were reduced to five per factor using item response theory creating a 60-item final scale. In a review of measurement and definition of psychological flexibility, the MPFI performed very well in quality assessment for validity, reliability, and item content aligning with stated definition (Cherry et al., 2021). It also provides information on how to interpret scores for clinical meaningfulness which was found to be lacking in other measures. The MPFI was found to have been used in ten studies, whereas the AAQ-II was found to be used in 80, reflecting the AAQ-II's prevalence, though this may be due to the age of the scales rather than one being favoured over the other based on utility. The scale has extensive coverage of psychological flexibility and inflexibility but lacks the

brevity for practical use in mental health settings and across populations. The scale has not been validated for use in youth populations and its length may not be appropriate for younger populations due to language such as “receptive”, “ebb and flow”, “perspective”, and “auto-pilot”.

The Personalized Psychological Flexibility Index (PPFI; Kashdan et al., 2020) is another recent measure that was rated highly in the Cherry and colleagues (2021) review. The scale was developed using robust methods aligned with Boateng and colleagues’ (2018) guidelines for scale development in large samples. The scale invites an individual to select a single goal they hope to achieve in their life and then rate a number of statements that capture their relationship to the goal in the presence of different contextual factors (e.g., stressors). While the scale presents a novel approach to capturing psychological flexibility in a more “real life” application for the individual, the instructions are unclear and the practice of rating attitudes towards a goal may seem unfamiliar to participants without prior orientation to the concept. This scale has not been validated for youth populations and uses more complex language such as “commitment”, “pursuing”, “setbacks”, and “discouraged”.

1.7 Functional contextualism

Contextual behavioural science (CBS) presents a pragmatic and naturalistic approach for conceptualising and developing knowledge of human behaviour rooted within the philosophy of functional contextualism (Hayes 2012). The unit of analysis of functional contextualism is the act-in-context (with the use of hyphens to denote how an action cannot be divorced from its context) and the aim is to “predict-and-influence, with precision, scope and depth” (p. 4, Hayes, 2012), behaviour in context, both historical and current. The contextualist basis is akin to pragmatism in that it does not strive for absolute truths or assumptions, but an analysis is said to be true if it achieves the intended purpose, also referred to as “successful working” (Fox, 2006). Pragmatism developed in the context of the seemingly opposed schools and methodological traditions of positivism and constructivism (Tashakkori & Teddlie, 2010). Pragmatists view the research question as paramount in guiding design and methodological decision making adopts a “what works” approach

that is also utilised in functional contextualism. This enables the use of both quantitative and qualitative data and analyses in answering research questions with the benefit that the weaknesses of one may be addressed by the other, and vice versa (Johnson & Onwuegbuzie, 2004). Within pragmatism, there is also the recognition that causal relationships may exist but precisely defining them is problematic or unachievable. As a community, the Association of Contextual Behavioural Science (ACBS) encourages the expansion of the knowledge base using methodology that is congruent with the principles of functional contextualism.

1.8 Outcome measurement

Scales that measure psychological constructs are often used as outcome measures in mental health settings and in research. Historically, measurement of mental health constructs was solely in the realm of research but increasingly shifted into applied practice (Harrison & Eaton, 1999). An outcome measure within a therapeutic context can be defined as a tool used to examine the impact of an intervention on an individual's mental health. Outcome measures provide a quantitative indication of a construct at different time points that can be compared to gain an understanding of change and influence of different factors. These time points may occur before (to provide a baseline, once or repeatedly), during (once or repeatedly), and after intervention, discharge and/or at follow-up.

Routine outcome measurement in mental health services generally falls into seven domains: wellbeing, cognition/emotion, behaviour, physical health, interpersonal, society and services (Slade, 2002). Routine measurement in adults has been demonstrated to inform clinical decision making, improve diagnostic accuracy, improve patient-clinician communication, increase monitoring of intervention, and aid maintenance of treatment effects (Carlier et al., 2012). External and service-level drivers for outcome measurement in clinical settings can be for cost-containment/funding, measurements of clinical governance, adherence to clinical guidelines, governmental focus on quality of healthcare, and societal focus on consumerism and product quality (Slade, 2002). Outcome measurement has a range of uses and implications for different

stakeholders but ultimately, accurate measurement of processes underlying mental health and its treatment can inform and improve the future care provided to individuals both in research and clinical settings. Within youth settings, there is varied implementation of outcome measurement despite recommendations and this has been found to differ in relation to clinician attitudes and characteristics and service drivers (Kwan et al., 2020).

1.9 Standards for scale development

Boateng and colleagues (2018) present a best practices guideline for scale development for measurement of latent variables. They suggest that a rigorous scale is developed over three phases: item development, scale development, and scale evaluation. These three steps are further broken down into nine stages.

Table 5

Stages for scale development (Boateng et al., 2018)

Stage	Activity
1. Selecting domain and item selection: what to ask?	• State the purpose of the domain • Explore existing measures • Explain the domain and define construct • Define dimensions within construct • Deductive methods: literature review • Inductive methods: focus group discussions and interviews
2. Content validity: does the scale measure the domain of interest?	• Expert evaluation: 5-7 expert judges are consulted • Utilise Delphi method to refine items based on expert judges feedback • Utilise cognitive interviews with intended scale population to evaluate face validity of items
3. Preliminary questions testing: are questions and answers meaningful?	• Administer draft of measure to small sample and conduct interviews exploring processes in answering questions and responses to items
4. Administering measure and deciding sample size	• Administer measure on a target sample • Conduct exploratory factor analysis on data • Administer measure on same sample at a different time point or independent sample for test of dimensionality

5. Item reduction: is the scale concise but meaningful?	• Tests of item discrimination – do the set of items measure a unitary construct? • Explore inter-item and item-total correlations – how do items relate to one another and the scale overall?
6. Factor analysis	• Ascertain how many factors or domains the items fall into using suitable statistical methods (e.g., exploratory factor analysis)
7. Dimensionality testing	• Explore the structures/underlying relationships of the hypothesised latent construct and factors – does the theoretical model of the construct fit the items? • Confirmatory factor analysis • Estimate bifactor models to validate dimensionality • Estimate measurement invariance to explore whether initial structures of measure are consistent across groups or samples
8. Reliability testing	• Assess internal consistency: what is the covariance of the items compared to the total score • Assess test-retest reliability: how consistent are participant scores over time
9. Validity testing	• Assess predictive validity: do score predict future outcomes • Assess concurrent validity: do scores correlate with scores of “gold standard” measurement tools

2 Extended methods

2.1 Recruitment

Initial iterations of the study method sought to recruit a community sample through social media using participant self-selection and snowballing techniques. However, a pilot trial of the online questionnaire revealed most respondents were fraudulent in claiming that they were UK based or unique individual responses. Many responses were found to be from the same IP addresses and were not based in the UK, raising doubts about the authenticity of demographic information given and the data collected. At this stage the questionnaire was withdrawn from social media platforms and study methods were revised by the research team. Increasingly, it is reported that monetary or prize draw incentives for study recruitment are attracting large volumes of fraudulent participants who misrepresent their demographics (Chandler & Paolacci, 2017). Social media recruitment methods have also been found to be

less able to generate a general sample compared to online paid recruitment platforms that are found to produce diverse, representative samples (Dworkin et al., 2016). These points raise important questions about the reliability and quality of research produced using recruitment such as social media and prompts a move towards more stringent methods.

The use of the paid online recruitment platform, Prolific, was decided for youth sample phase of the study at this stage with a final ethics application submitted and approved to reflect this. Prolific allows researchers access to a pool of verified participants who are invited to take part in studies based on their fit with researcher-specified eligibility criteria and are compensated per study completed based on the length of completion time. Prolific has been found to provide higher quality data and participants compared to other platforms and online recruitment methods (Douglas et al., 2023). Parents of 13-17 year olds were recruited through the platform in order to provide consent for their child to take part before the child assented and accessed the survey. Those over 18 were approached to take part if they met eligibility criteria. Study funds were used to compensate participants £1.20 for their time through the Prolific platform.

2.2 Data analysis

2.2.1 Factor analysis

In terms of understanding the underlying structures (or unique subsets) of numerous variables within a set of data, there are generally two methods: Principal Components Analysis (PCA) and Factor Analysis (FA) (Tabachnick & Fidell, 2013). Both combine variables into separate subsets based on the strength of correlation between variables. PCA and FA are useful in the reduction of large sets of variables into fewer factors, highlighting groupings of correlations, hypotheses testing regarding the nature of constructs, and providing an operational basis for latent processes utilising observed variables. When there is an assumed theoretical relationship between variables, as in the case of many psychological measurements and constructs (including this study), FA is used over PCA. In FA, the underlying theoretical construct of a

factor is thought to “cause” the scores of variables. In PCA, factors (or what PCA refers to as components) are sets of empirically related variables that are not thought to be meaningfully related or represent an underlying process.

There are two types of FA that are most used: exploratory and confirmatory. Exploratory FA (EFA) is used at the beginning stages of research for refining variables and identifying and understanding constructs and processes (Tabachnick & Fidell, 2013). Principal axis factoring (PAF) is the predominant method of EFA. Confirmatory FA (CFA) is often used at the later stages of research or scale development to explore alternative iterations of scales (e.g. translated versions), use in different populations, and/or to test theory. However, the selection of EFA or CFA for differing research questions and processes is not always clear cut. The items of ADAPTS are directly based on the existing CompACT that has undergone EFA and CFA in a range of samples and demonstrates a clear, theoretically coherent structure. In the present study, EFA was chosen because the wording of items in the ADAPTS was distinct from the CompACT measure. This essentially renders it a distinct measure where an EFA would hold open the possibility of items having altered meaning, relationships, and performance through the adaptation process. The youth population is also distinct in their stage of understanding and cognitive development that warrants exploration through EFA rather than CFA in its relation to the construct of psychological flexibility and proposed processes that is lacking in previous research. In the EFA process, oblique rotation and direct oblimin methods were chosen above orthogonal rotation (e.g., varimax) because factors may be expected to correlate due to the theoretical interrelation of core ACT processes (Costello & Osbourne, 2005).

The removal of items that perform poorly during factor analysis can increase the unidimensionality and internal consistency of a scale and subscales (Clark & Watson, 2016). A stronger factor loading suggests a stronger relationship between an item and the subscale (or latent construct), supporting the construct validity of an item (Comrey & Lee, 2013).

2.2.2 Reliability

2.2.2.1 Internal consistency. Internal consistency refers to the degree to which a scale can be relied upon to measure a certain construct (Field, 2024). This is based on the correlations between items within the scale and/or subscales measured with Cronbach's alpha. Cronbach's alpha indirectly indicates the extent that a set of items represents a unidimensional latent variable. Commonly accepted values for Cronbach's alpha are outlined in Table 10. However, when a scale represents an overall construct and has subscales within it, there are arguments for lower Cronbach's alpha scores to be accepted for total scale score and higher values demonstrated by subscales.

Table 6
Cronbach's alpha values and qualitative descriptors for internal consistency

$0.9 \leq \alpha$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

2.2.2.2 Inter-item correlations. Inter-item correlations explore the relationship between scores of individual items against all other potential items in the scale. It provides information about the extent to which items measure the same construct, also acting as a measure of redundancy for individual items if they correlate too strongly with another item. This would indicate that the items essentially provide the same information in a scale and one can be removed for item reduction and succinctness. Inter-item correlations are measured with Pearson's *r* and it is generally recommended that the value should fall between 0.15 and 0.5 to indicate a balance between homogeneity across items but also sufficient unique variance between them, with items above 0.8 being excluded (Clark & Watson, 1995).

2.2.3 Validity

Construct validity refers to the extent to which a measure accurately measures what it claims to (Hinkin, 1995). This study has used concurrent,

convergent, and discriminant validity to explore the properties of the ADAPTS. This can be examined against measures of other theoretically similar and dissimilar constructs. Concurrent validity of a new scale is measured by comparing scores to those of an existing measure (Stanton et al., 2002). It is typically assessed against the “gold-standard” existing scale for the same construct. Higher levels of correlation would suggest a higher degree of concurrent validity as the new scale should demonstrate similar performance to an established, validated scale. Convergent validity is assessed by exploring the relationships between scores of a new measure and those of different but related constructs. To demonstrate good convergent validity a measure should correlate to a moderate degree dependent on the expected relationships between constructs. A correlation that is too strong would suggest that the new scale is measuring a variable that is not distinct enough from constructs it is not intended to measure. Discriminant validity assesses a new measure against a construct it would not be expected to have a relationship with. Low correlations with a distinct construct would suggest high discriminant validity. A high correlation would suggest that the new measure is measuring something it is not intending to measure.

2.3 Measures

Further information about the measures used in the study is detailed below. Short form versions of measures were favoured over long form primarily to reduce participant burden, especially considering the age of the sample (Crane & Broome, 2017). All short-form measures demonstrated robust psychometric properties therefore this decision was not thought to compromise the quality of the data or analysis.

2.3.1 AFQ-Y8 (Youth sample)

The AFQ-Y8 is a short form version of the 17-item AFQ-Y developed by Greco and colleagues (2008). The AFQ-Y8 was used in the youth sample to provide data for convergent validity against the ADAPTS. To demonstrate convergent validity, the two measures would be expected to correlate to a strong degree. Despite earlier critique of the measure as derived from the AAQ-II, the AFQ-Y8 was chosen due to it being the most widely used youth measure

of psychological flexibility and its short-form. The measure is designed as a child self-report measure of psychological inflexibility, characterised by experiential avoidance and cognitive fusion. The AFQ-Y8 was developed in accordance with recognised scale development procedures and stages for item selection, refinement, and factor analysis etc. (Boateng et al., 2018). Due to the performance of the short form AFQ-Y8 being comparable to the AFQ-Y, it has been suggested that the short form be used as the favoured measure (Livheim et al., 2016). The scale correlated in expected ways with child measures of mindfulness (CAMM, Greco et al., 2011) and thought suppression (White Bear Suppression Inventory; WBSI, Wegner & Zanakos, 1994), overlapping constructs that support construct validity. The scale has been validated in adult as well as youth samples demonstrating its potential utility as a lifespan measure (Fergus et al., 2012). However, it is an adaptation of the AAQ (Hayes et al., 2004) raising clear questions about whether the scale can truly be relied upon to measure psychological flexibility/inflexibility as it fails to account for the construct of values (see Background for further information). The AFQ and AFQ-Y8 demonstrate a single factor structure that is not convincingly theory congruent when considering the proposed processes within psychological flexibility (Greco et al., 2008; Szemenyei et al., 2020).

2.3.2 CAMM (Youth sample)

The CAMM is a 10-item children's mindfulness measure that has followed generally robust scale development procedures in its inception (Boateng et al., 2018; Greco et al, 2011). The CAMM was chosen to complement the AFQ-Y8 in giving a broader representation of psychological flexibility constructs in the youth sample to explore convergent validity. In previous research, the measure correlated in expected ways with theoretically parallel and divergent constructs, demonstrating good construct and discriminant validity. Internal consistency of the scale has been further reported (α=.84) since the scales initial development and there were also found to be no gender group differences (Kuby et al. 2015).

2.3.3 RCADS (Youth sample)

The Revised Child Anxiety and Depression Scale (RCADS) is a 47-item scale that measures symptoms related to anxiety and depression in children (Chorpita et al., 2005). The RCADS is a common, multi-factorial scale with the full measure comprising six subscales: separation anxiety disorder (SAD), social phobia (SP), generalised anxiety disorder (GAD), panic disorder (PD), obsessive compulsive disorder (OCD), and major depressive disorder (MDD). The subscales for GAD and MDD were chosen for the present study for brevity and specificity as constructs to measure concurrent validity against the ADAPTS. Clinical thresholds for scores for the scale and subscales were established against criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994) with the top 7% of scores being considered borderline and top 2% considered clinical. The RCADS is the most used routine outcome measurement in child and adolescent mental health services in the UK (Waldron et al., 2018). The RCADS was found to be the most sensitive to change measure of a review of 21 child psychometrics measures (Wolpert et al., 2016). A review of the measure's use across settings, languages, and countries found that it reliably demonstrated good internal consistency (Piqueras et al., 2017). However, the measure was found to lack robust evidence of test-retest reliability over short periods of time.

2.3.4 SWEMWBS (Youth and adult sample)

The Short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS; Ng Fat et al., 2017) measures mental well-being and is designed to be used in the general population and clinical samples. The SWEMWBS was used to explore concurrent validity between psychological flexibility and the construct of wellbeing. The SWEMWBS was chosen due to its prevalent use as a measure of wellbeing across the world (Mack et al., 2024). It is a short-form version of the 14-item Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) with the 7-item SWEMWBS developed using Rasch analysis for item reduction (Stewart-Brown et al., 2009). The 7 items reflect the domains of optimism, usefulness, relaxation, problem-solving, clear thinking, close relationships, and self-determination. When compared using Spearman's correlations, the two versions of the measure demonstrated near perfect agreement (Ng Fat et al.,

2017). While the SWEMWBS demonstrates strong psychometric properties, it has been noted that the items excluded from the 14- to 7- item measure primarily allude to feeling states and functioning, meaning there is potential that the short-form lacks thorough coverage of factors pertaining to wellbeing (Stewart-Brown et al., 2009). The scale has been validated for use with UK-based students (Tennant et al., 2007) and teenagers aged 13 and over (Clarke et al., 2011; Pakpour et al., 2024) demonstrating strong psychometric properties in youth populations. The SWEMWBS was found to have good construct validity measured against the PHQ-9 and the GAD-7 and sensitivity to change in a clinical sample (Shah et al., 2021).

2.3.5 EQ-5D-5L (Youth and adult sample)

The EuroQOL-5D-5L (EQ-5D-5L; Feng et al., 2021) is a quality-of-life measure that captures emotional and practical living domains and is often used in health research. One item from the scale that measures physical mobility was selected for the present study as a variable for discriminant validity. It was expected that scores for physical mobility would not correlate highly with psychological flexibility in order to demonstrate good discriminant validity.

2.3.6 AAQ-II (Adult sample)

Characteristics of the AAQ-II have been explored in the background of this paper. Despite critique of the measure, it remains the most widely used measure of psychological flexibility in the literature and was thought to be fitting for use to collect data to explore convergent validity against the ADAPTS in the adult sample. To demonstrate good convergent validity, we would expect good correlations but not overly strong as this may reflect similar issues of the AAQ-II in the ADAPTS.

2.3.7 PHQ-9 (Adult sample)

The Personal Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001) is a widely used brief measure of depressive symptoms that reflects the 9 symptoms of depression listed in the DSM-IV. The PHQ-9 shows good criterion validity and sensitivity to change over time. The measure was chosen to explore concurrent validity between the construct of depression and the ADAPTS and

due to demonstrating robust psychometric properties (Bianchi et al., 2022). The measure has been validated in a range of clinical populations as well the general population (Bianchi et al., 2022; Kocalevent et al., 2013).

2.3.8 GAD-7 (Adult sample)

The Generalised Anxiety Disorder (GAD-7) questionnaire is designed to measure symptoms of anxiety over a two-weeks period. The GAD-7 is recommended by national guidelines as a method to identify anxiety in the UK (NICE, 2020) and USA (Plummer et al., 2016). The GAD-7 has been found to be the best-performing measure for anxiety and is commonly used in a range of settings (Herr et al., 2014).

The use of separate anxiety and depression measures was also chosen to explore the correlations with the AAQ-II given previous high degrees of correlation between the AAQ-II and these constructs in previous literature.

3 Extended results

3.1 Assessing normality of the data

Histograms were visually analysed to assess for normal distribution with all variables appearing adequate. The Kolmogorov-Smirnov test was used (due to the sample sizes of n>50) to further assess for normal distribution with all data within parameters for normality.

3.2 Auxiliary data and results

Table 7

Youth sample occupation

Occupation	
School	138 (43.7)
University	84 (26.6)
College	30 (9.5)
Employed full-time	22 (7)
Employed part-time	15 (4.7)
Apprenticeship/work experience	12 (3.8)

Not currently in school/employment	11 (3.5)
Unable to be in school/employment	2 (0.6)
Other	2 (0.6)

Table 8

Item wordings for 18-item ADAPTS

Original item number	New item number	Subscale	Item wording
1	1	VA	I can work out what matters to me in life and go after these things
3	2	BA	I rush through activities that are important to me, without really paying attention
4	3	OE	I try to distract myself to block out difficult thoughts and feelings
5	4	VA	I behave in ways that reflect what is important to me
7	5	VA	I choose to do what's important to me, even if it brings up difficult emotions
8	6	OE	I tell myself it's wrong to have certain thoughts
9	7	BA	I find it hard to focus on the thing that I'm doing
10	8	VA	I live my life in a way that matches what I care about
11	9	OE	I try to avoid situations that might bring up difficult thoughts or feelings
12	10	BA	even when I'm doing things that are important to me, I find myself doing them without paying attention
14	11	VA	I do things that matter to me, even when it’s difficult
15	12	OE	I try hard to block the feelings I don't want
16	13	BA	I do things without being aware of what I'm doing
17	14	VA	I can stick with things that I care about, even when it's difficult
18	15	OE	I avoid things that are important to me, if there's a risk that I will feel upset
19	16	BA	I often seem to do things without much awareness of what I'm doing
21	17	VA	My values are really reflected in my behaviour

23	18	VA	I can keep going with something when it's important to me

Table 9

Excluded items

Original item number	Subscale	Item wording
2	OE	Something that is really important to me is to not have upsetting feelings
6	OE	I get so tangled up in my thoughts that I don't do the things that really matter to me
13	OE	I'm willing to let myself have whatever thoughts and feelings come up, without trying to change or avoid them
20	OE	Thoughts are just thoughts – they don't have to control what I do
22	OE	I can accept how I feel without having to change it

Table 10

Item-total correlations in youth sample table

Item	Corrected item-total correlation	Scale mean if item deleted	Scale variance if item deleted
1	.449	57.70	191.735
2	.466	58.37	186.311
3	.346	59.30	191.357
4	.351	57.70	195.200
5	.305	58.21	195.471
6	.346	58.71	189.622
7	.633	58.84	177.239
8	.425	57.66	191.870
9	.412	59.54	190.384
10	.589	58.83	180.553
11	.511	57.83	188.890
12	.379	59.31	191.560
13	.609	58.80	178.456
14	.506	57.90	188.015
15	.552	58.65	182.047
16	.641	58.69	177.706
17	.478	57.63	190.709
18	.538	57.42	188.972

Table 11

Item-total correlations in adult sample

Item	Corrected item-total correlation	Scale mean if item deleted	Scale variance if item deleted
1	.441	64.2366	213.212
2	.539	64.6997	204.277
3	.519	66.6005	200.985
4	.426	64.3868	214.789
5	.493	65.0178	208.507
6	.376	66.3232	206.658
7	.676	65.4631	190.448
8	.518	64.5623	210.476
9	.424	66.7837	207.752
10	.657	65.2748	195.929
11	.541	64.5852	208.432
12	.350	66.6107	210.728
13	.575	65.3461	199.089
14	.593	64.4987	208.460
15	.546	65.3766	202.450
16	.638	65.0509	196.834
17	.498	64.4529	211.044
18	.603	64.0331	209.981

Table 12

18-item ADAPTS inter-item correlations in youth sample

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1		.129	-.075	.552	.405	.057	.243	.498	-.003	.181	.472	.056	.231	.392	.204	.233	.481	.470
2	.129		.316	.006	.042	.284	.411	.101	.210	.426	.193	.217	.467	.245	.289	.433	.174	.238
3	-.075	.316		-.201	-.093	.382	.447	-.144	.444	.327	-.031	.552	.348	.044	.319	.312	-.043	.002
4	.552	.006	-.201		.481	-.134	.126	.536	-.040	.153	.478	-.088	.146	.380	.128	.190	.580	.433
5	.405	.042	-.093	.481		-.069	.080	.424	.030	.096	.508	-.056	.042	.453	.123	.054	.382	.385
6	.057	.284	.382	-.134	-.069		.301	.059	.441	.252	.081	.491	.244	.043	.305	.243	.025	.083
7	.243	.411	.447	.126	.080	.301		.192	.396	.544	.253	.336	.558	.259	.414	.544	.260	.289
8	.498	.101	-.144	.536	.424	.059	.192		-.023	.217	.528	-.031	.216	.364	.187	.220	.489	.505
9	-.003	.210	.444	-.040	.030	.441	.396	-.023		.276	.063	.455	.274	.152	.483	.334	.028	.073
10	.181	.426	.327	.153	.096	.252	.544	.217	.276		.186	.233	.617	.269	.334	.593	.255	.310
11	.472	.193	-.031	.478	.508	.081	.253	.528	.063	.186		-.010	.177	.574	.276	.232	.532	.611
12	.056	.217	.552	-.088	-.056	.491	.336	-.031	.455	.233	-.010		.387	.050	.336	.298	-.002	.036
13	.231	.467	.348	.146	.042	.244	.558	.216	.274	.617	.177	.387		.185	.377	.712	.218	.199
14	.392	.245	.044	.380	.453	.043	.259	.364	.152	.269	.574	.050	.185		.295	.292	.434	.563
15	.204	.289	.319	.128	.123	.305	.414	.187	.483	.334	.276	.336	.377	.295		.496	.187	.270
16	.233	.433	.312	.190	.054	.243	.544	.220	.334	.593	.232	.298	.712	.292	.496		.243	.276
17	.481	.174	-.043	.580	.382	.025	.260	.489	.028	.255	.532	-.002	.218	.434	.187	.243		.565
18	.470	.238	.002	.433	.385	.083	.289	.505	.073	.310	.611	.036	.199	.563	.270	.276	.565	

Table 13

18-item ADAPTS inter-item correlations in adult sample

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1		.281	.166	.375	.336	.149	.412	.479	.114	.221	.389	.043	.193	.350	.207	.281	.335	.362
2	.281		.254	.319	.237	.138	.478	.277	.179	.606	.239	.107	.450	.358	.232	.516	.356	.345
3	.166	.254		.107	.199	.337	.400	.185	.473	.367	.269	.533	.319	.233	.403	.314	.167	.260
4	.375	.319	.107		.355	.073	.308	.583	-.008	.267	.433	-.041	.201	.445	.079	.231	.598	.413
5	.336	.237	.199	.355		.068	.306	.399	.293	.255	.578	.164	.198	.508	.336	.244	.382	.437
6	.149	.138	.337	.073	.068		.300	.168	.419	.295	.136	.434	.214	.092	.348	.207	.074	.150
7	.412	.478	.400	.308	.306	.300		.363	.245	.595	.340	.162	.521	.460	.379	.584	.371	.430
8	.479	.277	.185	.583	.399	.168	.363		.048	.280	.510	.009	.228	.517	.192	.308	.618	.498
9	.114	.179	.473	-.008	.293	.419	.245	.048		.240	.199	.575	.208	.156	.453	.207	.025	.155
10	.221	.606	.367	.267	.255	.295	.595	.280	.240		.268	.218	.646	.378	.343	.663	.304	.365
11	.389	.239	.269	.433	.578	.136	.340	.510	.199	.268		.089	.178	.611	.315	.237	.478	.585
12	.043	.107	.533	-.041	.164	.434	.162	.009	.575	.218	.089		.175	.072	.424	.140	.014	.087
13	.193	.450	.319	.201	.198	.214	.521	.228	.208	.646	.178	.175		.258	.346	.791	.233	.343
14	.350	.358	.233	.445	.508	.092	.460	.517	.156	.378	.611	.072	.258		.350	.351	.505	.648
15	.207	.232	.403	.079	.336	.348	.379	.192	.453	.343	.315	.424	.346	.350		.367	.195	.338
16	.281	.516	.314	.231	.244	.207	.584	.308	.207	.663	.237	.140	.791	.351	.367		.308	.416
17	.335	.356	.167	.598	.382	.074	.371	.618	.025	.304	.478	.014	.233	.505	.195	.308		.487
18	.362	.345	.260	.413	.437	.150	.430	.498	.155	.365	.585	.087	.343	.648	.338	.416	.487	

3.3 Subscale reliability

3.3.1 Valued action subscale reliability

Overall internal consistency of the 8-item values subscale in the youth sample was a=.88, and a=.88 in the adult sample. None of the inter-item correlations exceeded the *r* >.80 threshold to be considered for exclusion in either sample.

Table 14

Valued action subscale inter-item correlations in youth sample

Item	1	5	7	10	14	17	21	23
1		.552	.405	.498	.472	.392	.481	.470
5	.552		.481	.536	.478	.380	.580	.433
7	.405	.481		.424	.508	.453	.382	.385
10	.498	.536	.424		.528	.364	.489	.505
14	.472	.478	.508	.528		.574	.532	.611
17	.392	.380	.453	.364	.574		.434	.563
21	.481	.580	.382	.489	.532	.434		.565
23	.470	.433	.385	.505	.611	.563	.565	

Table 15

Valued action subscale item-total correlations in youth sample

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	.623	.868
5	.660	.864
7	.577	.873
10	.638	.866
14	.720	.858
17	.602	.870
21	.663	.864
23	.682	.862

Table 16

Valued action subscale inter-item correlations in adult sample

	1	5	7	10	14	17	21	23
1		.375	.336	.479	.389	.350	.335	.362
5	.375		.355	.583	.433	.445	.598	.413
7	.336	.355		.399	.578	.508	.382	.437
10	.479	.583	.399		.510	.517	.618	.498
14	.389	.433	.578	.510		.611	.478	.585
17	.350	.445	.508	.517	.611		.505	.648
21	.335	.598	.382	.618	.478	.505		.487
23	.362	.413	.437	.498	.585	.648	.487	

Table 17

Valued action subscale item-total correlations in adult sample

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	.495	.875
5	.614	.863
7	.574	.869
10	.700	.853
14	.703	.853
17	.700	.854
21	.655	.858
23	.666	.858

3.3.2 Openness to experience subscale reliability

Overall internal consistency of the 5-item openness to experience subscale in the youth sample was a=.79, and a=.80 in the adult sample. None of the inter-item correlations exceeded the *r* >.80 threshold to be considered for exclusion in either sample.

Table 18

Openness to experience Inter-item correlations in youth sample

Item	4	8	11	15	18
4		.382	.444	.552	.319
8	.382		.441	.491	.305
11	.444	.441		.455	.483
15	.552	.491	.455		.336
18	.319	.305	.483	.336	

Table 19

Openness to experience subscale item-total correlations in youth sample

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
4	.559	.737
8	.531	.749
11	.616	.720
15	.621	.719
18	.464	.770

Table 20

Openness to experience subscale inter-item correlations in adult sample

Item	4	8	11	15	18
4		.337	.473	.533	.403
8	.337		.419	.434	.348
11	.473	.419		.575	.453
15	.533	.434	.575		.424
18	.403	.348	.453	.424	

Table 21

Openness to experience subscale item-total correlations in adult sample

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
4	.569	.757
8	.492	.784
11	.639	.735
15	.659	.728
18	.526	.769

3.3.3 Behavioural awareness subscale reliability

Overall internal consistency of the 5-item behavioural awareness subscale in the youth sample was a=.85, and a=.88. in the adult sample. None of the inter-item correlations exceeded the *r* >.80 threshold to be considered for exclusion in either sample.

Table 22

Inter-item correlations in youth sample

Item	3	9	12	16	19
3		.411	.426	.467	.433
9	.411		.544	.558	.544
12	.426	.544		.617	.593
16	.467	.558	.617		.712
19	.433	.544	.593	.712	

Table 23

Behavioural awareness subscale item-total correlations in youth sample

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
3	.521	.854
9	.636	.827
12	.682	.814
16	.749	.795
19	.722	.803

Table 24

Behavioural awareness subscale inter-item correlations in adult sample

Item	3	9	12	16	19
3		.478	.606	.450	.516
9	.478		.595	.521	.584
12	.606	.595		.646	.663
16	.450	.521	.646		.791
19	.516	.584	.663	.791	

Table 25

Behavioural awareness subscale item-total correlations in adult sample

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
3	.602	.870
9	.647	.865
12	.766	.832
16	.731	.841
19	.786	.827

4 Extended Discussion

4.1 Discussion of the subscale results

Reliability analysis of the subscale results showed that the triflex processes performed equivalently across the two samples. The OE subscale demonstrated the lowest strength internal consistency and inter-item correlations compared to VA and BA subscales. Nonetheless, the strength of internal consistency within all subscales was strong. The slightly lower scores in the OE scale correlations may reflect the varied nature of factors pertaining to OE as discussed below resulting in a more heterogenous item set. The consistency of results between the adult and youth samples could support the notion that psychological flexibility processes are understood and experienced in a similar way across the lifespan though further exploration in this area is needed.

4.2 Future research

The journal article makes suggestions for further validation across different populations extending the utility of the measure in the future. The final stage for scale development as presented by Boateng and colleagues (2017) should be completed to confirm the factor structure and further assess the robustness of the scale. Use of the measure should be made within the context of Contextual Behavioural Science (CBS) using CBS-coherent methodologies. Specific processes should be targeted and explored in small-scale SCED studies (see Luck et al., 2024) with pre-, during, and post- measurement once test-retest reliability is established. As a dynamic, context dependent construct, exploration of openness to experience may be well suited to SCED designs where data on the variable can be captured in vivo in response to stimuli in a participant's world.

Despite limitations, it is clear that the measure has utility above existing measures for psychological flexibility and across the lifespan. From a CBS "what works" philosophy, the intentions of the study have been fulfilled using sound methodology producing a pragmatic tool. However, to acknowledge that the construct of openness to experience is multi-faceted and may not be

adequately covered by five items in the current ADAPTS under a “what works” approach may highlight an important gap. The degree to which “what works” can be applied varies and it could be argued that the ADAPTS along with other potential scales of psychological flexibility do not fully assess the six proposed processes. This is possibly an issue of a lack of clear definition of processes within ACT and wider literature. This could be addressed by the refinement and clarification of targeted processes and perhaps inclusion and exclusion criteria applied to existing literature through systematic review. It may also be that “what works” in terms of measuring psychological flexibility is a different way of scale development from traditional methodology. For a discipline that involves a large degree of metaphor in clinical practice to convey complex ideas, the use of metaphor, for example, could help in assessing psychological flexibility in a more abstract way.

The development and validation of psychological flexibility measures raise valid questions about what is being measured. While psychological flexibility can be treated as a trait-like, stable quality, it is increasingly being regarded as a dynamic, context-sensitive behavioural response style through contemporary models such as ACT. From a pragmatic, contextual behavioural science perspective as adopted by this study, psychological flexibility is regarded as a modifiable process that can be captured at a point in time by self-report measures while acknowledging the inherent limitations of such methods. The ADAPTS does not directly observe psychological flexibility in action, but does capture self-reported patterns that reflect an individual’s typical recent attitudes towards openness to experience, behavioural awareness, and valued action in the context of challenges.

4.3 ADAPTS, CompACT, and openness to experience

Many interesting considerations were presented by the performance of the openness to experience subscale in this and other studies. While the 18-item ADAPTS and CompACT have been demonstrated to be structurally sound, there are arguments to be made about the coverage of the variety of phenomena contributing to openness to experience as a construct. The literature demonstrates different methods for attempting to capture the

construct's breadth (see Sections 1.5.1 and 1.5.2). The current ADAPTS lacks coverage of positive states of openness to experience such as acceptance and willingness as skills or stances (lost through removal of item 13: "I'm willing to let myself have whatever thoughts and feelings come up, without trying to change or avoid them" and item 22 "I can accept how I feel without having to change it"). In losing these items, the scale also does not include defused states towards internal events (thoughts and feelings) that would capture defusion as a strength in the presence of difficult experiences. Items that capture these components of openness to experience would also reflect metacognitive processes of the individual that would cover further breadth of openness to experience but also potentially self-as-context. What is primarily targeted by the ADAPTS openness to experience subscale is experiential avoidance (that captures distraction, suppression, and behaviour under aversive control), and fusion (judgement-based internal struggles). The items that capture these facets have face validity of openness to experience, but they do so through inverse inference. The use of negatively-valenced items within a scale intending to capture psychological flexibility is possibly a limitation as it is proposed that the inverse of psychological inflexibility (that some items allude to) is not simply psychological flexibility (Francis et al., 2016). However, in the case of openness to experience, it can be said that if someone avoids experiences or judges internal experiences, they lack openness to experience.

An EFA of the CompACT was conducted in an adult Portuguese sample supporting the three-factor structure of the original CompACT (Trindade et al., 2021). The EFA resulted in five items being removed from the openness to experience subscale due to loading onto more than one factor with a refined 18-item CompACT presented. The authors attribute performance differences in the openness to experience factor between the Portuguese sample and the original CompACT development sample to cultural differences. In this sample, the 18-item CompACT showed good concurrent and convergent reliability and good discriminant validity between the subscales and depression, anxiety, and stress constructs.

A CFA was conducted in a USA military population (N=178) testing a three-factor fit on an English language 18-item CompACT (using the items retained in the Portuguese study (Trindade et al., 2021)) and the original 23-item CompACT (Tynan et al., 2022). The three factor 18-item structure of the CompACT was replicated in the sample while the CompACT-23 showed poor fit in the data. The 18-item CompACT showed moderate convergent reliability with anxiety, depression, PTSD, perceived stress, and life satisfaction.

The 23- and 18-item versions of the CompACT were also tested using CFA in Italian (N=251), German (N=226), and Spanish (N=248) samples (Giovannetti et al., 2024). The 18-item CompACT structure was found to be replicated across the samples, consistent with findings in the Portuguese (Trindade et al., 2021) and military (Tynan et al., 2022) studies. The scale was found to perform in a consistent manner across the three populations. These findings from different populations demonstrate that the original CompACT-23 (Francis et al., 2016) scale has not been replicated and that there are structural issues within the openness to experience subscale.

5 Reflections

5.1 Personal development as researcher

In this section, I will reflect on experiences from my beginnings in psychological research during a psychology conversion master's course through to the completion of this thesis.

What attracted me to clinical psychology as a profession was the inbuilt process of evidence-based progression and innovation through the interplay of clinical practice and research. For that reason, I envisaged my career being fairly balanced between the two and sought out research opportunities alongside the clinical experience I gained. I was offered two research assistant posts; one that I declined due to thinking experiences an assistant psychologist would be more beneficial for my application to doctoral training, and one I was not able to fulfil due to gaining a place on training, limiting my pre-training research experience. While I did well in the research components of my

master's course, the highly structured and small-scale nature of the projects did little to prepare me for real life clinical research. I began training with confidence about my research ability and a naïve sense of the ease of conducting research and the value placed on it in practical mental health realms. These factors may not have been the case had I taken up post as a research assistant and I wonder how my subsequent experiences might have been different had I more professional research experience prior to training.

When starting out on the doctoral programme, I had what you could call some early successes with good feedback on my research protocol and strong support for my original project. This project involved being the lead researcher and therapist for a hermeneutic single case efficacy design (HSCED) series of ACT for people with intellectual disabilities. The combination of praise for this idea and my own unrelenting standards for achievement meant that I did not heed the warning from one member of the team who suggested that the project was too intensive to complete alongside the other demands of training. In ACT terms, I was maybe fused to myself-as-content as successful and competent - concepts that I clearly valued highly. At this stage, I also think I was relationally framing the idea of "doing less" with "failure" which prevented me from considering a project that might have been more manageable in the context. Doing research that addressed a key gap in intellectual disabilities literature also aligned with my values as a sibling of someone with an intellectual disability. I felt achieving highly in a project on this topic would connect me more strongly with my values.

During my first-year placement and the completion of my systematic literature review, I started to experience chronic migraines that eventually resulted in me taking four months off sick from training. I believe one of the contributory factors (among many) to the migraines was stress and tension arising from my working style where I strive to work things out for myself and work autonomously rather than readily asking questions or seeking help. Unfortunately, I did not find a fully effective cure to the migraines and had to drastically adjust my work ethic and pacing to accommodate the long-term health condition and return to training. Coming to terms with a limiting physical

health condition in the context of a large research project was hard as it pushed my self-as-content towards difficult judgments of myself as a failure or not being good enough. This was compounded by the decision to abandon my original thesis idea and pursue a less demanding project given the need for pacing and the time I had left on training. Due to the value-laden nature of the original project, I was heavily invested in its success and its necessity. Letting go of the project was initially quite a blow and I felt a sense of shame and sadness at not being able to complete it. Coming to terms with not conducting the project meant embracing flexible thinking, defusion, acceptance, and discovering different perspectives. This taught me that completing research or work in an area that has a personal connection to me comes with an emotional burden that should be carefully considered in future. This learning informed my decision making when applying to clinical psychologist jobs where I felt able to pursue a field other than intellectual disabilities that I felt a duty towards and as such, was probably driven towards for the wrong reasons.

Choosing a different project does not negate or lessen my view that my original project is an important and necessary piece of work. I recognise that I might have imbued it with too much importance which fuelled my passion for it and subsequent emotional impact. Upon reflection, I see that the project is a small step in a larger movement in research into therapies for those with intellectual disabilities. Choosing a different project does not prevent me from being involved in the project's completion in the future or being involved in similar research in a supervisory capacity. In this sense, I can continue to act in a values consistent manner without becoming overwhelmed.

From a practical, research process perspective, I learnt the importance of understanding the resources necessary for the completion of projects. Key resources that now strike me as important and highly limited within the context of conducting a large project during training were time, number of researchers/therapists, workload split and emotional capacity (considering the personal link to project topic and delivery of therapy). While planning the project, it appeared there were plentiful study days available for the delivery of therapy necessary for the project and its planning and completion. A lack of

experience led me to overestimate the resources available and I did not fully anticipate the extensive periphery tasks that take up time during the navigation of research. A single delay would mean the loss of valuable study days and a lack of progress in the project. When considering that other deadlines and demands during training also took up many study days, time was highly limited. I have learnt that timeframes and administrative tasks are major factors to be realistic about in the planning of research and the anticipation of setbacks and changes to original plans and timeframes.

Thinking of my original project as committed action towards accessing my values as a sibling perhaps highlights an important challenge and consideration when working with these ACT processes. While ACT clearly allows for the phenomena of living towards values bringing up both meaningful and challenging feelings it seems possible in my experience that choosing a particular path of committed action served to create more stress/distress overall. It is noted that living a life in line with values can put people in touch with difficult feelings. Even though other techniques might be suggested to mitigate the impact of increased stress (for example, practising defusion from the difficult thoughts and feelings that might come up), it may be important to caveat the “do what matters” processes with the need for balancing of the emotional weight it entails, if relevant.

While orientating myself to a new project I noticed myself becoming worried about its quantitative methodology. I became concerned about understanding the statistical workings of the methods I intended to use and felt a sense of “not being good enough” at statistics for a project of this nature. I perceived there to be a huge amount of “unknown” before me that I would not be able to conquer. I thought I needed better prior experience and knowledge of quantitative methods to proceed. When I became aware of these thoughts that were acting as a barrier to my progress, I explored ways to defuse from these ideas and approach the project as a learning experience rather than something I approach from a knowing or expert position. I think this has been one of the most valuable lessons throughout my training and research journey. At times I have felt a need to feel fully competent and experienced at a task before

proceeding. However, fusion to the idea of “knowing” can shut down opportunities for learning and curiosity that can hinder progress and potentially cause harm. I now meet challenges and new experiences as opportunities for learning and treat myself more gently within that context rather than over worrying about what skills I might lack.

As I worked through the statistical analysis of the project, I found that I came to enjoy the contained and iterative process of working with clear cut procedures and numbers. I also gained a sense of satisfaction in realising how large seemingly meaningless sets of data could come together and demonstrate a clear relationship not only among themselves but within the wider CompACT context. Prior to this project, I think I understood statistics to be firmly aligned with positivism and lacked the experience in statistics/research to appreciate how it could be approached more flexibly from different epistemological positions. After a lengthy chapter explaining different procedures for factor analysis, I was struck by a paragraph in Using Multivariate Statistics (Tabachnick & Fiddell, 2019) that stated that no matter which analysis was chosen, the results would essentially be the same. I was encouraged by this frank and pragmatic-aligned sentiment. I find I have a greater appreciation for how statistics can fit within a psychological research context and also within a critical realist approach (my personal approach to science) and within pragmatism (the CBS approach adopted for this project). Despite the upheaval of changing projects, I am grateful at having the opportunity to develop confidence and experience in statistics.

Completing a research project within a cohort of others doing the same thing was a challenge in itself in relation to the outward judgements of others in relation to progress and competitiveness. I do not consider myself to be competitive but found I quietly compared my progress to the progress of others and striving to “keep up”. This was greatly interrupted by my time off with sickness and my altered timeline for project completion upon my return. I was struck by how I previously found being among the cohort timeline to be both stressful in some ways but also motivating. Being out of sync with the group was in turn a welcome relief from the drive but also left me searching for other

sources of motivation. I found motivation through befriending those who were also out of sync with the cohort, who had shared values with me and we provided support and motivation for each other. Each of these colleagues experienced significant life events during training, as I did in the last year.

Despite the best laid plans for doctorate completion and life, I have learnt that life happens and everything can change. Being able to move with circumstances and find ways to accept the uncontrollable and all the emotion that comes with it has been invaluable to me. This can mean putting other things (thesis) on hold to come back to and be more present for, and then also accepting and sitting with the additional emotions this can bring about. On reflection, I think my values of achievement and striving for knowledge that were very important to me throughout my life and in the initial stages of the doctorate and being a researcher are no longer as important to me. I feel this benefits me in some ways as I am not so emotionally caught up in my achievement or progress which can be greatly challenged throughout a research process. However, I have had to search for motivation during the writing up stages in different places. Though I have heard it said and thought I lived aligned with it, I now think I truly appreciate what it means to be a human first and a researcher/clinical psychologist second (or third or fourth or after that). The ACT processes have been useful tools for interpreting my experience and also practicing throughout the last few years. Despite a shift in my values, I am exciting about the prospect of taking on research in my role as a clinical psychologist and I am purposely part of a highly research active team. I hope with a new found balance for life and myself, I can move into qualified research life with ample flexibility.

5.2 Ethical issues

Research involving children is crucial in developing adequate mental healthcare and evidence-based approaches (Crane & Broome, 2017). However, research involving children also raises particular ethical considerations. Researchers must ensure that participants clearly understand what their involvement entails which requires developmental adaptations when working with children. Information sheets were designed with accessibility and

understanding in mind so that study details including the risks and benefits of taking part were clear to participants of all ages before they gave consent/assent. Age-appropriate information sheets with clear language supported by pictures are used to ensure accessibility and maximise understanding of participation. Participants can be given time to consult with a trusted adult about their involvement before giving assent/consent. The assent/consent process ensures a level of agency and autonomy for the child as they are able to voluntarily make a decision about their involvement, with adult support. It is hoped that this level of agency and willingness to participate (if assent/consent is given) will partly address the inherent power imbalances in the adult-child relationship. Participant facing materials are designed in such a way that they provide ample information but also appeal to the youth population and have the potential to reduce power imbalances through their accessibility and clarity. Using online questionnaires that can be accessed on mobile devices provides additional choice in where and when participants complete the questionnaires and hopes to reach wider populations that may not be reached typically in research. This method was thought to be minimally intrusive for child participants.

Parental/carer consent and assent was sought for participants between the ages of 13 and 15. "Parental/carer" refers to the legal guardian of the potential child participant. A parent/carer information sheet was provided before parent/carers decided whether to consent on behalf of their child or not. If the parent/carer provided parental/carer consent, an age-appropriate information sheet was provided for participants and assent gained before proceeding to the questionnaire. In the event that one party (parent/carer or potential child participant) does not provide assent/consent, the participant will not take part in the study as the webpage will not progress.

All measures (apart from the ADAPTS, that this current study is validating) that were used have been validated for populations of 13 years and over and are routinely used in these populations in education and healthcare settings as standard practice. In this sense it is thought that the measures used are as suitable as possible for participants. Thought and attention has also been

given to minimising burden and risk involved in participation wherever possible in the study.

The occurrence of an adverse event as a result of participation in this study was thought to be low. The research involved participants answering questionnaires exploring wellbeing, mood and thoughts (including anxious and depressed mood and thoughts). A "topics of a potentially sensitive nature" warning was clear in recruitment text, adverts, and information sheets. Potential participants were advised not to participate if they anticipated becoming distressed by the potentially sensitive topics. Participants were prompted in the information sheet to discuss any worries about taking part with a trusted adult. In the event that participants became distressed during a questionnaire, they were free to stop and close the webpage. A debrief sheet was provided with signposting to relevant services (e.g., GP, NHS self-referral to child and adolescent mental health services, Barnados) and prompting to discuss any concerns with a trusted adult. This information was also provided in the information sheet so that it is available in the event a participant does not complete the questionnaires and reach the debrief page. Confidentiality was explained to all participants prior to participation. No personal data was collected or stored for paritipants for minimal risk of intrusion or demand on the participants. Participants were informed that participation was entirely voluntary, and they could choose to withdraw from the study without having to provide a reason. As participation was anonymous, it was not possible for individual participant data to be withdrawn from the study after submission. Participants aged 13 to 21 were recruited using this research recruitment platform Prolific where they were paid for their time. Prolific payments were thought to be proportionate to the requirements of participation.

5.3 Epistemological position

This area is explored throughout functional contextualism expositions in the extended introduction and discussion above. To reflect further, as a researcher and clinician, I have developed an enjoyment for pragmatism. I find it takes the pressure off the tendency to try to get everything perfect and shifts a focus to immediate and efficient problem-solving. This is particularly containing

for me as I tend to ask a lot of questions and struggle to draw a line with what could be “good enough”. There will always be an argument for doing things another way and it is important to acknowledge this. Exploration of alternative methods and further analysis is core for progression in science and critical thinking. However, I focused on what is demonstrated to work well for the type of question this study asked and worked within those parameters. Using similar methods across scale development allows for efficient replication and extension of results and makes results more easily comparable.

5.4 This project and CBS

In term of the Contextual Behavioural Science field, this paper has a clear and meaningful contribution to make towards the well documented problem with previous measures of psychological flexibility. I believe that the ADAPTS has potential to be foundational in a new direction in psychological flexibility research in youth and transition research, especially given that these fields are in their relative infancy. However, research progress tends to be less direct and absolutist, though there is a need for a widely agreed upon paradigm shift within the CBS world, there is still a hierarchy that slows progress and main figures within the hierarchy have not stated a position on things that might aid a shift towards more accurate measurement. There is an odd conflict between what is called for by CBS in terms of accurate measurement, contextual responsiveness versus current practice.

As I wrote the final journal article for this thesis, I noticed I became conflicted about presenting literature on the efficacy of ACT and PF as a mediator of mental health outcomes. I struggle to reconcile the fact that the AAQ-2 is presented as a measure of psychological inflexibility when it fails to include a core part of the proposed framework of psychological flexibility, lacking basic face validity. This renders the whole body of ACT and psychological flexibility literature supported by this measure invalid in terms of the key mechanism of change. To construct an argument for ACT as a prominent therapeutic approach in mental health fields based on this evidence feels inappropriate. However, from a pragmatic standpoint, in clinical application, there is a demonstrable relationship between ACT therapies and

improved mental health outcomes notwithstanding psychological flexibility that offers some solace. While I was conflicted about including the evidence, it was essential to present and caveat with the inherent issues it presents.

The prolific presentation and use of the AAQ-II as a measure of psychological flexibility by researchers, whether using a pragmatic approach or not, leads me to question the integrity of those in the CBS field and more broadly. This was further compounded by contact I received from Steve Hayes following the publication of my systematic literature review on the quality of single case experimental designs using ACT (Luck et al., 2024). He commended the review but included an obscure not readily available commentary paper he had written that he believes has influence over current practice in the evidence base that I should be aware of. While it was encouraging to receive contact from him and to know that he keeps abreast of CBS research publications, I felt as though the apparent assumption that I should have come across the paper as out-of-touch, further supporting the ego and insularity of CBS world. This also fuels a growing scepticism I have noticed within myself towards scientific research in general which has larger implication. If we are very lucky we might avoid need for health care but inevitably, physical health will decline. At some point we are at the mercy of the intervention informed by the “evidence base”. For example, what I thought of as positivism within medical research appears to me now as a veneer of certainty in some instances. While I believe that a healthy amount of scepticism is essential in maintaining a necessary critical approach I wonder where the line is in terms of turning scepticism into action. I hope this project and presentation of the ADAPTS can be a step towards movement away from the AAQ-II within the broader field.

There are many definitions of processes within psychological flexibility that expands pathways for measurement and research. Within ACT it appears to be fundamentally developed through the work of one party that advocates the use of an inherently flawed measure which leads me to question the integrity of the field. The issues presented throughout this project raise many questions. Should the AAQ-II be retracted as a measure of psychological flexibility? What

are the obstacles in the way of a more decisive direction away from the AAQ-II? Is further work in psychological flexibility unhelpful using current methods? There appears to be a fusion to tradition that is hindering progress. I believe there should be a large evaluation and “back to the drawing board” movement within the CBS field to create a stronger foundation for psychological flexibility research to support and strengthen intervention.

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Appendices

Appendix A: Letter of ethical approval

UNIVERSITY OF LINCOLN

Application Details	
Ethics Reference	UoL2023_10719
Title of Project	Validation of the CompACT-Y
Lead Researcher	Safia Luck
Academic Supervisor (if applicable)	Nima Moghaddam, David Dawson
Committee	Human Ethics Committee (PR)
Date of Ethical Opinion	26 September 2023

FAVOURABLE OPINION

Your application for the above project has been considered, on behalf of the committee and I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form and supporting documentation.

1. Commencement of the research

1.1 Risk Assessment: Where your activity is not covered by an existing risk assessment then a new risk assessment **must** be completed prior to any research commencing. Where your research activity is covered by an existing risk assessment, please ensure you are familiar with the content and any mitigating factors. Where appropriate you may need to modify an existing risk assessment.

1.2 It is assumed that the research will commence within 12 months of the date of the favourable ethical opinion.

1.3 If the research does not commence within 12 months of the favourable opinion being issued, the lead applicant (or academic supervisor for student research) should send a written explanation for the delay. A further written explanation should be sent after 24 months if the research has still not commenced.

1.4 If the research does not commence within 24 months, the REC may review its opinion.

Where applicable:

In line with Data Protection and the University's guidelines for the production of research recruitment materials:

- Personal data should be destroyed when it is no longer necessary to contact participants.
- Any recruitment materials **must** follow the Guidelines for the production of research recruitment materials including adding the ethics reference (found at the top of this letter) to any externally facing documents/recruitment text (including in any social medial adverts).

2. Duration of favourable opinion

2.1 The favourable ethical opinion of the Research Ethics Committee (REC) for a specific research study applies for the duration of the study, as detailed in your application (or any subsequent amendments).

3. Amendments

3.1 If it is proposed to make an amendment to the research as described in the application, the lead applicant (authorised by the academic supervisor for student research) should submit an amendment to the REC by accessing the original application form on LEAS and creating an amendment form.

4. Monitoring

4.1 A REC may review a favourable opinion in the light of progress reports and any developments relevant to the study. The lead applicant and academic supervisor (for student research), is responsible for ensuring the research remains scientifically sound, safe, ethical, legal and feasible throughout its duration. The lead applicant and academic supervisor (for student research) should submit a progress report to the REC 13 months after the date on which the favourable opinion was given. Annual progress reports should be submitted thereafter.

4.2 Progress reports should be completed and submitted using the forms in LEAS.

5. Conclusion or early termination of the research

5.1 The Lead Applicant should complete the End of Study Form in LEAS once the study has completed. It is also their responsibility to inform the REC of early termination of the project or if the work is not completed.

6. Long Term Studies

6.1 The lead applicant and academic supervisor (for student research) is responsible for ensuring that the study procedures and documentation are updated in light of legislative or policy changes and also for reasons of good practice (e.g. standards for supporting documentation). This should be documented in the progress report to the REC (see above) and, where necessary, an amendment (see above) should be submitted to the REC. The REC may review its opinion in light of legislative changes or other relevant developments.

Additional guidance may be found at here

Statement of Compliance

The Committee is constituted in accordance with the University of Lincoln Research Ethics policy and E-QMS SOP E-01 Ethics Committee Operations.

Approved list of documents (if applicable):

Document Type	File Name	Date	Version
Interview / Focus Group Questions	Validation_of_the_CompACT-Y AFQ-Y8 v1 210423	21/04/2023	1
Interview / Focus Group Questions	Validation_of_the_CompACT-Y CAMM v1 210423	21/04/2023	1
Interview / Focus Group Questions	Validation_of_the_CompACT-Y CompACT-Y v1 210423	21/04/2023	1
Interview / Focus Group Questions	Validation_of_the_CompACT-Y RCADS ANXIETY v1 210423	21/04/2023	1
Interview / Focus Group Questions	Validation_of_the_CompACT-Y RCADS LOW MOOD v1 210423	21/04/2023	1
Interview / Focus Group Questions	Validation_of_the_CompACT-Y SWEMWBS v1 210423	21/04/2023	1
Other documents	Response to reviewer 090523 v1	09/05/2023	2
Participant Information Sheet	Validation_of_the_CompACT-Y Links to surveys:PIS:consent	02/09/2023	1
Consent Form	Validation_of_the_CompACT-Y Links to surveys:PIS:consent	02/09/2023	1
Participant Information Sheet	Validation_of_the_CompACT-Y Links to surveys:PIS:consent	02/09/2023	1
Participant Information Sheet	Validation_of_the_CompACT-Y Links to surveys:PIS:consent	02/09/2023	1
Interview / Focus Group Questions	Validation_of_the_CompACT-Y Links to surveys:PIS:consent	02/09/2023	1
Other documents	Response to reviewers 020923 v2	02/09/2023	2
Other documents	Validation_of_the_CompACT-Y 16-21andParentsSocialMediaPosters v3 020923	02/09/2023	3
Other documents	Validation_of_the_CompACT-Y RecruitmentText v2 020923	02/09/2023	2

Appendix B: Letter of ethical approval for recruitment method amendment

UNIVERSITY OF LINCOLN

Application Details

Ethics Reference	2023_10719
Title of Project	Validation of the CompACT-Y
Amendment Reference	Additional recruitment strategies 092023
Lead Researcher	Safia Luck
Academic Supervisor (if applicable)	
Date of Amendment Ethical Opinion	29 September 2023

Favourable Opinion

Thank you for your amendment, I am pleased to confirm a favourable ethical opinion for the amendment to the above research on the basis described in the amendment form and supporting documentation (if applicable).

Please refer to your original favourable opinion letter for any conditions of approval.

e: ethics@lincoln.ac.uk

Useful links: LEAS| Ethics guidance| Frequently Asked Questions| Templates| Committee dates

Approved list of documents relevant to this amendment:

Appendix C: Measures

RCADS Anxiety

How are things?

Date: ☐☐/☐☐/20☐☐ Time: ☐☐h☐☐m

Please put a circle around the word that shows how often each of these things happen to you.
There are no right or wrong answers.

		0	1	2	3
1	I worry about things	Never	Sometimes	Often	Always
2	I worry that something awful will happen to someone in my family	Never	Sometimes	Often	Always
3	I worry that bad things will happen to me	Never	Sometimes	Often	Always
4	I worry that something bad will happen to me	Never	Sometimes	Often	Always
5	I worry about what is going to happen	Never	Sometimes	Often	Always
6	I think about death	Never	Sometimes	Often	Always

RCADS Low mood

How are things?

Date: ▢▢/▢▢/20▢▢ Time: ▢▢h▢▢m

Please put a circle around the word that shows how often each of these things happen to you.
There are no right or wrong answers.

		0	1	2	3
1	I feel sad or empty	Never	Sometimes	Often	Always
2	Nothing is much fun anymore	Never	Sometimes	Often	Always
3	I have trouble sleeping	Never	Sometimes	Often	Always
4	I have problems with my appetite	Never	Sometimes	Often	Always
5	I have no energy for things	Never	Sometimes	Often	Always
6	I am tired a lot	Never	Sometimes	Often	Always
7	I cannot think clearly	Never	Sometimes	Often	Always
8	I feel worthless	Never	Sometimes	Often	Always
9	I feel like I don't want to move	Never	Sometimes	Often	Always
10	I feel restless	Never	Sometimes	Often	Always

Child and Adolescent Mindfulness Measure (CAMM)

We want to know more about what you think, how you feel, and what you do. **Read** each sentence. Then, circle the number that tells **how often each sentence is true for you.**

	Never True	Rarely True	Some-times True	Often True	Always True
1. I get upset with myself for having feelings that don't make sense.	0	1	2	3	4
2. At school, I walk from class to class without noticing what I'm doing.	0	1	2	3	4
3. I keep myself busy so I don't notice my thoughts or feelings.	0	1	2	3	4
4. I tell myself that I shouldn't feel the way I'm feeling.	0	1	2	3	4
5. I push away thoughts that I don't like.	0	1	2	3	4
6. It's hard for me to pay attention to only one thing at a time.	0	1	2	3	4
7. I get upset with myself for having certain thoughts.	0	1	2	3	4
8. I think about things that have happened in the past instead of thinking about things that are happening right now.	0	1	2	3	4
9. I think that some of my feelings are bad and that I shouldn't have them.	0	1	2	3	4
10. I stop myself from having feelings that I don't like.	0	1	2	3	4

The Short Warwick–Edinburgh Mental Well-being Scale (SWEMWBS)

Below are some statements about feelings and thoughts.
Please tick the box that best describes your experience of each over the last 2 weeks

STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5

CompACT-Y	Name:	Date

Thinking about all the different areas of your life,
please rate the following 23 statements using the scale below:

0	1	2	3	4	5	6
Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree

1.	I can work out what matters to me in life and go after these things	0	1	2	3	4	5	6
2.	Something that is really important to me is to not have upsetting feelings	0	1	2	3	4	5	6
3.	I rush through activities that are important to me, without really paying attention	0	1	2	3	4	5	6
4.	I try to distract myself to block out difficult thoughts and feelings	0	1	2	3	4	5	6
5.	I behave in ways that reflect what is important to me	0	1	2	3	4	5	6
6.	I get so tangled up in my thoughts that I don't do the things that really matter to me	0	1	2	3	4	5	6
7.	I choose to do what's important to me, even if it brings up difficult emotions	0	1	2	3	4	5	6
8.	I tell myself it's wrong to have certain thoughts	0	1	2	3	4	5	6
9.	I find it hard to focus on the thing that I'm doing	0	1	2	3	4	5	6
10.	I live my life in a way that matches what I care about	0	1	2	3	4	5	6
11.	I try to avoid situations that might bring up difficult thoughts or feelings	0	1	2	3	4	5	6
12.	Even when I'm doing things that are important to me, I find myself doing them without paying attention	0	1	2	3	4	5	6
13.	I'm willing to let myself have whatever thoughts and feelings come up, without trying to change or avoid them	0	1	2	3	4	5	6
14.	I do things that matter to me, even when it is difficult	0	1	2	3	4	5	6
15.	I try hard to block the feelings I don't want	0	1	2	3	4	5	6
16.	I do things without being aware of what I'm doing	0	1	2	3	4	5	6
17.	I can stick with things that I care about, even when it's difficult	0	1	2	3	4	5	6
18.	I avoid things that are important to me, if there is a risk that I will feel upset	0	1	2	3	4	5	6
19.	I often seem to do things without much awareness of what I'm doing	0	1	2	3	4	5	6
20.	Thoughts are just thoughts – they don't have to control what I do	0	1	2	3	4	5	6
21.	My values are really reflected in my behaviour	0	1	2	3	4	5	6
22.	I can accept how I feel without having to change it	0	1	2	3	4	5	6
23.	I can keep going with something when it is important to me	0	1	2	3	4	5	6

AFQ-Y8

We want to know more about what you think, how you feel, and what you do. Read each sentence. Then, circle a number between 0-4 that tells how true each sentence is for you.

	Not at all True	A little True	Pretty True	True	Very True
1. My life won't be good until I feel happy.	0	1	2	3	4
2. My thoughts and feelings mess up my life.	0	1	2	3	4
3. The bad things I think about myself must be true.	0	1	2	3	4
4. If my heart beats fast, there must be something wrong with me.	0	1	2	3	4
5. I stop doing things that are important to me whenever I feel bad.	0	1	2	3	4
6. I do worse in school when I have thoughts that make me feel sad.	0	1	2	3	4
7. I am afraid of my feelings.	0	1	2	3	4
8. I can't be a good friend when I feel upset.	0	1	2	3	4

Acceptance and Fusion Questionnaire for Youth (AFQ-Y)

We want to know more about what you think, how you feel, and what you do. Read each sentence. Then, circle a number between 0-4 that tells how true each sentence is for you.

	Not at all True	A little True	Pretty True	True	Very True
1. My life won't be good until I feel happy.	0	1	2	3	4
2. My thoughts and feelings mess up my life.	0	1	2	3	4
3. If I feel sad or afraid, then something must be wrong with me.	0	1	2	3	4
4. The bad things I think about myself must be true.	0	1	2	3	4
5. I don't try out new things if I'm afraid of messing up.	0	1	2	3	4
6. I must get rid of my worries and fears so I can have a good life.	0	1	2	3	4
7. I do all I can to make sure I don't look dumb in front of other people.	0	1	2	3	4
8. I try hard to erase hurtful memories from my mind.	0	1	2	3	4
9. I can't stand to feel pain or hurt in my body.	0	1	2	3	4
10. If my heart beats fast, there must be something wrong with me.	0	1	2	3	4
11. I push away thoughts and feelings that I don't like.	0	1	2	3	4
12. I stop doing things that are important to me whenever I feel bad.	0	1	2	3	4
13. I do worse in school when I have thoughts that make me feel sad.	0	1	2	3	4
14. I say things to make me sound cool.	0	1	2	3	4
15. I wish I could wave a magic wand to make all my sadness go away.	0	1	2	3	4
16. I am afraid of my feelings.	0	1	2	3	4
17. I can't be a good friend when I feel upset.	0	1	2	3	4

Acceptance and Action Questionnaire - version 2 (AAQ-2)

Instructions:

Below you will find a list of statements. Please rate how true each statement is for you by selecting the appropriate option.

		Never true	Very seldom true	Seldom true	Sometimes true	Frequently true	Almost always true	Always true
1	My painful experiences and memories make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
2	I'm afraid of my feelings.	1	2	3	4	5	6	7
3	I worry about not being able to control my worries and feelings.	1	2	3	4	5	6	7
4	My painful memories prevent me from having a fulfilling life.	1	2	3	4	5	6	7
5	Emotions cause problems in my life.	1	2	3	4	5	6	7
6	It seems like most people are handling their lives better than I am.	1	2	3	4	5	6	7
7	Worries get in the way of my success.	1	2	3	4	5	6	7

Appendix D: Recruitment materials from QuestionPro

16-21 Information Screen

We are inviting you to take part in a research study. Before you decide, it is important that you know why we are doing the study and what is involved. Please read the following information carefully.

What is the purpose of the study?
When we treat or do research on mental health, it is important we have a reliable way of measuring any changes. One way of measuring someone's mental health is through questionnaires. These questionnaires are usually developed through research like this study.

We are testing how well a new questionnaire about wellbeing for young people works. The questionnaire was already created in a different study. Wellbeing is related to how we think, feel and how we behave in different situations. We will test the questionnaire by getting lots of young people to complete it then compare the answers to other people's answers and other questionnaires.

The study involves doing some questionnaires online and should take around 10 minutes to complete. If we find that the questionnaire is useful, it will be freely available for healthcare and research professionals to use across English speaking populations.

Am I eligible to take part?
You can take part if you are **aged 16-21 and live in the UK**. You can take part no matter what background or identity you have, as long as you can read and understand this information.

We are hoping to find around 250 young people from the UK to take part in this study online.

Do I have to take part?
Participation is completely voluntary. You should only take part if you want to and choosing not to take part will not disadvantage you in any way.

What will I be asked to do?
If you want to take part, you will be asked to provide eConsent by ticking boxes agreeing to statements (e.g., statements confirming that you have read this information and that you agree to take part).

You will complete a brief form on your demographic details such as age and gender identity.

You will then complete some questionnaires answering questions about your thoughts, feelings and how you act in different situations. The questionnaires

are multiple choice so all you need to do is tick a box for each question. The questionnaires should take around 10 minutes to complete. Try and answer the questions as openly and honestly as you can.

Some questions are of a potentially sensitive nature: they ask about sad and anxious thoughts and feelings. If you think answering questions about those topics might upset you, it is better if you do not take part in the study.

Will I be paid expenses for taking part?
You will be paid through Prolific for your time spent taking part in the study. It is thought the study will take you about 10 minutes. You will not be paid expenses for taking part.

What are the possible benefits / risks of taking part?
The possible benefits of taking part are that you will be contributing towards our understanding of how we measure mental health in young people. This could help identify mental health issues in young people sooner and ensure they receive better support with mental health issues in the future.

Some questions are of a potentially sensitive nature: they ask about sad and anxious thoughts and feelings. There is a risk this could upset you.

There is a possibility that questions could make you consider things you had not thought about before. This could have positive consequences such as more insight into how you think and behave. This could also cause you upset as mentioned above.

If anything about this study has upset you, the following organisations are available and could offer support:

The Mix is a support service for people under 25.
Call The Mix helpline (open 4pm-11pm) on 0808 808 4994.
Or visit www.themix.org.uk/get-support to send an email or open a 1-1 chat.

Childline is a support service for people under 19.
· call Childline on 0800 1111 for support 24 hours a day (the number is short to help people remember)
· message Childline by making an account at www.childline.org.uk/get-support/
· You can find lots of helpful advice on the website or write on the message boards: www.childline.org.uk

Nightline is a support service for university students.
If you are a university student, you can visit www.nightline.ac.uk/want-to-talk/ to find your university's contact details for phone, videocall, instant messaging and email.

Will anyone know I have taken part?

The information we collect will be handled in confidence. No one will know you have taken part, as your responses are anonymous.

Where will my data be stored?
The data obtained from the study will be stored securely on the university OneDrive in password protected files. Only the researcher/researchers will have access to it. The data from this study *may* be put in an Open Access repository for other researchers to use in future research.

What will happen if I don't want to carry on with the study?
As you have completed the study anonymously it will not be possible to remove the data provided, as we will not be able to identify you in any way.

What will happen to the results of the research study?
The study will be written up as a thesis for partial fulfilment of the lead researcher's Doctorate in Clinical Psychology. Part of this includes a journal article that will be submitted to the Journal of Contextual Behavioural Science for possible publication when complete.

Who is organising and funding the research?
This research is being organised by Safia Luck at the University of Lincoln.

Who has reviewed the study?
All research conducted by the University of Lincoln is looked at by an independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by a University of Lincoln Research Ethics Committee, reference number 10719.

What if there is a problem?
It is very unlikely that this study would cause you any harm. If you have a concern or a complaint about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. The researchers contact details are given at the end of this information sheet.

If you remain unhappy and wish to complain formally, you can make a formal complaint through the University complaints procedure or by contacting ethics@lincoln.ac.uk.

Contact details
Thank you for reading about our study. You can contact us for any further information on the contact details below.

Safia Luck, Trainee Clinical Psychologist
Safia.luck@nottingham.ac.uk

Dr Nima Golijani-Moghaddam, Research Clinical Psychologist
nmoghaddam@lincoln.ac.uk

Dr Dave Dawson, Research Clinical Psychologist
ddawson@lincoln.ac.uk

Or call 01522 886972 to leave a message and one of us will return your call.

Again, if anything about this study has upset you, the following organisations are available and could offer support:
The Mix is a support service for people under 25.
Call The Mix helpline (open 4pm-11pm) on 0808 808 4994.
Or visit www.themix.org.uk/get-support to send an email or open a 1-1 chat.

Childline is a support service for people under 19.
· call Childline on 0800 1111 for support 24 hours a day (the number is short to help people remember)
· message Childline by making an account at www.childline.org.uk/get-support/
· You can find lots of helpful advice on the website or write on the message boards: www.childline.org.uk

Nightline is a support service for university students.
If you are a university student, you can visit www.nightline.ac.uk/want-to-talk/ to find your university's contact details for phone, videocall, instant messaging and email.

Consent screen

Please read the following and tick the boxes if you agree to proceed with the study

☐ I confirm that I have read the study information above. I have had the opportunity to consider the information, ask questions and have these answered satisfactorily.

☐ I understand that as I will complete the study anonymously, it will not be possible to remove any information I provide as you will not be able to identify me in any way.

☐ I understand that individuals from the University of Lincoln may look at the research data collected during the study to ensure that the study is conducted appropriately.

☐ I agree to take part in the above study.

Parental information screen for 13-15 year olds

Parent/carer information

We'd like to invite your child to take part in our research study. Whether they join the study is entirely up to you and them. Before you decide, we would like you to understand why the research is being done and what it would involve for you and your child. Please take time to read this information sheet carefully to help you decide whether or not to consent to your child taking part. There are contact details of the researchers at the end of this information if you would like to ask any questions. Please feel free to talk to others about the study if you wish. Your child will be able to access an age-appropriate information sheet if you decide to give consent for them to take part.

What is the purpose of the study?

When we treat or do research on mental health, it is important we have a reliable way of measuring any changes. One way of measuring someone's mental health is through questionnaires. These questionnaires are usually developed through research like this study. We are testing how well a new questionnaire about wellbeing for young people works. Wellbeing is related to how we think, feel and how we behave in different situations. The questionnaire was already created in a different study. We will test it by getting lots of young people to complete it then compare the answers to other people's answers and other questionnaires. The study involves your child doing some questionnaires online and should take less than 10 minutes to complete. If we find that the questionnaire is useful, it will be freely available for healthcare and research professionals to use across English speaking populations.

Is my child eligible to take part?

Your child can take part if they are aged 13-15 and live in the UK. We are hoping to find 250 participants like your child to take part.

Does my child have to take part?

Participation is completely voluntary. Your child should only take part if you want them to and they are happy to participate. Choosing not to take part will not disadvantage you or your child in any way. If you choose for your child not to take part it will not impact your legal rights in any way.

What will my child and I be asked to do?

If you are happy for your child to take part, you will be asked to provide eConsent by ticking boxes agreeing to statements (e.g., statements confirming that you have read this information and that you agree for your child to take part).

You will then have access to age-appropriate information for your child. Please pass the device to your child so they can read the information. You

can talk about the study with them if they have any questions.

If they are happy to take part, they will be asked to provide assent by ticking boxes agreeing to statements (e.g., statements confirming they have read and understood this information and that they agree to take part).

Your child will then complete a brief form gathering demographic information such as their age and gender identity.

Your child will then access the questionnaires. They will answer questions about their thoughts, feelings and how they act in different situations. The questionnaires are multiple choice so all your child needs to do is tick a box for each question. The questionnaires should take around 10 minutes to complete. Your child should try and answer the questions as openly and honestly as they can.

Will my child be paid expenses for taking part?
You will receive funds through Prolific for your/your child's time.

What are the possible benefits of taking part?
The possible benefits of taking part are that your child will be contributing towards our understanding of how we measure mental health in young people. This could help identify mental health issues in young people sooner and ensure they receive better support with mental health issues in the future.

There is a possibility that questions could make your child consider things they had not thought about before. This could have positive consequences such as more insight into how they think and behave.

What are the possible disadvantages and risks of taking part?
All efforts have been made to make participation in the study as convenient as possible for your child. It may be that taking around 10 minutes to complete the questionnaires is boring or effortful for your child.

Some questions are of a potentially sensitive nature: they ask about sad and anxious thoughts and feelings. There is a risk this could upset your child.

There is a possibility that questions could make your child consider things they had not thought about before. This could have positive consequences such as more insight into how they think and behave. This could also cause them upset as mentioned above.

If anything about this study has upset your child, they can talk to you or any other trusted adult.

Your child can access confidential support through the support organisations below:

Childline is a support service for people under 19.

- call Childline on 0800 1111 for support 24 hours a day (the number is short to help people remember)
- message Childline by making an account at www.childline.org.uk/get-support/
- You can find lots of helpful advice on the website or write on the message boards: www.childline.org.uk

If you have been affected by anything about this study, you can access support through the organisation below:

Samaritans provide 24 hour support for anything you are going through.

- Call Samaritans on 116 123
- Or access to send an email or download the Samaritans support app: www.samaritans.org/how-we-can-help/contact-samaritan/

Mind help provide support for mental health issues.

- Call Mind's Infoline for information and pointers towards local support: 0300 123 3393 (Mon-Fri, 9am-6pm)
- Or email info@mind.org.uk

Will anyone know my child has taken part?
The information we collect will be handled in confidence. No one will know your child has taken part.

Where will my child's data be stored?
The data obtained from the study will be stored securely on the university OneDrive in password protected files. Only the researcher/researchers will have access to it. The data from this study *may* be put in an Open Access repository for other researchers to use in future research. If so, responses will be anonymised and any personal data (e.g. contact details) will be removed.

What will happen if I don't want my child to carry on with the study?
You are free to withdraw your child at any point during participation, without having to give a reason, by closing the study webpage.

After completion, as your child will have completed the study anonymously it will not be possible to remove the data provided, as we will not be able to identify your child in any way.

What will happen to the results of the research study?
The study will be written up as a thesis for partial fulfilment of the lead researcher's Doctorate in Clinical Psychology. Part of this includes a journal article that will be submitted to the Journal of Contextual Behavioural Science for possible publication when complete.

Who is organising and funding the research?
This research is being conducted by the University of Lincoln.

Who has reviewed the study?

All research conducted by the University of Lincoln is looked at by an independent group of people, called a Research Ethics Committee, to protect you and your child's interests.

What if there is a problem?
If you have a concern about any aspect of this study, you should ask to speak to one of the researchers, who will do their best to answer your questions. The researchers' contact details are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you can do this by contacting ethics@lincoln.ac.uk.

Further information and contact details
Thank you for reading about our study. You can contact us for any further information on the contact details below.

Safia Luck, Trainee Clinical Psychologist
Safia.luck@nottingham.ac.uk

Supervisors:
Dr Nima Golijani-Moghaddam, Research Clinical Psychologist
nmoghaddam@lincoln.ac.uk

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Consent screen

Please read the following and tick the boxes if you agree to proceed with the study

- [ ] I confirm that I have read the study information above. I have had the opportunity to consider the information, ask questions and have these answered satisfactorily.
- [ ] I understand that as my child will complete the study anonymously, it will not be possible to remove any information they provide as you will not be able to identify them in any way.
- [ ] I understand that individuals from the University of Lincoln may look at the research data collected during the study to ensure that the study is conducted appropriately.
- [ ] I agree to my child taking part in the above study.

13-15 year old information sheet

Hello, my name is Safia.

I would like you to help me with my research study by doing a questionnaire.

Please read this information carefully. Talk to your parent or carer about the study if you want. Your parent or carer can ask me any questions if you want to know more. Take time to decide if you want to take part.

Why are we doing this research?

This study tests how well a new questionnaire about **wellbeing** works. We will test it by comparing it to other questionnaires and other people's answers.

Wellbeing is linked to how you think and feel. It is also linked to what you do in different situations.

Why have I been asked to take part?

You can take part because you are aged 13-15.

We are asking over 250 children and young people all together.

You can take part no matter what background or identity you have.

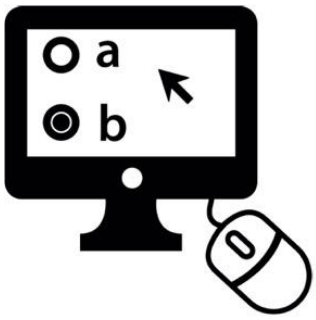
Do I have to take part?

No! It is entirely your choice whether or not you take part. Here is what will happen before the study:

1. Your parent/carer will tick a box to show they give consent (agreement for you to take part)
2. You will read this information sheet and will have a choice to take part or not.

3. If you agree to take part, you will tick a box to show that you agree. Then, you can enter the questionnaire webpage.
4. If you don't want to take part, just close the webpage.
5. You are free to stop the questionnaire at any time without giving a reason. If you decide to stop, there will be no consequences.

What will I do if I take part?
All you do is complete an online questionnaire.



The questions are multiple choice. You just tick a box for each question.

The questionnaire will take about 10 minutes of your time.

You will answer lots of questions about your wellbeing.

Please answer the questions truthfully and take your time.

What else will I be asked to do?
You will not be asked to do anything extra because of the study, just answer the questions as openly and honestly as you can.

Is there anything else to be worried about if I take part?
There are some questions that ask about anxious or sad thoughts and feelings. If you think this might upset you, it is better for you to not take part.

You can talk to an adult if this worries you.

If you do get upset by anything in the questionnaire, please talk to your parent or carer or another adult.

You can also:
call Childline on 0800 1111 for support 24 hours a day (the number is short to help people remember!)

OR

message Childline by making an account at www.childline.org.uk/get-support/

OR

You can find lots of helpful advice on the website or write on the message boards: www.childline.org.uk

Will the study help me?
No, but the information we get from this study might help to understand mental health problems.

What happens when the research study is finished?
We will keep all the information safely together and delete it securely after 7 years.

What if I don't want to do the research anymore?
Just close the questionnaire webpage.

Your responses are anonymous and that means we won't be able to find them and delete them.

Will anyone else know I'm doing this?
Only people you tell will know you have taken part.

Your answers will be anonymous. That means they will not be linked to you in any way.

All information that is collected during the research will be kept strictly confidential.

What if there is a problem?
Tell us if there is a problem and we will try and sort it out straight away.

You and your parent or carer can contact me.

If you are still unhappy after this and want to make a formal complaint you can email ethics@lincoln.ac.uk

What will happen to the results of the research study?

When the study has finished we will present our findings in a research paper. This will be available in an online library.

If you want to know about the results, you can enter your or your parent's email address at the end of the study.

If the questionnaire works, other people will be able to use it to help young people like you in the future.

The results will be anonymous, which means that you will not be able to be identified from them.

Who is organising the research?
Safia Luck from the University of Lincoln is organising this study.

Who has checked the study?
Before any research goes ahead it has to be checked by a Research Ethics Committee. This is a group of people who make sure that the research is OK to do.

This study has been looked at by the University of Lincoln Research Ethics committee. Ethics reference number 10719.

Thank you for reading about my study.

If you would like any further information about this study, please speak to your parent/carer who can contact me.

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Dr Nima Golijani-Moghaddam
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Dr Dave Dawson
ddawson@lincoln.ac.uk

Consent screen:

Please read the following and tick the boxes if you agree to proceed with the study

- [ ] I confirm that I have read the study information above. I have had the opportunity to consider the information, ask questions and have these answered satisfactorily.
- [ ] I understand that as I will complete the study anonymously, it will not be possible to remove any information I provide as you will not be able to identify me in any way.
- [ ] I agree to take part in the above study.

Appendix E: Final ADAPTS

ADAPTS	Name:	Date

Thinking about all the different areas of your life,
please rate the 18 statements using the scale below:

0	1	2	3	4	5	6
Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree

1. I can work out what matters to me in life and go after these things	0 1 2 3 4 5 6
2. I rush through activities that are important to me, without really paying attention	0 1 2 3 4 5 6
3. I try to distract myself to block out difficult thoughts and feelings	0 1 2 3 4 5 6
4. I behave in ways that reflect what is important to me	0 1 2 3 4 5 6
5. I choose to do what's important to me, even if it brings up difficult emotions	0 1 2 3 4 5 6
6. I tell myself it's wrong to have certain thoughts	0 1 2 3 4 5 6
7. I find it hard to focus on the thing that I'm doing	0 1 2 3 4 5 6
8. I live my life in a way that matches what I care about	0 1 2 3 4 5 6
9. I try to avoid situations that might bring up difficult thoughts or feelings	0 1 2 3 4 5 6
10. Even when I'm doing things that are important to me, I find myself doing them without paying attention	0 1 2 3 4 5 6
11. I do things that matter to me, even when it is difficult	0 1 2 3 4 5 6
12. I try hard to block the feelings I don't want	0 1 2 3 4 5 6
13. I do things without being aware of what I'm doing	0 1 2 3 4 5 6
14. I can stick with things that I care about, even when it's difficult	0 1 2 3 4 5 6
15. I avoid things that are important to me, if there is a risk that I will feel upset	0 1 2 3 4 5 6
16. I often seem to do things without much awareness of what I'm doing	0 1 2 3 4 5 6
17. My values are really reflected in my behaviour	0 1 2 3 4 5 6
18. I can keep going with something when it is important to me	0 1 2 3 4 5 6

Scoring instructions (administrative use only)

- Scores are derived by summing responses for each of the three subscales (Openness to Experience; Behavioral Awareness; Valued Action) or the scale as a whole (ADAPTS Total score).
- Ten items are reverse scored before summation (items 2, 3, 6, 7, 9, 10, 12, 13, 15 and 16).

Openness to Experience (OE) subscale

Calculated as the sum of scores for items: 3 (reversed), 6 (reversed), 9 (reversed), 12 (reversed) and 15 (reversed).
Subscale scores range from 0-30, with higher scores indicating greater openness to experience (willingness to experience internal events [thoughts, feelings, sensations, etc.] without trying to control or avoid them)

Behavioral Awareness (BA) subscale

Calculated as the sum of scores for items: 2 (reversed), 7 (reversed), 10 (reversed), 13 (reversed) and 16 (reversed).
Subscale scores range from 0-30 with higher scores indicating greater behavioral awareness (mindful attention to current actions)

Valued Action (VA) subscale

Calculated as the sum of scores for items: 1, 4, 5, 8, 11, 14, 17 and 18.
Subscale scores range from 0-48 with higher scores indicating greater engagement in valued actions (meaningful activity)

ADAPTS Total

Calculated as the sum of the three subscale scores, the full-scale ADAPTS Total score ranges from 0-108, with higher scores indicating greater psychological flexibility.

Appendix F: JCBS article guidelines

https://www.sciencedirect.com/journal/journal-of-contextual-behavioral-science/publish/guide-for-authors

Project Poster

Measuring Psychological Flexibility Across the Lifespan: Validation of the Adult and Adolescent Psychological FlexibiliTy Scale (ADAPTS)

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Trent Doctorate in Clinical Psychology

The University of Nottingham

Background

Psychological flexibility is presented as the mechanism of change underpinning Acceptance and Commitment Therapy (ACT).

Literature demonstrates the increased utility of ACT including in youth populations and those with accessible language needs. There are also growing trends towards transitional mental health services (Kwan & Rickwood, 2015).

Current widely used measure of psychological flexibility (AAQ-II (Bond et al., 2011)) has been shown to have high correlations with anxiety measures and does not cover full PF processes. This calls the ACT evidence base developed using this measure into question. A youth measure (AFQ-Y (Greco et al., 2008)) is also based on this with similar issues.

Accurate measurement of proposed mechanisms of change within therapy are essential for the progression of knowledge and practice in mental health.

A new measure of psychological flexibility for youth populations, the ADAPTS (Lewis et al., 2020) (developed from the CompACT), was recently developed using robust scale development methods.

Aims

To assess the factor structure and validity of the ADAPTS against existing measures in youth and adult populations

Methods

A youth sample of 352 13–21-year-olds and an adult sample of 400 19–80-year-olds were recruited. Analyses were conducted in two phases (youth and adult).

Exploratory factor analysis (EFA) was used to explore the factor structure of the ADAPTS.

Analyses of internal consistency, convergent (compared to measures of psychological flexibility), concurrent, and divergent validity were conducted.

Results

EFA in youth and adult samples revealed a three-factor structure for the ADAPTS comprising 18 items.

Factors reflected theoretical PF processes of openness to experience, behavioural awareness, and valued action.

Five items expected to fit the openness to experience subscale were removed during analysis due to poor factor loading and cross-loading.

ADAPTS correlated in expected ways with existing measures chosen to explore concurrent, convergent, and discriminant validity (see table).

Corellations with existing measures

Measure	ADAPTS total score
Youth sample	
AFQ-Y	-.63**
Mindfulness	.62**
Depression	-.62**
Anxiety	-.48**
Wellbeing	.61**
Mobility	-.08
Adult sample	
AAQ-II	-.67**
Depression	-.57**
Anxiety	-.56**
Wellbeing	.64**
Mobility	-.11*

Discussion

In keeping with previous validations of the CompACT in different populations, the ADAPTS has demonstrated a three-factor structure comprising of 18 items with strong validity and reliability.

Like previous factor analyses of the CompACT across populations, the OE subscale had items removed. This may be due to the multifaceted nature of OE not suiting factor reduction methodologies of scale development. It is also a difficult concept to understand without prior orientation.

The ADAPTS is presented as an accessible, robust, and valid measure of psychological flexibility that can be used in both youth and adult populations. This will aid research in transition to adulthood.

Future research could explore the validity of the scale in younger child populations. Test-retest reliability of the ADAPTS also needs to be explored.

References

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. D. (2011). Preliminary Psychometric Properties of the Acceptance and Action Questionnaire–II: A Revised Measure of Psychological Inflexibility and Experiential Avoidance. Behavior Therapy, 42(4), 676–688. https://doi.org/https://doi.org/10.1016/j.beth.2011.03.007

Greco, L. A., Lambert, W., & Baer, R. A. (2008). Psychological inflexibility in childhood and adolescence: Development and evaluation of the Avoidance and Fusion Questionnaire for Youth. In Psychological Assessment (Vol. 20, Issue 2, pp. 93–102). American Psychological Association. https://doi.org/10.1037/1040-3590.20.2.93

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