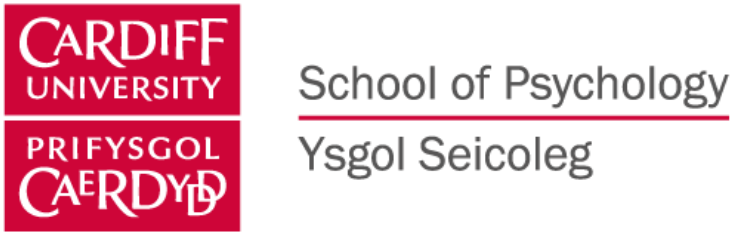

Acceptance and Commitment Therapy for Adolescents: A Systematic Review of Online Self-help Interventions, and an Empirical Study Validating a Measure of Psychological Flexibility

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Contents

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Preface

With increasing rates of mental health difficulties in young people placing demand on specialist mental health services, alternative forms of support are needed to prevent difficulties arising and intervene early when they do, to reduce escalation. One such approach involves providing universal interventions, including online self-help. In recent years, the interest in Acceptance and Commitment Therapy (ACT) as an intervention for mental health and well-being in young people has grown. ACT aims to improve psychological flexibility, the ability to adapt and respond effectively to situations and internal experiences, while remaining open to the present moment and acting in alignment with one's values. However, a challenge in ACT research is that conclusions regarding effectiveness are limited by insufficient measurements of psychological flexibility in young people. The aim of this research is to review the literature to evaluate the effectiveness of universal, digitally delivered self-help ACT interventions for young people on mental health, well-being and psychological flexibility outcomes, and to validate a comprehensive measure of psychological flexibility processes in young people.

The first paper in this thesis systematically reviewed the literature relating to of universal, digitally delivered self-help ACT interventions for young people. Universal interventions can be delivered to a whole population and aim to foster positive mental health and well-being, and self-help is one format in which they can be delivered. Self-help involves individuals following a treatment process individually and have increasingly been delivered digitally to extend access to support. Previous research and reviews have examined universal and online self-help interventions, and found them to be a promising source of support for young people. However, none have exclusively focused on these interventions using ACT. Studies were eligible if the ACT intervention targeted at least two processes of psychological flexibility, delivered to young people between 10 and 25 years old, and had outcome measures relating to mental health, well-being and psychological flexibility. Searches of relevant databases provided 11 studies which met inclusion criteria. Subsequently, the studies were quality assessed and findings were synthesised using a narrative

approach. The results between studies varied. A majority reported significant improvements in mental health and well-being outcomes. However, less than half of the studies found improvements in ACT process measures. The review was unable to draw firm conclusions regarding the effectiveness of universal, digitally delivered self-help ACT interventions due to heterogeneity in study design, intervention content and outcome measures used.

The second paper in this thesis is an empirical paper which aimed to validate the Comprehensive assessment of Acceptance and Commitment Therapy processes for youth (CompACT-Y). ACT interventions have been shown to be effective for a range of difficulties in children and young people, however there are existing challenges in measuring psychological flexibility in this population. The CompACT-Y was administered alongside other measures of psychological flexibility subprocess, mental health, well-being and behaviour to determine its factor structure, validity and internal reliability. A total of 334 young people from six schools across the UK participated in the research. The study resulted in a 19-item version of the CompACT-Y with a three factor structure, which aligned with ACT and psychological flexibility theory. The CompACT-Y also correlated as expected with other measures of psychological flexibility for young people, suggesting good convergent validity. It also correlated with mental health, well-being and behavioural measures in line with theoretical understanding of psychological flexibility, indicating good concurrent validity. A validated, comprehensive measure of psychological flexibility has implications for future research on ACT for children and young people, and addresses some of the issues of measuring psychological flexibility both in research and clinical practice.

This research contributes to the understanding of ACT and psychological flexibility in children and young people by highlighting methodological issues of studies included in the systematic review, and addresses some of these issues by offering a valid measure of psychological flexibility, particularly for values and committed action subprocesses, as other validated measures for these constructs do not exist. This research also adds to evidence about the role of psychological flexibility in mental health and well-being in children and young people.

Paper 1: Systematic Literature Review

Universal online self-help ACT interventions for youth: A systematic review

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Abstract

In recent years, referrals to child and adolescent mental health services in the UK has increased and services are struggling with demand. One approach to address this is delivering universal interventions to a whole population, such as online self-help. Previous reviews of online self-help have not exclusively focussed on universally delivered Acceptance and Commitment Therapy (ACT). This systematic review aimed to evaluate the effectiveness of universal online self-help ACT interventions for young people.

Relevant databases were searched for studies examining ACT interventions that were delivered universally, online and as self-help (guided and unguided) to young people aged 10 to 25-years-old. Eleven studies met inclusion criteria. These were assessed for quality and findings summarised using a narrative synthesis.

Outcomes on mental health, well-being and ACT processes were reviewed, and results across studies were mixed. The majority of studies found significant improvements in mental health and well-being outcomes following the ACT intervention, however less than half found improvements on ACT process measures. Subgroups, such as those with elevated mental health symptoms, had better outcomes. The ACT interventions had varied delivery formats, length and content, although interventions aimed at more ACT processes had better outcomes. There were no changes in measures of psychological inflexibility in any studies. However, methodological issues such as low sample sizes resulting in underpowered analysis, low adherence to the ACT intervention, and inconsistent measures of psychological flexibility, limited interpretation of findings.

Heterogeneity between studies and methodological issues made it difficult for this review to draw conclusions regarding the effectiveness of universal online self-help ACT interventions for young people. Future research with consistent approaches is needed across these types of interventions to improve methodological rigour to determine whether these interventions are effective.

Keywords: ‘Acceptance and Commitment Therapy’, ‘online’, ‘universal interventions’, ‘self-help’, ‘young people’ , ‘mental well-being’

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Universal online self-help ACT interventions for youth: A systematic review

The prevalence of mental health difficulties in children and young people (CYP) is increasing. Mental health conditions have risen from 1 in 9 in 2017 to 1 in 6 in 2022 in children aged 7 to 16, and from 1 in 10 to 1 in 4 in those aged 17 to 19 in England (Newlove-Delgado et al., 2022). This has led to an increase in CYP seeking mental health support services since March 2021, with approximately 720,000 accessing services in February 2023 (NHS Digital, 2023). The COVID-19 pandemic has worsened CYP's mental health and well-being, exacerbating previous mental health problems, increasing psychological distress and symptoms of anxiety and depression (Hawke et al., 2020; Panchal et al., 2021).

Despite increased funding and efforts to improve access to mental health services for CYP, approximately 50% of CYP in the UK do not receive the necessary support (UK Health and Social Care Committee, 2021). Even when referred to specialist child and adolescent mental health services (CAMHS), approximately 25% of CYP are not accepted for treatment due to not meeting the service threshold or eligibility criteria (Crenna-Jennings & Hutchinson, 2020). While CYP with severe mental health difficulties (e.g., psychosis and eating disorders) may receive quicker access to specialist input, those with less severe issues experience lengthy waits or receive no treatment, which may worsen their mental health (Edbrooke-Childs & Deighton, 2020). The delay in appropriate interventions for mental health concerns can also lead to an increase in problem severity, resulting in longer and more complex treatments, which places additional demand on services (Care Quality Commission, 2018).

Adolescence, the period of development between 10 and 25 years old, (World Health Organisation (WHO), n.d.; Kinghorn et al., 2018), is a critical period for the onset on mental health difficulties, as half of adults with mental health difficulties display symptoms before age 14 (Kessler et al., 2005). Limited availability of mental health support is concerning, given adolescence's implications for future success (Black et al., 2017). Therefore, addressing CYP mental health and well-being in a timely manner is essential.

Universal Interventions

One approach for addressing limited access to specialist support is prevention and early intervention, which the WHO (2002) categorises into three levels: universal, selective, and indicated, depending on the target population and the risk of mental health problems. Universal interventions aim to address the general, non-clinical population and encompasses strategies that aim to reduce mental health risk and enhance protective factors (Purtle et al., 2020). Selective interventions target subgroups at risk of developing mental health difficulties, and indicated interventions are designed for those with high-risk characteristics and emerging mental health symptoms.

Prevention and early intervention can reduce the long-term impact of poor mental health on development, improving social relationships, and future vocational and economic prospects (McGorry, 2019). Early intervention can also reduce healthcare costs and economic consequences of poor mental health and well-being (Stevens, 2011). A literature review (Colizzi et al, 2020) concluded universal interventions, such as school-based programs or digital platforms, can be effective in preventing the onset of mental health problems in young people.

The UK government commissioned Public Health England to examine evidence on universal approaches to improving mental health and well-being (Robson, 2019). The report included 19 systematic reviews covering 113 interventions, largely based on individual level outcomes. The review found positive outcomes such as improved coping skills and reduced anxiety and depression. However, evidence for interventions focusing on subjective well-being was limited, and long-term outcomes were lacking. The report suggests a framework is needed to better understand outcomes of universal interventions across different system levels.

A systematic review by Salazar de Pablo et al. (2020) evaluated the effectiveness of universal and selective interventions for improving mental health and well-being outcomes in CYP. The review found that universal interventions were as effective as selective interventions for enhancing outcomes and significantly better at improving cognitive skills to resolve problems. These results

suggest that universal interventions are not only feasible, but also effective in promoting positive mental health in CYP.

Universal interventions can be delivered effectively outside of healthcare, such as in schools. A systematic review and meta-analysis of 90 studies on school-based preventative interventions (Werner-Seidler et al., 2017) found small effective sizes on depression and anxiety symptoms when compared to controls, and comparable outcomes between universal and targeted interventions for mental well-being and symptoms of anxiety. Similarly, a review of school-based universal interventions in the UK (Mackenzie & Williams, 2018) found neutral or small effect sizes for mental health and well-being outcomes across 12 studies. However, both reviews highlighted methodological issues faced by research on universal interventions in schools, including small sample sizes (Werner-Seidler et al., 2017), high attrition and limited longer-term follow up (Mackenzie & Williams, 2018).

A common format to deliver universal interventions is self-help, and in recent years self-help universal interventions have increasingly been delivered digitally.

Universal Self-help Interventions

Self-help interventions involve an individual following a manualised treatment process independently (Cuijpers & Schuurmans, 2007) and can be delivered either unguided or with some therapist involvement (guided; Bekker et al., 2017). Such interventions are a feasible and acceptable alternative to traditional therapist-led support (Kauer et al., 2014) and can increase the likelihood of individuals who value self-reliance to seek professional help in the future, suggesting self-help provides an indirect route in overcoming barriers to support (Kauer et al., 2014; Ishikawa et al., 2022). Moreover, self-help interventions can be delivered online with minimal professional involvement. This can increase privacy and anonymity, lower practical barriers and associated costs such as time off work and travel, and facilitate quicker access to treatment (Pretorius et al., 2019). In addition, CYP may prefer approaches which focus on self-reliance rather than professional support, due to social factors such as perceived stigma around mental health and perception of professionals,

as well as systemic and structural barriers such as financial costs, practicalities and logistics (Gulliver et al., 2010; Radez et al., 2021). Given these factors, self-help interventions may be a feasible option.

Self-help interventions have been used for mental health and well-being in CYP, mainly involving cognitive-behavioural therapy (CBT). A review and meta-analysis (Bennett et al., 2019) found both guided and unguided self-help interventions have moderate effect sizes on mental health and well-being measure such as emotional and behavioural symptoms compared to control groups, with guided self-help having higher effect sizes than unguided. Computerised self-help was found to be superior to bibliotherapy. However, self-help interventions were not as effective as face-to-face treatments, although the difference in effect sizes was small. The authors recommended further research to understand who might benefit from self-help interventions.

Universal Digital Self-help Interventions

Digital technology has revolutionised the delivery of health interventions, with a diverse range of digital methods employed such as websites, apps, computer-assisted games and programmes, digital devices, virtual reality, and instant or text messaging (Liverpool et al., 2020). While the use of digital technology in health care systems has previously been recognised, the COVID-19 pandemic necessitated and normalised its use (Budd et al., 2020; Mann et al., 2020). Digital technology offers several advantages for mental health promotion and intervention, including the provision of real-time data to support timely intervention (Hollis et al., 2015) and engagement of evidence-based treatments to CYP who may be less likely to seek help from professionals (Ryan et al., 2010). Rudd and Bedias (2020) also suggested universal, digitally delivered interventions can support the whole population by increasing mental health awareness and mental well-being, and the evidence-base for these interventions needs to develop.

Nonetheless, Aguilera (2015) cautioned that challenges such as legal and ethical issues, including patient data privacy, confidentiality and sensitivity in communication, need to be addressed in digitally delivered interventions. Despite these challenges, it has been argued that

digitalisation of services is inevitable and will lead to improvements in accessing higher quality care (Mitchell and Khan, 2019).

In the UK, policies such as 'Transforming children and young people's mental health provision: a green paper' (Department of Health and Social Care, 2017) advocate the importance of promoting positive mental health for all young people and suggest self-help digital interventions as one approach to achieve this by increasing access to evidence-based support.

The evaluation of digital mental health interventions is essential for their implementation in routine practice (Taylor et al., 2020). Reviews of online interventions have found that computerised CBT interventions are effective in treating anxiety and depression (Ebert et al., 2015; Stasiak et al., 2016), and web-based CBT self-help is the most commonly evaluated modality with positive outcomes (Zhou, 2021). Furthermore, a systematic review of universal digitally delivered self-help interventions (Babbage et al. (2022) found such interventions improved psychological well-being and social functioning in young people.

With the expanding evidence-base in support of digital self-help interventions, and CBT being the most frequently used modality, the National Institute for Health and Care Excellence (NICE, 2023) have recently drafted guidance to recommend the use of digital self-help resources based on CBT for the treatment of mild to moderate anxiety symptoms in CYP.

Acceptance and Commitment Therapy

Acceptance and Commitment Therapy (ACT) is a transdiagnostic third-wave CBT that aims to increase psychological flexibility, rather than targeting specific symptoms. ACT conceptualises distress as resulting from attempts to avoid unwanted thoughts, feelings, and experiences (experiential avoidance), which reduces engagement in other meaningful and important activities (Hayes et al., 1999). ACT promotes psychological flexibility, which is the ability to be present in the moment while acting in accordance with personal values. By increasing psychological flexibility, psychological distress is alleviated by reducing experience avoidance and increasing engagement in behaviours congruent with one's personal beliefs (Hayes et al., 2011).

Research suggests increasing psychological flexibility can create change to address mental health and psychosocial difficulties, improve human functioning, and enhance overall well-being (Kasdan & Rottenberg, 2010). Tyndall et al. (2020) found three underlying groups of psychological flexibility in adults – high, moderate and low. Those in the high psychological flexibility group were found to have the lowest symptoms of depression, anxiety, stress, and negative emotions. Similarly, higher psychological flexibility is associated with better mental health outcomes, including lower symptoms of depression and anxiety, better social functioning, and life satisfaction (Lucas & Moore, 2020). Psychological flexibility has also been found to mediate the relationship between early life traumas and the negative impact on mental health measures (Richardson & Jost, 2019). Taken together, these findings demonstrate the role of psychological flexibility in reducing mental health difficulties and promoting positive mental well-being, functioning, and life satisfaction.

ACT has also been applied to CYP. Halliburton and Cooper (2015) described considerations for adapting ACT for adolescents, such as using age-appropriate language or helping young people understand abstract ideas by associating with specific tasks. The review also highlighted how during adolescence, subprocesses such as acceptance and values are important due to changes in autonomy and development of own moral systems independent of parents' values. Other research has also outlined how adolescents can be supported to identifying and clarifying values which, important to the ACT model, are then used to guide and inform how one behaves (Berryhill & Lechtenberg, 2015). This research highlights that CYP are able to engage with ACT principles, albeit with developmental and contextual considerations.

Over the past twenty years, the evidence-base for ACT as an effective treatment for mental health and well-being has grown. A meta-review of ACT interventions for adults (Gloster et al., 2020) found ACT was significantly better at improving outcomes across a range of mental health difficulties compared to control groups and most active conditions other than CBT. Likewise, ACT has been shown to be an effective intervention for CYP. A meta-analysis by Fang and Ding (2020) found ACT was superior to control conditions and performed similarly to established treatments in

reducing mental health symptoms and psychological distress, as well as improving quality of life and well-being.

However, whilst the evidence base for ACT is expanding, there remain certain methodological concerns that require further attention. Swain et al. (2015) highlighted many studies of ACT for CYP had small sample sizes, affecting the generalisability of results and underpowered statistics, non-randomised study designs limited internal validity, and a lack of studies comparing ACT to other treatments. Furthermore, Fang and Ding (2020) acknowledged significant variability in the presenting issues across the reviewed ACT studies, as well as inconsistent measures of positive mental health and behavioural symptoms.

Digitally delivered universal self-help ACT Interventions

ACT is a transdiagnostic approach which can be applied in different intervention levels and formats, including education. Gillard et al. (2018) outlined how ACT can be applied to support staff well-being, be delivered to young people in individual or group formats to manage mental health difficulties, and be adapted into an emotional health and well-being curriculum to promote well-being and development of life skills. ACT-based school interventions have been found to be effective on outcomes of depression, anxiety, and stress, but significant findings were mostly in studies examining targeted interventions rather than universal (Knight & Samuel, 2022). The review suggested that methodological weaknesses in the included studies, such as inadequate use of validated measures and low sample sizes, could explain this finding. More research with larger samples is required to determine the efficacy of ACT at a universal level.

In terms of the delivery of ACT through digital methods, Klimczak et al. (2023) examined the effectiveness of online self-help ACT interventions across a range of problems and adult populations, consistent with ACT's transdiagnostic approach. The review found online ACT self-help interventions were effective at improving general mental health and well-being, quality of life and psychological flexibility.

However, for CYP there have not been any reviews of online self-help ACT interventions. Fang and Ding's (2020) review did not comment specifically on whether studies were delivered online and included a combination of universal and targeted ACT interventions. The authors suggested future research was needed on different delivery formats for ACT interventions for CYP as there is currently a lack of studies compared to adults. More recently, a review of 34 ACT interventions for adolescent mental health (Petersen et al., 2022) included only two studies of digitally delivered ACT, with one being universal self-help and the other being therapist-led online ACT for trichotillomania.

Overall, the mental health needs of CYP are increasing and access to professional psychological support can be challenging and restricted. Self-help and digital delivery of mental health interventions offer an alternative to face-to-face professional support. There is an emerging evidence-base for ACT as an effective approach to reducing psychological distress and improving mental well-being at multiple treatment levels and formats. However previous reviews have not examined self-help or online ACT interventions for children and young people. Therefore, the current review aims to:

a) Systematically review the literature regarding digitally delivered self-help ACT interventions for universal use in young people.
b) Examine the effectiveness of such interventions.
c) Provide a narrative synthesis of the results of identified literature.

2. Method

Search and screening procedures

Searches of the following online databases were undertaken between September 2022 and March 2023 to identify relevant literature: MEDLINE / PubMed (Ovid); APA PsycINFO (Ovid); Embase (Ovid); Scopus; Web of Science. The Association for Contextual Behaviour Science (ACBS) website was also searched. Grey literature was searched for using the ProQuest Dissertation and Theses Global website. The following search terms were selected to return relevant literature:

"acceptance and commitment therapy" OR acceptance commitment therapy OR iact

AND

online OR internet OR web* OR digital* OR mobile OR virtual

AND

child* OR adolescen* OR youth* OR young* OR college* OR student* OR teen* OR school*

Using the Ovid website, some search terms were mapped to subject headings within the APA PsychInfo database to retrieve more relevant results. These were:

1. Online* mapped to 'Online Therapy'
2. Internet mapped to internet/ or world wide web (www)
3. Web* mapped to websites/ or digital mental health resources
4. Digital* mapped to digital interventions/ or Digital Mental Health Resources

Retrieved papers were initially screened by title and abstract against the inclusion and exclusion criteria. Full texts of remaining papers were retrieved and compared against the same inclusion and exclusion criteria.

Inclusion Criteria

Empirical studies published in peer reviewed journals as well as theses and grey literature, were included if studies met the following criteria.

Population

a) Participants were young people/adolescents aged between 10-25 years old
    a. Studies where some participants were over 25 years were included if the target sample were students *and* the mean age of the sample was ≤ 25 years old

Intervention

b) Studies delivering a universal online/digitally delivered ACT
    a. Studies which had a component of in-person contact (e.g., if assessment was conducted in person) were included if the main delivery method of the intervention was online (e.g., web, app, messaging)
c) Studies evaluating intervention targeting more than one area of psychological flexibility: acceptance, cognitive defusion, committed action, mindfulness, self-as-context, and values
d) Studies evaluating a self-help intervention, either guided OR unguided
e) Studies delivering the intervention to an individual OR group
f) Studies using a quantitative or mixed method approach

Outcome

g) Studies with at least one outcome measure related to mental health and well-being, with measures completed at a minimum of two separate time points

Exclusion Criteria

The exclusion criteria were:

a) Studies with an age range younger than 10 years or older than 25 years
b) Studies which had an inclusion criteria for participants to meet a clinical cut-off, diagnostic criteria, or specific characteristics (e.g., smoker, pain difficulties)

c) Studies evaluating interventions targeting individuals with specific mental health diagnoses (e.g., depression/anxiety) or difficulties (e.g., pain, smoking cessation)
d) Studies where the ACT intervention was delivered alongside other psychological approaches
e) Studies with a qualitative methodology, and quantitative studies using observational or single case study design

Eligible Studies

The initial searched identified 580 articles, which reduced to 267 after duplicate records were removed using Zotero. Thirty articles met the inclusion criteria following a screening of title and abstracts. A total of 11 studies were included, but one paper had two samples which were analysed independently (Krafft et al. 2019), therefore reported separately in this review (n=12).

Reasons for exclusion related to the study population age, no mental health or well-being measures, ACT interventions focusing on only one core psychological flexibility process, and intervention type (i.e., not being self-help or targeted for a specific difficulty). See Figure 1 for the PRISMA flow chart. At all stages, 50% of papers were peer reviewed. Any differences in agreement about study inclusion were discussed to reach consensus.

Data extraction, synthesis and quality assessment

The following data was extracted from included papers: study date; study location; number of participants; participant demographics (including age, gender and ethnicities where available); study design; groups/conditions; online delivery method (e.g., web, app, phone etc.); category of intervention (e.g., guided self-help, unguided self-help); length of intervention (where applicable); ACT processes included; outcome measures of interest (mental health and/or well-being); study results.

There was considerable heterogeneity between included studies, such as the number of ACT process interventions targeted, length of intervention and outcome measures used. A narrative synthesis of the data was deemed appropriate and a meta-analysis was not performed. The quality of studies was appraised using the National Heart, Lung and Blood Institute (NHLBI) quality

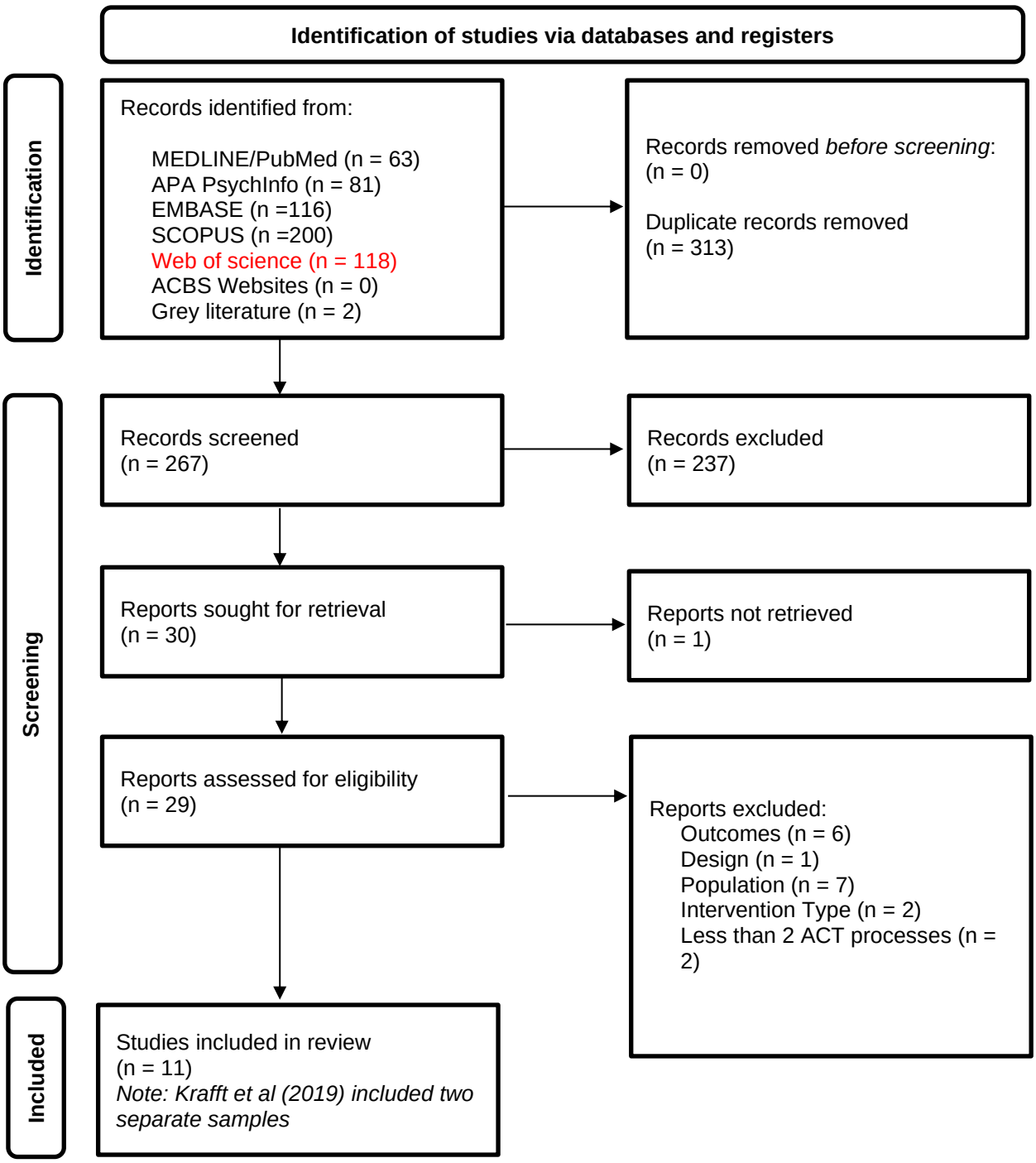
assessment tools for controlled intervention studies (n = 10) or pre-post studies with no control group (n=1). These tools provide a quality rating of 'Good', 'Fair' and 'Poor'. All papers were quality assessed, five of which were rated by an independent researcher (a trainee clinical psychologist), with discrepancies between quality ratings resolved through discussion.

Reflexivity

Procedures were undertaken to address the dynamic interplay between the objectivity and subjectivity of the researcher. Certain aspects of the review process introduced the potential for researcher bias, particularly in the stages of eligibility assessment, data extraction, and quality assessment. To mitigate the impact of such biases and uphold objectivity, a second reviewer independently participated in the eligibility and quality assessment phases. To minimize potential biases in data extraction, systematic review guidance was consulted and discussed with the research team to pre-determine data extractions areas, prior to reviewing identified literature. This process aimed to reduce the likelihood of data extraction being influenced by the researcher's interests or preconceived notions. Furthermore, the researcher did not hold hypotheses or predictions regarding the effectiveness of the ACT interventions, which ensured a data-driven approach to the review and allowed the findings and evidence from identified papers guide the analysis and conclusions.

Figure 1.

PRISMA Flow chart



3. Results

A total of 11 studies were identified which met the inclusions/exclusion criteria. An overview of the studies is provided in Table 1. There was one paper, Hämäläinen et al. (2021), which met all the inclusion criteria, however the study was examining intervention usage and satisfaction, and the results did not include data relevant to the current review's research question. This paper was therefore excluded. The included studies involved a total number of 1,324 young people across four countries: United States of America (USA), Canada, Finland and Malaysia. Two of the included studies (Keinonen et al., 2021; Räsänen et al., 2020) were secondary analysis of the same or subsamples from larger randomised control trials (RCTs) and therefore not counted as separate participants. Study publication dates ranged from 2013 to 2023.

Participant demographics and sample characteristics

All studies reported gender as a binary categorisation (i.e., male or female), with the exception of Lappalainen et al. (2023) which also had 'Other/Does not want to tell'. All studies had a majority of their sample identifying as female, although two studies (Lappalainen et al., 2021; Levin et al., 2014) had a closer-to-even gender split. Consistent with the current review's criteria, included studies did not have inclusion criteria for participants to exhibit symptoms of psychological distress or experience mental health concerns. However, five studies reported the prevalence rate of such difficulties. Krafft et al. (2019) had two separate samples, a SONA credit (research credit platform) sample and help-seeking sample, with 39.7% and 77.1% respectively experiencing at least moderate symptoms on any subscale of the Depression, Anxiety and Stress Scale - 21 Items (DASS-21; Lovibond & Lovibond, 1995). Other studies ranged between 31% and 87% of their sample having elevated scores on primary mental health outcomes measures at baseline assessment (Lappalainen et al., 2021, 2023; Levin et al., 2017; Räsänen et al., 2016).

Study Design and quality assessment

The present review includes 11 studies investigating the efficacy of different interventions. Eight studies were RCTs (Krafft et al., 2019; Lappalainen et al., 2021, Levin, 2013; Levin et al., 2014,

2016, 2017; Rasanen et al., 2016), and two studies reported secondary analyses of previously conducted RCTs (Keinonen et al., 2021; Räsänen et al., 2020). The remaining study by Chen et al. (2022) was a pre-post study without a control condition.

To evaluate the quality and potential biases in the identified studies, the NHLBI quality assessment tools were used. These tools, consisting of 14 and 11 items respectively, were applied to assess the risk of bias in controlled intervention studies (i.e., RCTs) and before-after (pre-post) studies with no control group. The assessment items encompass aspects of study design, randomisation, blinding, statistical power, sample size, and appropriateness of outcome measures. The results of the quality assessment are summarised in Table 2.

The majority of studies (*n* = 6) had similar group characteristics at baseline, high adherence and acceptable drop-out below 20%, and outcomes were assessed using valid and reliable measures in relation to the study's research question. However, some studies (Krafft J. et al., 2019; Lappalainen et al., 2023; Levin, 2013; Levin et al., 2016, 2017) had high attrition or poor adherence to intervention protocol, limiting the interpretation of the findings. Poorer quality studies were rated as such because of small samples sizes (which resulted in underpowered statistical analysis), high attrition, low adherence to the intervention and access to other interventions not being reported.

Table 1.

Overview of study details

Author, Date, Location	N	Population	Participant Demographics	Study Design and conditions	Intervention type (e.g., delivery format, guided or unguided)	Intervention length	Target ACT processes
Chen et al. (2022) Malaysia	52	Undergraduate students	M = 21.5 (SD=1.47, Range =18-23) 86.5% female 51.9% Malay	Pre-post; Intervention only, no control	Web self-help; unguided	2 week; 6 modules; up to 6 hours	6; Acceptance, Cognitive Defusion, Committed Action, Mindfulness, Self-as-context, Values
Keinonen et al. (2021) Finland	123	Secondary School Students	Median = 15 (14–16) 57% female	RCT (secondary analysis)	App self-help; guided	5 weeks; 5 modules; 2.5 hours minimum	5; Values; Congitive Defusion; Acceptance; Mindfulness; Self-as-context
Krafft et al. (2019a) USA/Canada	63	University Students (SONA credit)	M = 20.24 (3.88) 73% female 96.8% White	RCT; Simple App vs Complex App vs WLC	Mobile App self-help; unguided	4 weeks	3; Acceptance, Mindfulness, Values
Krafft et al. (2019b) USA/Canada	35	University Students (Help Seeking)	M = 24.57 (7.86) 65.7% female 94.3% White	RCT; Simple App vs Complex App vs WLC	Mobile App self-help; unguided	4 weeks	3; Acceptance, Mindfulness, Values
Lappalainen et al. (2021) Finland	249	Secondary School Students	M = 15.27 (SD = .39, Range = 15-16) 51% Female	RCT; iACTface vs iACT vs control	App self-help; guided	5 weeks; 1 module per week	6; Acceptance, Cognitive Defusion, Committed Action, Mindfulness, Self-as-context, Values
Lappalainen et al. (2023) Finland	234	Secondary School Students	M = 15.01 (SD=.14, 14-16 years)	RCT; iACT student+virtual	Web self-help; guided	5 weeks (with 2 video calls in	6; Acceptance, Cognitive Defusion, Committed

				coach vs iACT virtual only vs WLC		student coach group)	Action, Mindfulness, Self-as-context, Values
Levin (2013) USA	234	Undergraduate students	M = 21.61, (SD = 5.48, Range = 18-58). 66.7% Female	RCT; ACT-CL vs Active control (Healthy living website)	Web self-help; unguided	3 weeks; 2 lessons	3; Acceptance, Mindfulness, Values
Levin et al. (2017) USA	79	Undergraduate students	M = 20.51 (SD = 2.73, mode = 18) 66% Female 88% White	RCT; ACT vs WLC	Web self-help; unguided	4 weeks; 6 sessions	5; Acceptance, Cognitive Defusion, Committed Action, Mindfulness, Values
Levin et al. (2014) USA	76	First-year university student	M = 18.37 (SD=.54, Range = 18-20) 53.9% female; 71.1% White	Feasibility RCT; ACT-CL vs WLC	Web self-help; unguided	3 weeks, 2 lessons	2; Acceptance, Values
Levin et al. (2016) USA	234	Undergraduate students	M = 21.61, (SD = 5.48, range = 18–58, median = 20) 76.9% Female 76.2% White	Feasibility RCT; ACT-CL vs Education website	Web self-help; unguided	3 weeks; 2 sessions	2; Acceptance and values (with secondary mindfulness resources)
Räsänen et al. (2016) Finland	68	University Students	19-32 years old; M = 24.29 (SD=3.28) 85.3% Female	RCT; iACT vs WLC	Web self-help; guided	7 weeks; 2 in-person, 5 online modules	6; Acceptance, Cognitive Defusion, Committed Action, Mindfulness, Self-as-context, Values
Räsänen et al. (2020) Finland	68	University Students	19-32 years old; M = 24.29 (SD=3.28) 85.3% Female	RCT (Secondary Analysis); iACT vs WLC	Web self-help; guided	7 weeks; 2 in-person, 5 online modules	6; Acceptance, Cognitive Defusion, Committed Action, Mindfulness, Self-as-context, Values

Note. RCT = randomised Controlled Trail, WLC = Waitlist Control.

Table 2.

Quality Assessment summary, ranging from 'Good' to 'Poor'

Author	Score (no. of items = Yes/Total Items)	Rating
Krafft et al. (2019a)	5/14	Poor
Krafft et al. (2019b)	5/14	Poor
Levin (2013)	8/14	Poor
Chen et al. (2022)	8/12	Fair
Lappalainen et al. (2023)	8/14	Fair
Levin et al. (2014)	9/14	Fair
Levin et al. (2016)	9/14	Fair
Levin et al. (2017)	9/14	Fair
Räsänen et al. (2016)	9/14	Fair
Lappalainen et al. (2021)	11/14	Good
Keinonen et al. (2021)	11/14	Good
Räsänen et al. (2020)	11/14	Good

ACT Intervention: Content, length, delivery format and ACT processes

Six studies delivered the ACT interventions using the web and unguided self-help format, whilst five were guided. Three RCTs used a guided self-help approach, with the intervention being accessed either on the web or through an app (Räsänen et al., 2016; Lappalainen et al., 2021, 2023). One study, Krafft et al. (2019), used a mobile application to provide participants access to the ACT intervention and received notifications on their mobile.

The interventions ranged in length from 2 to 7-weeks long, with varying number of sessions or content to be covered. The shortest intervention (Chen et al., 2022) was conducted over a 2-week period and targeted all six subprocesses of psychological flexibility in six 1-hour sessions. Levin et al. (2016) examined a three-week intervention based on acceptance and values, although included some secondary, optional resources to target mindfulness. Two studies targeted three ACT processes; acceptance, values, and mindfulness, over a 3-week (Levin, 2013) and 4-week period

(Krafft et al., 2019). Levin et al. (2017) offered a six-session intervention for university students over a 4-week period, covering all ACT processes except self-as-context. Räsänen et al. (2016, 2020) investigated the use of a 7-week online ACT intervention, which included five modules aimed at each ACT process, with two in-person meetings with an ACT coach before accessing the online modules. Supplementary materials, such as multimedia sessions, emails, and online resources, were also used in some of the interventions to be completed with the timeframes (Levin, 2013; 2016).

Three studies delivered an online ACT intervention for adolescents, The Youth Compass (Lappalainen et al., 2021; Keinonen et al., 2021; Lappalainen et al.,2023). The Youth Compass is a 5-week online guided self-help program which targets all six ACT processes. The program is accessed using various devices, including mobile, laptop, tablet or computer. Each module is structured the same; an introduction and three levels, with each level involving a variety of exercises according to the corresponding ACT processes. Exercises included short texts, pictures, comic strips, audio and video clips. Lappalainen et al. (2021) delivered the intervention in two formats: either brief written weekly feedback by ACT coaches via WhatsApp, or weekly written feedback with the addition of two face-to-face meetings with ACT coaches (iACTface), which involved a structured interview at the beginning and a discussion check-in half-way through the intervention. Likewise, Lappalainen et al. (2023) delivered the Youth Compass intervention and one condition had support from both an ACT-trained psychology university student and virtual coach, and the other condition with a virtual coach only (chatbot and SMS coaching). The student coaches had a 45-minute video call with the purpose of assessing and understanding the situation of each participant, and a further 45-minute video call two weeks later to encourage engagement, discuss values, values-based action and cognitive defusion.

The ACT intervention studied by Räsänen et al. (2016; 2020) had the option of being adapted to a theme between stress, depression and anxiety, based on information gathered during the initial in-person meeting. However, this was optional and participants had the final decision, meaning the

intervention was universal. The intervention was primarily text based and consisted of self-help text, ACT metaphors, well-being tasks and practical exercises based on each ACT process.

Outcome Measures

Table 3 outlines the mental health, well-being and ACT process measures utilised by each study. Multiple mental health symptoms (e.g., depression, anxiety, stress) and well-being were measured in all studies except Keinonen et al. (2021), who used an outcome measure based only on depression.

All studies used at least one ACT process measure. Three studies used a single measure of one ACT process; Krafft et al. (2019) utilised the Valuing Questionnaire (VQ) to assess changes in values and value-directed behaviours, whilst two studies (Lappalainen et al., 2021; Keinonen et al., 2021) used the 8-item version of the Avoidance and Fusion Questionnaire for Youth (AFQ-Y8; Greco et al., 2008). The AFQ-Y8 is a self-report measure of psychological inflexibility, with elevated scores indicating higher levels of cognitive fusion and experiential avoidance. In five studies, the Acceptance and Action Questionnaire–II (AAQ-II; Bond et al., 2011) was used as a measure of acceptance, experiential avoidance, and psychological inflexibility, alongside other measures of ACT processes.

When examining the ACT process measures being used, there were five studies which evaluated all processes of interest (Lappalainen et al., 2023; Levin, 2013; Levin et al., 2014, 2016, 2017). In comparison, six studies only measured a subset of the target ACT processes. The Youth Compass (Lappalainen et al., 2021) assessed changes in experiential avoidance and cognitive fusion, rather than all ACT processes (AFQ-Y8). Krafft et al. (2019) focused on acceptance, mindfulness, and values but only tested values, whereas Chen et al. (2022) had intervention modules on all six processes, but only evaluated acceptance, experiential avoidance, and mindfulness.

Table 3.

Summary of outcome measures used across studies.

Author	Mental Health/Well-being Outcome Measure(s)	ACT process measure(s)
Chen et al. (2022)	DASS-21; SWEMWBS-7	AAQ-II; MAAS
Keinonen et al. (2021)	DEPS	AFQ-Y8
Krafft et al. (2019a)	DASS-21; MHC-SF	VQ
Krafft et al. (2019b)		
Lappalainen et al. (2021)	DEPS; SWLS	AFQ-Y8
Lappalainen et al. (2023)	STAI; DEPS	CompACT; SCS-SF
Levin (2013)	DASS; MHC-SF	AFQ-Y; PVQ (Relationship; Education Subscales); FFMQ (Acting with Awareness; Non-reactivity subscales)
Levin et al. (2014)	DASS-21	AAQ-II; PVQ
Levin et al. (2016)	DASS; MHC-SF	AFQ-Y; PVQ (Relationship; Education Subscales); FFMQ
Levin et al. (2017)	CCAPS-34; MHC-SF	AAQ-II; CFQ; VQ; PHLMS
Räsänen et al. (2016)	MHC-SF; PSS-10; BDI-II; Finnish Descriptive Visual Rating Scale (Life Satisfaction and self-esteem subscales)	AAQ-II; FFMQ; OLQ-13
Räsänen et al. (2020)	MHC-SF; PSS-10; BDI-II	AAQ-II; FFMQ; ATQ; SOC-13 (Meaningfulness subscale)

Note. AAQ-II = Acceptance and Action Questionnaire–II, AFQ-Y = Avoidance and Fusion Questionnaire for Youth; ATQ = Automatic Thoughts Questionnaire; BDI-II = Beck Depression Inventory-II; CCAPS-34 = Counselling Center Assessment of Psychological Symptoms; CFQ = Cognitive Fusion Questionnaire; CompACT = Comprehensive Assessment of Acceptance and Commitment Therapy processes; DASS/DASS-21 = Depression, Anxiety and Stress Scale; DEPS = Depressive Scale; FFMQ = Five Facet Mindfulness Questionnaire; MAAS = Mindfulness Attention Awareness Scale; MHC-SF = Mental Health Continuum Short Form; OLQ-13 = Orientation to Life Questionnaire; PHLMS = Philadelphia Mindfulness Scale; PSS-10 = Perceived Stress Scale; PVQ = Personal Values Questionnaire; SOC-13 = Sense of Coherence Scale; VQ = Valuing Questionnaire.

Study Results

The overall findings of the studies included in the analysis on mental health and ACT process measures were mixed (Appendix B and C). Specifically, five studies reported no significant differences in mental health and well-being of participants after the online ACT intervention compared to control conditions (Krafft et al., 2019a; Lappalainen et al., 2021, 2023; Levin et al., 2014, 2016). Seven studies reported significant differences in mental health measures (Chen et al., 2022; Keinonen et al., 2021; Krafft et al, 2019b; Levin, 2013; Levin et al., 2017; Rasanen et al., 2016; Räsänen et al., 2020). However, two of these studies were rated as poor quality (Krafft et al, 2019; Levin, 2013) due to methodological issues including inadequate sample sizes, high dropout rates, and poor adherence to the intervention, limiting the interpretation of the significant results.

The impact of ACT interventions on process measures was found to be variable in the studies reviewed. With the exception of five studies (Chen et al., 2022; Levin et al., 2014, 2017; Räsänen et al., 2016, 2020), the remaining studies found no significant differences on ACT processes measures between treatment and control groups when examining the whole sample post-treatment. Some studies (*n* = 4) found significant changes in at least one ACT process measure compared to controls in different sub-populations, such as those who adhered to treatment protocol (e.g., completed three of five session; Lappalainen et al., 2023), or those with elevated scores on measures of mental health and/or wellbeing (Keinonen et al., 2021; Levin et al., 2014, 2017).

Mental Health and Well-being

Nine studies had at least one significant result within the ACT treatment group for a measure of mental health or well-being (Chen et al., 2022; Keinonen et al., 2021; Krafft et al., 2019b; Lappalainen et al., 2021; Levin et al., 2013, 2016, 2017; Rasanen et al., 2016, 2020), and significant within-group effect sizes (d) for the ACT intervention conditions ranged from small to large (.15-1.26).

The RCT comparing a prototype ACT intervention to a healthy living website (Levin, 2013) found no significant differences between the two conditions. In fact, participants in the healthy living

condition had significantly lower scores on depression and anxiety (p=.005, d =.31) and stress (p=.043, d =.34) at three months follow up compared to the ACT condition. However, this study was rated poor quality as the ACT intervention group had poor adherence to the protocol and high attrition. This meant statistical analysis was underpowered and conclusions are difficult to make. Similarly, in one study (Levin et al., 2016), those in the ACT intervention condition were more likely than the control condition to continue experiencing anxiety and depression symptoms at both post-intervention (p=.05) and 3-month follow up (p=.095). Again, low adherence to the ACT intervention may explain these results.

There were three studies that found no significant changes in mental health and/or well-being measures in the intent-to-treat (ITT) samples, but found significant results when examining subsamples. Keinonen et al. (2021) found a significant reduction of depressive symptoms in a subsample of participants who had high experiential avoidance at baseline. Participants who completed a minimum of three sessions of The Youth Compass intervention (Lappalainen et al., 2021) had significant decreases in depression in both ACT groups, with (p=.021) and without (p=.017) face-to-face contact. There was also a significant positive difference between scores on the 'Satisfaction with Life' measure in the iACT group compared to the controls when analysed per-protocol (p=.034). Significant differences in those who adhered to protocol usage was also replicated by Lappalainen et al. (2023), although only anxiety improved (p=.042) with a small effective size (d=.05) in the intervention group. Changes in depression post-intervention were not significant (p=.224, d=.10).

Although all studies applied the intervention universally, two studies found differences in outcomes for subsamples who were more distressed compared to those who were not. Levin et al. (2014) reported those at least minimally distressed showed significant improved after the ACT intervention on symptoms of depression (p=.018, d=.91) and anxiety (p=.033, d =.81), but not on the stress subscale of the DASS-21. Likewise, when both the help-seeking and SONA credit sample from Krafft et al. (2019) were combined, those scoring above the median on the DASS ("higher distress")

had significant improvements in overall distress (p=.03), anxiety (p<.05) and stress (p=.01) in the ACT intervention groups. However, there was no difference between the type of app intervention (simple vs complex).

ACT processes

Significant post-intervention differences in ACT process measures were found in three studies. The ACT intervention used by Chen et al. (2022) led to a significant improvement in the AAQ-II (p =.002; r =.4) and Mindfulness Attention Awareness Scale (MAAS; p =.003; r =.4). The secondary analysis of the iACT intervention (Keinonen et al., 2021) concluded the intervention was effective for a subgroup of individuals who had higher levels of experiential avoidance and depressive symptoms at baseline, and the intervention resulted in bigger changes (p< .01). Finally, Räsänen et al. (2016) found their 7-week ACT intervention resulted in significant improvements on both pre-post and pre-follow for the iACT group on all ACT processes measures (p<.001), with the exception of the Orientation to Life Questionnaire (OLQ-13) at 3-month follow up. Effect sizes were moderate (.52-.65).

Across the other studies (*n* = 8) , there was variability in the significance of changes in ACT process measures. Some studies found changes in certain values subscales (Krafft et al., 2019; Levin, 2013; Levin et al., 2017) whilst two had significant changes in mindfulness measures and subscales (Räsänen et al., 2020; Levin et al.,2014). Lappalainen et al. (2023) found the iACT intervention had significant changes in those who adhered to treatment protocol, although this was limited to the valued action subscale of the CompACT (p=.02; Francis et al., 2016) and the Self-Compassion Scale–Short Form (p=.03, Raes et al., 2011).

Studies with mindfulness as an ACT process outcomes utilised the FFMQ (Räsänen et al., 2016, 2022; Levin et al., 2016) or the MAAS (Chen et al., 2022). The FFMQ and MAAS yielded significant findings in the ACT groups, both in between-group comparisons and within the iACT group at pre-post and pre-follow-up time points. However, examining changes of different subscales of the FFMQ, Räsänen et al. (2016) reported significant improvements post-intervention for the

observing and non-reactivity subscales, but not for the describing and acting with awareness subscales.

No studies found significant between-group differences on psychological inflexibility measures (AAQ-II and AFQ-Y/Y-8) post interaction or at follow-up. Two studies found significant within-group changes in the intervention group (Levin, 2013; Räsänen et al., 2016). Levin (2013) found significant reduction in AFQ-Y8 scores at 3-month follow up in the iACT and control conditions, however the control condition had greater effect sizes. The study was also rated as poor quality.

Although there were no significant changes in ACT processes between pre- and post-measurement in the iACT group, Levin et al. (2014) provided support for the model of Psychological Flexibility. The study found scores on the AFQ-Y correlated both pre-post and pre-fu with significant reduction, and small to moderate effect, in Depression (d=.49 (pre-post); d= .26 (pre-fu)); Anxiety (d=.38; d=.18) and Stress (d=.56; d=.25).

4. Discussion

The objective of this systematic review was to evaluate the effectiveness of digital self-help ACT interventions for universal use in young people without specific mental health difficulties. In total, there were 11 studies which were examined, describing universal ACT interventions of various length and targeting different ACT processes. The data suggests that some digitally delivered ACT self-help interventions were effective in reducing depression symptoms and psychological distress, as evidenced by significant pre-post intervention changes and large effect sizes (Chen et al., 2022; Levin et al., 2017; Räsänen et al., 2016). However, the effectiveness of the interventions on psychological flexibility was more mixed.

There was also evidence that the outcomes on mental health, well-being and psychological flexibility differed depending on adherence to the intervention, contingent on whether the analyses were on intention-to-treat or per-protocol samples, meaning the whole randomised sample or only those who followed the treatment protocol respectively (Shah, 2011).

In terms of quality appraisal of included studies, there did not appear to be an association between study quality and outcomes. For instance, Krafft et al. (2019) was rated poor, yet it reported significant effects of the intervention on some outcomes. Conversely, Chen et al. (2022) received a fair quality rating and reported significant effects of the intervention on mental health, well-being, and ACT processes. Similarly, Lappalainen et al. (2021) and Räsänen et al. (2020) had a good quality rating and did not find a significant difference between the intervention and control group for the whole sample. Examining the different study design factors is therefore important to draw conclusions.

The effectiveness of digitally delivered ACT interventions were evaluated by reviewing the outcomes of ACT process measures across several studies, consistent with ACT theory. The commonly used AAQ/AAQ-II process measure (Chen et al., 2022; Levin et al., 2014, 2017; Rasanen et al., 2016; Räsänen et al., 2020) showed non-significant results for the majority of ACT intervention groups. Similarly, in studies measuring experiential avoidance using the AFQ-Y, the intervention

groups did not show significant improvements compared to the control group (Levin et al., 2016; Lappalainen et al., 2021). One study (Lappalainen et al., 2023) utilised the CompACT as an ACT process measure and found no significant results for the intervention group. This may be due to participants in this study being up to 16-years-old, and the CompACT has not been validated in those under 18. These findings suggest that digitally delivered ACT interventions were largely ineffective in improving psychological flexibility and highlight the importance of using valid and reliable measures appropriate for the study population.

The studies reviewed varied considerably in duration; from 2 to 7 weeks. It is difficult to make conclusions about the appropriate length of digitally delivered ACT interventions. For example, Chen et al. (2022) was a 2-week intervention and found significant improvements in outcomes of depression, anxiety, stress, well-being and increases on psychological flexibility measures. Similarly, the 7-week interventions investigated by Räsänen et al. (2016; 2020) were effective on outcomes of mental health and psychological flexibility. In contrast, there were no significant improvements in mental health and well-being measures in most studies where the intervention length was 3- (Levin et al., 2014; 2016), 4- (Krafft er al., 2019) and 5-weeks (Lappalainen et al., 2021; 2023).

The findings of this review about intervention length differs from some other literature. Harrer et al. (2019) conducted a meta-analysis of online-delivered mental health interventions for students. They found interventions of 4 to 8-weeks had optimal outcomes. However, the review by Harrer et al. (2019) included both universal and selective interventions and grouped CBT and third-wave interventions, making it difficult to compare findings. In contrast, a meta-analysis of online guided self-help interventions for depression in university students (Ma et al., 2021) found no significant difference for length of intervention, although interventions of moderate length (4- to 8-weeks) had the highest effect sizes ($g = 0.52$) compared to shorter ($g = 0.29$) and longer ($g = 0.25$) interventions. Given the variable findings between the current and other reviews, further research is needed to determine the most effective length of digitally delivered interventions, particularly through sub analyses by intervention type and modality.

Since the length of intervention does not appear to be related to the outcome, a more helpful approach might be to examine the content of the ACT interventions and the psychological flexibility processes that were designed to be targeted. Although the ACT program by Chen et al. (2022) was delivered over 2-weeks, the content addressed all six ACT processes. Among the seven ACT interventions that aimed to address at least three processes (excluding studies with poor quality ratings; Levin, 2013; Krafft et al., 2019), a majority found significant outcomes for the ACT conditions on both mental health and well-being, as well as on ACT process measures (Chen et al., 2022; Keinonen et al., 2021; Levin et al., 2017; Rasanen et al., 2016; Räsänen et al., 2020). Therefore, it is possible that ACT interventions which cover a broader range of processes are likely to be more effective than those that target fewer processes, regardless of the intervention length.

Other research suggests that the effectiveness of ACT interventions depends on the specific psychological flexibility subprocesses being targeted. An RCT of an online ACT intervention for distressed students found that the full ACT intervention, engaged (values and committed action), and open modules (acceptance, cognitive defusion) had significant moderate to large effects on mental health outcomes, but the open group was less effective compared to the engaged and full group. The engaged and open group had weaker changes on psychological flexibility process measures compared to the full ACT intervention. In another study (Villatte et al., 2016) on ACT modules for adults seeking mental health support, interventions focusing on acceptance and cognitive defusion had greater effects on symptom severity, cognitive defusion, and acceptance measures. Targeting values showed superior effects on life quality and values-based activation. These findings highlight the variation in mental health and psychological flexibility outcomes based on specific ACT components. The current review supports these findings, suggesting universal self-help interventions targeting at least three psychological flexibility processes being most effective.

To better enable future research to evaluate the effects different ACT components have on outcomes, there is a need for comprehensive measures of ACT. For instance, using measures such as the CompACT (Francis et al., 2016) provides a complete assessment of all ACT processes and allows

analysis to explore changes in total psychological flexibility scores, as well as individual subscale scores. The benefit of using a measure which allows sub-analyses was demonstrated by Lappalainen et al. (2023), who found their intervention was significant for valued action, but not overall psychological flexibility, behavioural awareness (self-as-context, mindfulness) or openness to experience (acceptance, defusion). Being able to distinguish between these subprocesses will be advantageous for future research so that the content of digital ACT interventions can be adapted to address all areas equally.

This review found that some studies did not select appropriate measures to assess the target processes of the intervention, which limited the ability to draw conclusions about intervention effectiveness. Krafftt et al. (2019) only used a values measure, despite their intervention targeting acceptance, values, and mindfulness. Keinonen et al. (2021) and Lappalainen et al. (2021) used the AFQ-Y, a measure of experiential avoidance and cognitive fusion, despite their intervention being designed to improve all six subprocesses of psychological flexibility. Similar to the limitations of the measures used by studies in this review, Fang and Ding (2020) noted variability and inconsistency in psychological flexibility measures used when reviewing broader CYP ACT interventions which made comparisons across studies challenging. Without selecting suitable measures related to the intervention's targets, the conclusions of these studies are limited as it is possible the interventions were effective, but not adequately assessed.

Conclusions regarding the effectiveness of universal digital self-help ACT interventions on psychological flexibility may also be influenced by the quality of outcome measures used. Studies with participants over 18 years used the AAQ-II measure, which has been criticised for its poor discriminant validity from measures of distress, and as it may measure psychological inflexibility rather than psychological flexibility (Wolgast, 2014; Landi et al., 2021). The AFQ-Y or AFQ-Y8 measure is more appropriate for adolescents (Livheim et al., 2016) and was used in four studies (Keinonen et al., 2021; Lappalainen et al., 2021; Levin, 2013; Levin et al., 2016). However, these measures are unidimensional and measures psychological inflexibility instead of flexibility.

Psychological inflexibility has been defined as rigid patterns of thinking, feeling, and behaving in response to adverse internal experiences, which prevent individuals from adapting to challenging situations and following personal values (Kashdan et al., 2020). In research developing a multidimensional measure of psychological flexibility, Rolffs et al. (2018) concluded psychological flexibility and inflexibility correspond to 12 unique processes which change independently of one another. These findings support the idea flexibility and inflexibility are distinct from one another, and not necessarily opposite.

A theme to emerge from this review was that subsamples, such as those seeking help (Krafft et al., 2019b) or with higher levels of distress (Levin et al., 2014), may benefit more from digital ACT self-help interventions than others. However, it's important to note the study by Krafft et al. (2019b) had reduced quality due to methodological design, and results should be interpreted with caution. It may be that those actively seeking help are more distressed therefore more likely to engage with the intervention. This is supported by research which suggests individuals experiencing higher levels of distress are more likely to use online interventions compared to those with lower levels of distress (Ryan et al., 2010). The subgroup findings are consistent with other reviews of digital interventions for CYP, which have found them to be effective compared to waitlist controls for individuals with specific mental health needs who seek support (Zhou et al., 2021; Buttazzoni et al., 2021).

Another finding of this review was that some of the studies had low adherence to the intervention protocol, similar to some other reviews of digital interventions. Clarke et al. (2015) conducted a systematic review of universal online mental health interventions and found adherence to interventions was low in multiple studies, with drop-out rates ranging from 7% to 86%. As adherence rates to online interventions is related to effectiveness (Hämäläinen et al., 2022), it is necessary for studies to consider methods of increasing adherence to interventions to maximise the benefits.

In this review, only two studies referred to the COVID-19 pandemic (Chen et al., 2022; Lappalainen et al., 2023), and therefore it is not possible to determine the impact the COVID-19 may

have had on acceptability and adherence to the ACT interventions. However, a systematic review of digital mental health services during the COVID-19 pandemic found that the feasibility, acceptability and effectiveness of services were similar to pre-pandemic levels (Zhong et al., 2023). Furthermore, a rapid review of remote mental health support to young people during COVID-19 found young people were accepting of digital support, however engagement and drop-out was lower when young people did not choose to access support online (James, 2020). It would be important for future research regarding online psychological interventions to examine the influence of the COVID-19 pandemic and acceptability, adherence and intervention effectiveness.

Whether an ACT intervention is guided, and the format of this, can impact adherence and effectiveness. Peer-support coaching has been found to increase adherence and effectiveness in an ACT self-help intervention (Klimczak et al., 2023). In this review, seven studies were guided using virtual (SMS and chatbot) and student coaches. The intervention by Lapplainen et al. (2023) included both person and virtual coaching and found the group that had access to both types of coaching had higher adherence outcomes compared to the group who had virtual coaching only. However, the other studies which were guided (Keinonen et al., 2021; Lappalainen et al., 2021; Rasanen et al., 2016; Räsänen et al., 2020) were only compared against waitlist control conditions, and it is therefore difficult to conclude from this review whether guided interventions increased adherence and outcomes compared to unguided.

Strengths and Limitations

A limitation of this review is that there was significant heterogeneity between the reviewed studies in terms of the ACT intervention content, target processes and outcome measures used to evaluate the interventions. This variability makes drawing overall conclusions challenging, as there are multiple factors which differ between studies. In addition, there was variability in outcome measures, the content of the ACT intervention and whether the intervention was guided or unguided. Future research regarding digitally delivered ACT self-help interventions for young people

would benefit from having consistency in the measures of psychological flexibility subprocesses to improve methodological quality and enable comparisons across studies.

The scope of this review was also limited by the broad age range of participants; 10 to 25-years-old (consistent with the WHO definition of adolescence). There is currently limited research about how psychological flexibility changes throughout adolescence and into adulthood. This makes it challenging to compare across studies due to the differences in developmental stage of participants and how this may influence psychological flexibility skills and delivery of ACT interventions. For example, there is research to suggest executive functioning skills which develop during adolescence (e.g., self-control, self-regulation) provide the foundation for psychological flexibility (Doorley et al., 2020), and cognitive fusion and experiential avoidance can increase during mid-adolescence, whilst acceptance may decrease (Cobos-Sánchez et al., 2022).

Furthermore, comparison across studies was hindered by the age range as broader measures were used for both young people and adults. Although this review included studies with participants above 10 years old, the youngest age of participants was 15 years old, and only three studies specifically examined digital ACT interventions for adolescents (i.e., under 18 years old). The generalisability of conclusions from this review to adolescents therefore needs to be considered cautiously, and further studies in this population are required.

The studies in this review had predominantly female samples and all but one study reported gender of participants using binary options of ‘male’ or ‘female’. However, these terms refer to the binary categorisation of sex based on biological attributes, and not gender which encompasses a broader spectrum of self-identities influenced by social, cultural, and psychological factors (Heidari et al., 2016). A review of existing reporting guidelines found health research primarily uses binary terminology of sex and gender interchangeably and inconsistently, leading to issues in research design and synthesis (Gogovor et al., 2021). Issues with reporting sex and gender impacts on the replicability of research (Cavanaugh & Abu Hussein, 2020) and has implications for research design, analysis and interpretation of findings in relation to sex and gender differences (Rich-Edwards et al.,

2018). To address these limitations, future research on ACT interventions should accurately report the sex and gender of participants to facilitate a comprehensive understanding of intervention effectiveness in diverse subgroups.

One strength of this study was the quality appraisal tool used. The NHLBI quality appraisal tool allowed for comparisons across RCT and pre-post studies as the quality rating categories (i.e., 'Good', 'Fair' and 'Poor') were the same on both tools. Whilst it is recognised quality assessment are subjective and introduce a risk of bias (Ma et al., 2020), the NHLBI have detailed guidance to support in standardisation of using the tool. Also, the risk of bias was minimised by having 45% of papers inter-rated for quality by an independent reviewer.

This review is the first, to the author's knowledge, to examine the effectiveness of universal digitally delivered self-help ACT interventions for young people. As mental health services for young people face growing demand (Crenna-Jennings and Hutchinson, 2020), alternative support methods are needed to increase access. It is therefore important that the evidence-base is evaluated to determine whether universal digitally delivered self-help interventions are an effective alternative which could be implemented into routine practice (Taylor et al., 2020). The findings of this review indicate the evidence for the efficacy of universal online self-help ACT interventions for young people is inconclusive, in part due to the methodological limitations of existing studies.

Conclusion

The present review aimed to determine the effectiveness of digitally delivered self-help ACT interventions for young people. The results of this review indicate that digital ACT interventions have inconsistent outcomes for both mental health and psychological flexibility subprocess measures. Conclusions are limited by the quality and comprehensibility of outcome measures adopted. This review also highlighted the variability in the content of digitally delivered ACT interventions. Further research is needed to better understand which components of ACT interventions contribute to changes in overall psychological flexibility, and in turn, mental health symptoms and well-being.

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Paper 2: Empirical Study

Validation of the Comprehensive Assessment of Acceptance and Commitment Therapy Processes for Youth: The CompACT-Y

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Abstract

Acceptance and Commitment Therapy (ACT) is a transdiagnostic approach which aims to increase psychological flexibility. Higher psychological flexibility has been associated with reduced psychological distress, mental health symptoms and improvements in well-being and functioning. Reviews of ACT for children and young people indicate it shows potential as an effective treatment for a range of difficulties, however there are issues regarding measurement of psychological flexibility in children and young people. At present, a broad measure of psychological flexibility processes does not exist for children and young people. The present study aimed to validate a comprehensive measure of ACT processes for youth (CompACT-Y).

The CompACT-Y measure was administered alongside measures of ACT processes, mental health and well-being to 334 young people across six UK schools, to assess for convergent and concurrent validity. The factor structure of the CompACT-Y was analysed using exploratory factor analysis.

The study found the CompACT-Y correlated with similar measures of psychological flexibility, mental health and well-being as expected, indicating acceptable convergent and concurrent validity. A three-factor structure was considered the most stable and was consistent with psychological flexibility and ACT theory.

The CompACT-Y appears a valid and reliable measure of psychological flexibility in young people. Further research is needed to replicate the findings and confirm factor structure, validity and reliability, particularly in younger adolescents and those from diverse backgrounds. The CompACT-Y offers a promising tool to improve the methodological rigour of ACT studies in young people, and has implications for the use of ACT in clinical practice.

Keywords: ‘Acceptance and Commitment Therapy’, ‘Psychological flexibility’, ‘process measure’, ‘Psychometric validation’, ‘adolescence’

Abstract Word Count: 249

Validation of the Comprehensive Assessment of Acceptance and Commitment Therapy Processes for Youth: The CompACT-Y

Acceptance and Commitment Therapy (ACT) is a transdiagnostic therapeutic approach that conceptualises distress as resulting from counterproductive attempts to avoid or suppress unwanted internal experiences such as our thoughts, feelings, and sensory sensations (known as experiential avoidance), alongside decreased involvement in meaningful activities (Hayes et al., 1999). The main aim of ACT interventions is to minimise the impact of psychological distress on engaging in valued action by promoting psychological flexibility. Hayes et al. (2006) described psychological flexibility as being present in the moment (mindful) and taking action that aligns with one's personal values and goals in the long-term, rather than focusing on and responding to immediate demands.

Psychological flexibility is composed of six underlying processes: acceptance; cognitive defusion; contacting the present moment; values; self-as-context and committed action (Hayes et al., 2006). Acceptance involves recognising and allowing negative thoughts, feelings, and experiences, and cognitive defusion refers to the act of observing one's thoughts and feelings without becoming consumed by their content and meaning. Contacting the present moment involves being mindful of one's current internal experiences, and self-as-context is a way of viewing internal experiences from an observer perspective. Values refer to identifying and following important principles in one's life, whilst committed action is the process of actively working towards these values despite difficult or adverse experiences (Hayes et al., 2011).

Psychological flexibility is understood to be a dynamic trait which can be used in different contexts to change or persist with behaviour in the direction of an individual's values (Doorley et al., 2020). Individuals who are psychologically flexible are more open to difficult thoughts and feelings through acceptance and defusion, make more contact with the present moment through awareness of internal experiences and viewing them from a distanced perspective, and understand which values they would like to inform their actions towards goals and a purposeful life (Harris, 2009). ACT fosters the development of psychological flexibility by helping individuals create adaptable and

flexible relationships with their internal experiences through a variety of strategies and skills, including experiential exercises and metaphors. These methods are used to help individuals recognise that attempts to control internal experiences are ineffective in the long-term, and to move from experiential avoidance to acceptance and defusion when difficult thoughts and feelings arise (Hayes & Pierson, 2005).

Gloster et al. (2011) examined how psychological flexibility relates to symptomatology, psychological wellbeing, quality of life, and personality. They found that psychological flexibility is a unique concept that has incremental validity for understanding clinical symptomatology above other constructs, such as mental health diagnoses, well-being and personality traits. They also found psychological flexibility can differentiate between help-seeking and healthy individuals, and explains variance in measures of depression, anxiety, panic, obsessive-compulsive disorder (OCD), self-esteem and quality of life. Research has also demonstrated that psychological flexibility can moderate the negative effects of life stressors on mental and physical health, as well as overall well-being (Fonseca et al., 2020; Gloster et al., 2017; Landi et al., 2020).

Higher psychological flexibility has implications for mental health symptoms. For instance, Tyndall et al. (2020) examined the relationship between psychological flexibility and psychological distress. They found that those scoring highest on psychological flexibility reported the lowest levels of psychological distress. Also, Østergaard et al. (2020) investigated the role of psychological flexibility in relapse prevention after depression, and found psychological flexibility both reduced residual depressive symptoms and increased positive mental well-being at 12-month follow-up. Psychological flexibility was also associated with greater well-being, lower distress, and effective coping strategies during the COVID-19 pandemic (Dawson & Golijani-Moghaddam, 2020).

Gloster et al. (2020) conducted a meta-review on the efficacy of ACT in treating adult difficulties. Their analysis of 133 studies from 20 meta-analyses showed that ACT was effective for conditions such as anxiety, depression, substance use, pain, and in transdiagnostic interventions. ACT had significant effect sizes compared to waitlist or placebo conditions, but were inconsistent

against active controls (e.g., treatment as usual; TAU). Whilst ACT and CBT had no overall significant difference, some meta-analyses highlighted ACT's superior symptom reduction across conditions (i.e., transdiagnostically). The authors recommended that future research should investigate ACT's change processes and outcomes related to functioning and well-being.

Acceptance and Commitment Therapy for Children and Young People (CYP)

As evidence for the effectiveness of ACT in adults has developed there has also been interest applying ACT for CYP, considering developmental needs and adaptations based on the context young people exist within (Halliburton & Cooper, 2015). Qualitative research investigating adolescents' experiences of ACT has suggested CYP use the therapeutic space to explore and connect with internal experiences (i.e., openness to experience and mindfulness) and CYP place greater importance on value-based behaviours which they can communicate with those important to them, such as parents and teachers (Ma et al., 2023). Similarly, other qualitative research has suggested adolescents benefit from opportunities to discuss and identify the influential factors on their values to support in their clarification (Lewis-Smith et al., 2021), which is compatible with adolescence as individuals seek increased autonomy (Greco et al., 2008a).

Reviews of ACT for CYP have been conducted to understand its effectiveness, although methodological limitation have been highlighted. Swain et al. (2015a) conducted a review of ACT for CYP aged between 6 and 18 years old and found ACT can improve mental health symptoms, quality of life, and psychological flexibility equivalent to other established interventions, such as CBT and TAU. However, evidence for the effectiveness of ACT in young people aged below 12 years was insufficient and there were also limitations in research design, such as the inconsistent measurement of psychological flexibility subprocesses across studies.

Subsequent reviews have drawn similar conclusions. A review of ACT interventions to prevent or treat mental health difficulties in CYP found that ACT reduced symptoms across a range of difficulties including anxiety, depression, eating disorders and OCD (Harris & Samuel, 2020). The review indicated further research is needed due to a small number of studies and poor research

design leading to heterogeneity across studies, making it difficult to assess processes of change or draw conclusions about outcomes for ACT interventions.

A meta-analysis by Fang and Ding (2020) examined randomised controlled trials (RCTs) of ACT for CYP. The results showed that compared to control conditions, ACT significantly improved mental health outcomes. Also, ACT was equally effective as CBT and active controls, and more effective than untreated control conditions, in enhancing quality of life and psychological well-being. However, limitations such as small sample sizes and brief follow-up periods hindered the assessment of ACT's long-term effectiveness and only four included studies had participants under than 12 years old. The authors highlighted a lack of research on ACT's impact on positive psychological factors. Overall, the heterogeneous methodologies and disparate measures of psychological flexibility subprocesses makes comparison and data integration across studies challenging.

Measuring psychological flexibility in CYP

As research into ACT and psychological flexibility expands, it is necessary to have a robust measure to determine whether ACT interventions result in changes of psychological flexibility as theoretically expected. Cherry et al. (2021) highlighted challenges in defining and measuring psychological flexibility and inflexibility due to its multifaceted conceptualisation, varied terminology and different definitions. The review emphasised that psychological flexibility is evaluated by a range of measurement tools and methods, with commonly used measures being applied and interpreted poorly. Subsequently, the review advocated for more robust measurement tools to support assessment of psychological flexibility.

Multiple measures currently exist to assess psychological flexibility in CYP, focusing on specific subprocesses like experiential avoidance, cognitive fusion, or mindfulness. Examples include the Avoidance and Fusion Questionnaire-Youth (AFQ-Y; Greco et al., 2008b) and the Child and Adolescent Mindfulness Measure (CAMM; Greco et al., 2011). The AFQ-Y and its shorter version, AFQ-Y8, measure psychological inflexibility by assessing experiential avoidance and cognitive fusion. However, the AFQ-Y was derived from items on the Acceptance and Action Questionnaire (AAQ-II;

Bond et al., 2011) for adults, which has faced criticism for its association with distress rather than acceptance, and poor construct validity for experiential avoidance (Rochefort et al., 2018; Wolgast, 2014). A review of the AFQ-Y8 (Lewis, 2020) also highlighted its limited content validity due to a lack of high-quality studies confirming item accuracy and low test-retest reliability.

Identifying, clarifying and taking actions that are consistent with one's values is an important component of ACT, however there is a lack of values measures for CYP. One of the few measures to be used with CYP is the Bulls-Eye Values Survey (BEVS; Lundgren et al., 2012). The measure uses a visual representation of a dart board divided into four value areas: work/education, leisure, personal growth/health and relationships. However, a review of values measures in ACT research (Reilly et al., 2019) identified limited utilisation of the BEVS in CYP studies, with studies having small sample sizes, not providing internal consistency scores. Concerns about the BEVS's sensitivity to detect change in research was also highlighted. Reilly et al. (2019) also identified one study that adapted the Valued Living Questionnaire (VLQ; Wilson et al., 2010) for adolescents in an ACT intervention for anxiety. Whilst the measure showed acceptable internal reliability, the study did not report details on the adaptation process, and no significant differences were found between or within-groups at post-intervention or follow-up.

Without a broad measure of psychological flexibility for CYP, it remains challenging to determine if interventions are increasing psychological flexibility in line with ACT principles. Some research has indicated that higher psychological flexibility in later sessions predicts reduced symptoms at follow-up (Fledderus et al., 2013). A comprehensive measure would facilitate the analysis of psychological flexibility components as predictors of therapeutic outcomes.

In research of ACT for CYP, up to eight different outcome measures of psychological flexibility are often required (Swain et al., 2015b; Timko et al., 2015; Petts et al., 2017). This can be burdensome, repetitive, and confusing for participants (Demkowicz et al., 2020). Furthermore, the lack of a comprehensive measure of psychological flexibility for CYP has clinical implications. The use of outcome measures has increased in CYP services since the implementation of the CYP Improving

Access to Psychological Therapies (CYP-IAPT) framework (Wolpert et al., 2015). However, the need for multiple measures to evaluate changes in psychological flexibility due to ACT interventions presents a barrier to completion, placing additional demands on clinicians and CYP. A single measure of psychological flexibility specifically designed for CYP would alleviate clinician burden and facilitate the assessment of ACT processes in clinical practice.

Francis et al. (2016) developed the Comprehensive Assessment of Acceptance and Commitment Therapy (CompACT) measure to address limitations in existing measures and capture multiple psychological flexibility subprocesses. The CompACT reliably and accurately measures three overarching ACT processes: openness to experience, behavioral awareness, and valued action, which encompass key processes of psychological flexibility (Francis et al., 2016). Currently there is no single, comprehensive measure of these psychological flexibility subprocesses validated for CYP. Such a measure will support research and clinical practice in terms of evaluating whether ACT interventions accurately target the core processes of psychological flexibility as intended.

Stage 1 Study: Cognitive Interviewing & Expert Consultation

Previous research (Lewis, 2020) revised the 23-items of the adult CompACT for CYP. The study involved cognitive interviewing of 36 participants aged between 11 and 18 years old (*M* = 15.56). It found that CYP had issues with comprehension and vocabulary of all 23 adult CompACT items. The cognitive interviewing stage resulted in an adapted pool of items suitable for a CYP population. Items were reviewed by 11 experts in psychological flexibility or ACT for CYP, who provided input to the final phrasing of items. The resulting measure, the CompACT-Y, included 23 adapted items to measure the subprocesses of psychological flexibility and has not yet been validated.

Present Study: Stage 2: Validation of the CompACT-Y with CYP

Aims and Hypotheses

This study aimed to validate the CompACT-Y in a CYP population to explore the internal factor structure of the measure and that it assesses the intended psychological flexibility constructs. It was predicted that the Compact-Y would:

(1) Retain a three factor structure consistent with the adult CompACT; 'openness to experience', 'valued action' and 'behavioural awareness'

(2) Be positively correlated with the CAMM and Valuing Questionnaire (VQ) Progress subscale and negatively correlated with the AFQ-Y8 and VQ Obstruction subscale, indicating convergent validity

(3) Be positively correlated with measures of wellbeing: i) the Short Warwick-Edinburgh Mental Well-being Scale, ii) World Health Organisation-Five Well-Being Index and iii) prosocial behaviours subscale of the Strengths and Difficulties questionnaire, indicating concurrent validity

(4) Be negatively correlated with measures of depression, anxiety, stress (Revised Child, Anxiety and Depression Scale and Perceived Stress Scale) and SDQ behavioural difficulties subscales (Emotional, Hyperactivity, Conduct and Peer Difficulties), indicating concurrent validity

(5) Not be correlated with a measure of social desirability (Crandall Social Desirability Test for Children-Short Form), indicating internal validity

2. Method

Participants

Participants were recruited from six schools across the UK between April 2022 and April 2023, covering a whole academic year, providing opportunity for all year groups to be involved. In total, 383 participants gave consent and 334 completed the study. Five participants were ineligible due to age, giving a final sample of 329. Participants were aged between 13 and 18 years old (M = 16.25, SD = 1.04). Table 1 provides a summary of the demographic information of the sample. Information about involved schools was also collected (Table 2).

Inclusion criteria for participation were secondary students aged 11-18 years (school years 7-13) and able to communicate fluently in English. If participants required additional support, school staff were asked to provide this through school established supports plans (i.e., a teaching assistant). Participants were required to have a National Curriculum scale reading and writing at level 3 or above due the need to read and understand large amounts of information. Participants were offered the opportunity to enter a prize drawn for gift vouchers valued at £10, £20, £25 and £45.

Table 1.

Summary of demographic information of final sample (n=329).

Characteristic	N	%
Gender		
Male	111	33.70
Female	193	58.70
Non-binary	13	4.0
Prefer not to say	12	3.60
UK Year of Study		
9	25	7.60
11	54	16.40
12	174	52.90
13	76	23.10
Ethnicity		
White British/English/Welsh/Northern Irish/Scottish	289	87.80
Mixed/Multiple ethnic background	15	4.60
Any other White background	11	3.30
Asian	9	2.70
African	2	0.60
Did not answer	3	0.90

Table 2.

Summary of school demographic information

School Characteristic	N	%
Type of School		
Community School (LA Maintained)	4	66.67
Academy School	1	16.67
Other	1	16.67
Latest Ofsted Rating		
Outstanding	1	16.67
Good	3	50.00
Requires Improvement	2	33.33
Area of school		
Suburban	2	33.33
Rural	3	50.00
Semi-rural	1	16.67

Procedure

Ethical approval. Ethical approval was awarded by the Cardiff University School of Psychology Research Ethics Committee.

Schools were contacted using a gatekeeper letter (Appendix D) which explained the purpose of the project. An initial meeting was held with a member of staff from interested schools (e.g., pastoral lead, head of year/department) to discuss the study procedures (Appendix E), including safeguarding, confidentiality, consent and data protection.

To maintain confidentiality participants were allocated a unique identifying number by their school to enter when completing the questionnaires. This anonymised the data, whilst also allowing the research team to notify teachers of participants if their responses on questionnaires was indicative of clinically concerning symptoms (depression and anxiety). In total, a third of participants (*n* = 109) met this criteria. Schools were then able to follow their local well-being procedures to support the identified individuals.

A parental opt-out and child opt-in consent procedure was used. Parents and carers were informed about the research through their school's communication system (Appendix F), provided

with information sheets explaining the research, opt-out process, and contact details of the research team if they required further information. Parents or carers had a 2-week period after receiving information to opt their child out of the study. If they did not opt their child out, the young person was invited to take part in the study.

Study procedure. Participants were provided with information sheets outlining the purpose of the study, benefits, risks, and how their data would be used (Appendix G). The information sheets were also provided in accessible formats depending on year group (Years 7-11, Appendix H; Years 12-13, Appendix I). Participants were required to confirm they had read and understood the information sheets and provide informed consent to commence the study (Appendix J). If a participant responded that they had not read the information sheet or did not provide consent, they were redirected to the end of the study.

After consent had been provided, demographic information was collected (Appendix K). A brief description about why the demographic information was being collected was provided for each item. Most demographic questions had the option of being left unanswered, with the exception of unique ID, name of school and age due to the safeguarding procedures.

The CompACT-Y measure was completed first and all subsequent measures were administered in a randomised order to minimise order effects. Once all the questionnaires were completed participants could elect to enter the prize draw.

Measures

Table 3 summarises the measures, their corresponding measured construct, and internal reliability in the present sample.

CompACT-Y. The CompACT-Y (Appendix L) is a 23-item measure of psychological flexibility for young people, adapted from the adult CompACT (Francis et al., 2016) by a former trainee clinical psychologist (Lewis, 2020). Items on the CompACT-Y are scored from 0 (Strongly Disagree) to 6 (Strongly Agree) with total scores ranging from 0–138, where higher scores indicate greater levels of psychological flexibility. The adult CompACT has three subscales; openness to experience,

behavioural awareness and valued action. Items on the CompACT-Y are similar to the adult CompACT but the wording was revised based on CYP and expert feedback. The factor structure of the CompACT-Y when administered to young people has not previously been tested.

Avoidance and Fusion Questionnaire Youth-8 (AFQ-Y8; Greco et al., 2008b). The AFQ-Y8 (Appendix M) is an 8-item measure of psychological inflexibility for adolescents aged 9 years and above. The AFQ-Y8 includes items relating to cognitive fusion and experiential avoidance. Respondents are asked to rate each statement on how true it is for them, ranging from 0 (Not at all True) to 4 (Very true). Scores are calculated by summing the items and range from 0–32, with higher scores suggesting higher psychological inflexibility. The AFQ-Y8 has a one-factor structure measuring psychological inflexibility, has internal consistency between α=.83 and .90 and has acceptance psychometric properties (Livheim et al., 2016).

Child and Adolescent Mindfulness Measure (CAMM; Greco et al., 2011). The CAMM (Appendix N) is a 10-item measure of mindfulness skills for young people aged 10 years and above. It includes items relating to present-moment awareness and non-acceptance of thoughts and feelings. Respondents are asked to consider how true a statement is for them and provide an answer on a 5-point scale from 0 (Never True) to 4 (Always True). The questionnaire is scored by reversing all items and summing, with a possible range of 0–40. Higher scores represent higher levels of mindfulness. The CAMM has been found to have good internal consistency (α=.80; Greco et al., 2011).

The Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS). The SWEMWBS (Appendix O) is a 7-item version of the 14-item Warwick-Edinburgh Mental Well-being Scale; a measure of mental well-being (WEMWBS; Tennant et al., 2007). The items relate to general functioning and feelings. Respondents are asked to answer the statements based on their experiences over the past 2 weeks and rate them on a 5-point scale from ‘None of the Time’ to ‘All of the Time’. Total scores for the measure range from 7–35. The SWEMWBS has been validated in secondary school populations (11–18 years old) and correlates with similar measures such as the WHO-5, and constructs such as life satisfaction (Koushede et al., 2019). The SWEMWBS has a good

model fit of a unidimensional factor of overall mental well-being (McKay & Andretta, 2017; Melendez-Torres et al., 2019).

The World Health Organisation- Five Well-Being Index (WHO-5; WHO, 1998). The WHO-5 (Appendix P) is a brief 5-item questionnaire designed to measure current mental well-being. Respondents are asked to think about their well-being over the past 2 weeks to answer statements. Responses to each statement range from 0 (At no time) to 5 (All of the time). Raw scores range from 0–25 and can be converted to a final score by multiplying the raw score by 4. Final scores range from 0–100, or the worst to the best imaginable well-being. The WHO-5 has been validated for use in people aged nine years and above and has appropriate validity for use in research to assess subjective well-being (Topp et al., 2015).

Revised Child, Anxiety and Depression Scale (RCADS-25; Ebesutani et al., 2012). The RCADS-25 (Appendix Q) is a measure of depression and anxiety in young people aged 8–18 years old based on the 47-item RCADS. The RCADS-25 asks respondents to rate statements on a 4-point scale; 0 (Never) to 4 (Always). The RCADS-25 has two factors, a broad anxiety factor and a depression factor, both with acceptable alpha values suggesting good internal consistency (α=.86–.91 for anxiety and α=.80 for depression). The scoring of the RCADS-25 provides a anxiety, depression and overall difficulties score by summing items which correspond to each subscale. The anxiety subscale scores range from 0–45 and the depression subscales scores from 0–30, with higher scores representing increased anxiety or depression symptoms.

Perceived Stress Scale-10 (PSS-10; Cohen et al., 1983). The PSS-10 (Appendix R) is a 10-item questionnaire used to measure stress in individuals aged 12 years and older. The measure asks how individuals have been thinking or feeling in relation to stress and coping over the last month, with responses ranging from 0 (Never) to 4 (Very Often). To score the measure, four items are reverse scored and then all items summed to provide a total score, which ranges from 0–40. Higher scores indicate increased levels of stress. The PSS-10 has been found to have a two-factor structure of perceived coping and perceived distress (Kechter et al., 2019), has convergent validity with a similar

measure of stressful life events, and is also predictive of changes in anxiety and depression suggesting sufficient concurrent validity (Liu et al., 2020). The PSS-10 has been found to have good internal consistency (α=.89) and item-total correlations range from .58 to .72 (Roberti et al., 2006).

Strengths and Difficulties Questionnaire (SDQ; Goodman et al., 1998). The SDQ (Appendix S) is a 25-item emotional and behavioural screening tool which asks about experiences over the past six months, and has self-report, parent and teacher versions, with the former being used in this study. The SDQ consists of 5 subscales. A total difficulties score is obtained by summing the first four subscales. Items are answered from 'Not True', 'Somewhat True' and 'Certainly True', and coded as 0, 1 and 2 respectively to obtain a score. Some items are reverse scored and each subscale score ranges from 0 to 10. The SDQ has been validated in children and young people up to 18 years old (Goodman, 1997). Goodman (2001) confirmed the SDQ five-factor structure, with satisfactory internal consistency between items (α=.73). Muris et al. (2003) found the SDQ self-report version had good concurrent validity with similar measures of emotional difficulties, an Attention-Deficit Hyperactivity Disorder (ADHD) symptom measure and a youth measure of internalising and externalising problems.

Valuing Questionnaire (VQ; Smout et al., 2014). The VQ (Appendix T) is a 10-item measure for adults (18 years and above) to assesses how consistently an individual is living with their values. Each item is answered on a scale of 0 (Not at all true) to 6 (Completely true). The VQ contains two 5-item subscales, Values Progress and Values Obstruction, with the former measuring whether actions are towards one's values and the latter measuring the obstacles which prevent living to one's values. The items for each subscale are summed, with higher scores on the Progress subscale representing greater valued living and higher scores on the Obstruction subscale representing a lack of valued living. The VQ has good concurrent validity with other ACT process measures, well-being and life satisfaction (Smout et al., 2014). Further studies have supported the VQ two-factor structure, internal reliability and correlations with theoretically similar measures (Reilly et al., 2019; Ruiz et al., 2022).

Crandall Social Desirability Test for Children-Short Form (CSD-S; Carifio, 1994). The CSD-S (Appendix U) is 12-item tool used to assess whether young people are providing socially desirable answers to questions. The items on the measure come from the 48-item Crandall Social Desirability Scale for Children (Crandall et al., 1965). Respondents are asked to answer 'True' or 'False' to each statement and a score of 1 is given to each socially desirable answer. The CSD-S has two versions: A and B. Version B was used in the current study as it had greater correlation with the full 48-item measure ($r = .92$) and acceptable internal consistency ($\alpha = .72$).

Data Analysis

Factor Analysis. As the CompACT-Y has not previously been administered to young people, an Exploratory Factor Analysis (EFA) was conducted to determine the underlying factor structure and item variable correlations (Worthington & Whittaker, 2006). A minimum of 230 participants was required for sufficient sample size, based on a ratio of participants to items of 10:1 (Kyriazos, 2018).

Bartlett and Kaiser-Meyer-Olkin (KMO) values were calculated to ensure the suitability of using an EFA. Significant Bartlett's test and KMO value ≥ .70 were required. Prior to the EFA, items with corrected item-total correlations below Nunnally & Bernstein's (1994) recommended threshold ($r<.30$) were deemed distinct and removed. Inter-item correlations of items were calculated to evaluate incremental validity, retaining items with average correlations between .15 and .50, and removed if correlations exceeded .80, which suggests an item is redundant (Clark & Watson, 1995). Factors were extracted via Principal Axis Factoring and Oblimin rotation method using three approaches (1) retaining factors with an eigenvalue >1 (Kaiser method; Kaiser, 1974), (2) the scree test method (include factors to the left of the elbow in a scree plot; Cattell & Vogelmann, 1977) and (3) parallel factor analysis (PAF) to retain factors with eigenvalues greater than the eigenvalues generated from random data of corresponding sample size (Horn, 1965). Communalities, the proportion of variance in each item that is shared by the retained factors, were assessed and removed if <.20 (Child, 2006).

Factor validity and reliability. Non-loading items were removed and item-total correlations re-calculated to assess whether the final items included on the CompACT-Y were conceptually similar to each other. The internal reliability of the CompACT-Y was assessed using both reliability coefficient (α; Cronbach's alpha) and average inter-item correlations. Cronbach's alpha values were acceptable if above the threshold of $r > .70$ (Nunnally and Bernstein, 1994) and average inter-item correlations were between .15 and .50 (Briggs & Cheek, 1986).

Validity. To further assess the validity of the CompACT-Y, correlations with the other measures administered were calculated, with a significance value of $p<.05$ used to determine significant correlations.

Reflexivity

The reflexive considerations within this research adhere to a post-positivism stance, acknowledging the potential impact of the researchers' experiential backgrounds on how this study was designed and conducted. The research team had professional interests in ACT and understanding of the theories informing the approach, such as functional contextualism and relational frame theory. The researchers also held specific beliefs regarding the conceptualisation of psychological flexibility and its fundamental principles, influenced by their combined clinical and research experiences. These experiences informed some decisions concerning data collection, for example, the administration of the Strengths and Difficulties Questionnaire as a behavioural measure, congruent with the ideas of functional contextualism and psychological flexibility theory. A priori hypotheses were formulated based on existing research, with the expectation of the research finding a three-factor structure for the CompACT-Y. To minimise potential bias an EFA approach was adopted, which allowed the possibility of identifying an alternative number of factors within the CompACT-Y. The output from the EFA was discussed within the research team to introduce a multi-perspective interpretation of the data. Additionally, the research team consulted relevant literature on EFA interpretation, specifically pertaining to item retention or removal, to further ensure an objective and data-driven analytical process.

Table 3.

Summary of measures, associated constructs and internal reliability for measures used in validity analysis

Measure	Number of items	Measured concept and subscales	Example Item	Reliability in present sample
Avoidance and Fusion Questionnaire Youth – 8 (AFQ-Y8)	8	Psychological inflexibility	*My thoughts and feelings mess up my life*	α = .87
Child and Adolescent Mindfulness Measure (CAMM)	10	Present moment/ mindfulness	*I think about things that have happened in the past instead of thinking about things that are happening right now.*	α = .87
Crandall Social Desirability Test for Children-Short Form (CSD-S)	12	Social Desirability	*I never say anything that would make a person feel bad*	α = .66
Perceived Stress Scale (PSS)	10	Stress	*In the last month, how often have you found that you could not cope with all the things that you had to do?*	α = .89
Revised Child, Anxiety and Depression Scale (RCADS-25)	25 (15 items for Anxiety, 10 items for Depression)	Anxiety and Depression	*Anxiety: I worry that I will suddenly get a scared feeling when there is nothing to be afraid of.* *Depression: Nothing is much fun anymore.*	α = .94
Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS)	7	Overall well-being	*I've been feeling useful*	α = .85
Strengths and Difficulties Questionnaire (SDQ)	25 (5 items per subscale)	**Emotion and behaviour:** Emotional symptoms Conduct problems	*I have many fears, I am easily scared* *I fight a lot. I can make other people do what I want*	α = .76

		Hyperactivity	*I am constantly fidgeting or squirming*	
		Peer relationship problems	*I have one good friend or more*	
		Prosocial behaviour	*I often volunteer to help others (parents, teachers, children)*	
Valuing Questionnaire (VQ)	10 (5 items per subscale)	**Valued living:** Progress subscale	*I worked toward my goals even if I didn't feel motivated to*	α = .86
		Obstruction subscale	*Difficult thoughts, feelings or memories got in the way of what I really wanted to do*	α = .80
World Health Organisation-Five Well-Being Index (WHO-5)	5	Mental Well-being	*My daily life has been filled with things that interest me*	α = .85

3. Results

Exploratory Factor Analysis: CompACT-Y

Removing outliers. Mahalanobis distance values of the total sample (*N* = 329) were analysed to identify outliers, removing eight participants. An additional case was removed due to incomplete data. This provided a final sample of 320 participants to asses the CompACT-Y's factor structure.

Assumptions. Applying Nunnally and Bernstein (1994) recommended threshold (*r* <.30), item-total correlations were analysed to determine whether any items were conceptually distinct. This led to one item being removed prior to the EFA being conducted. Inter-item correlations were also examined to identify items which had significant overlap with one another (*r* >.80), indicating the item was redundant and lacked incremental validity. None of the remaining items (*n* = 22) met this criteria. To assess multicollinearity, the determinant value of the correlations matrix was examined. The determinant value of .00024 was above the recommended threshold of .0001 (Field, 2018), indicating the absence of multicollinearity.

Bartlett's Test of Sphericity was significant ($\chi 2=2544.66$, *df* = 231 , p<.001) indicating that the correlation matrix was suitable for factor analysis. The KMO Measure of Sampling Adequacy (.87) suggested the sample size was adequate for performing EFA. The measure of sampling adequacy for each item was also above the recommended threshold (>.50).

CompACT-Y Factor Structure. Factor loadings below .45 were excluded, as loadings below this are deemed poor (Tabachnick et al., 2013). Also, factors with fewer than three items were considered unstable, as factors of five items with loading >.50 are considered more desirable (Costello & Osborne, 2005).

Factors of the CompACT-Y's remaining 22-items were initially extracted using Kaiser's criterion (Kaiser, 1974). Principle Axis Factoring was undertaken with an Oblimin rotation and factors with eigenvalues >1 were retained. A five-factor model was suggested using this method, however factor four had only three items load above the .45 cut-off, and only one item loaded to the fifth factor. Six items did not load to any of the suggested five factors on the pattern matrix, and five items

cross-loaded on the structure matrix. Two items (“I get so tangled up in my thoughts that I don’t do the things that really matter to me” and “I avoid things that are important to me, if there is a risk that I will feel upset”) had suboptimal loading across both pattern and structure matrices (they did not load adequately on the former and were cross-loaded on the latter).

Next, an EFA was run on a four-factor solution based on a scree test in which factors to the left of the elbow are retained. Based on the pattern matrix, factor four had three items load which ranged between .56 and .75. Eight items were removed based on non-loading (n = 5) and cross-loadings (n=3) on either the pattern or structure matrix. The four-factor model was re-analysed and this made the fourth factor unstable with only two items loading.

A three-factor solution was run based on the results of parallel factor analysis (PAF; Horn, 1965); three factors had eigenvalues greater than randomly generated eigenvalues of the same sample size. None of the items cross-loaded in this model, although one non-loading item was removed. Analysis was conducted on the remaining 21 items, all of which loaded onto a factor on either the pattern or structure matrices. However, the cumulative variance explained by the three factors fell below the recommended 50% (Streiner, 1994). To surpass this threshold, items with the lowest communalities were systematically eliminated until the total explained variance exceeded 50%, resulting in an additional item with a communality of .28, being removed. The analysis was then repeated, leading to the removal of another item that failed to load. Table 4 provides a summary of items removed to form the final three factors.

A final 19-item, three-factor model (Table 5) was deemed stable as all items loaded on either the pattern or structure matrices, no items cross-loaded, and each factor had a minimum of three items with loadings >.50. The KMO Test (.87) and Bartlett's Test of Sphericity ($\chi 2 = 2226.30$, df =171, $p<.001$) suggested suitability to run EFA and adequate sample size. The final three-factor model of 19-items explained 51.94% of the total variance.

The content of items in the three-factor model were explored to define the factors. The retained items were consistent with the subscales suggested by the CompACT (Francis et al., 2016):

- Factor 1: Valued action; 8 items relating to engagement in behaviours that reflect progress toward one's values (values and committed action)
- Factor 2: Openness to experience; 6 items relating to avoidance of and entanglement with unwanted thoughts and feelings (acceptance and cognitive defusion)
- Factor 3: Behavioural awareness; 5 items relating to engagement in mindless or automatic behaviours (contact with the present moment/mindfulness)

These subscales were significantly related to each other (*rs* = .35 –.49) although distinct (i.e., *rs* < .50) consistent with psychological flexibility theory.

Table 4.

Items removed from the initial 23 items.

Item	**Related theoretical ACT construct based on the adult CompACT**
Something that is really important to me is to not have upsetting feelings	Openness to experience; Acceptance
I'm willing to let myself have whatever thoughts and feelings come up, without trying to change or avoid them	Openness to experience; Acceptance
Thoughts are just thoughts – they don't have to control what I do	Openness to experience; Cognitive defusion
I can accept how I feel without having to change it	Openness to experience; Acceptance

Table 5.

The factor loadings of the 19 items of the CompACT-Y based on the pattern matrix (n = 320). See Appendix V for structure matrix.

	Three Factor Solution		
CompACT-Y Item	**Factor 1**	**Factor 2**	**Factor 3**
I can work out what matters to me in life and go after these things	.48		
I rush through activities that are important to me, without really paying attention*			-.49
I try to distract myself to block out difficult thoughts and feelings*		.64	
I behave in ways that reflect what is important to me	.53		
I get so tangled up in my thoughts that I don't do the things that really matter to me*		.38**	
I choose to do what's important to me, even if it brings up difficult emotions	.64		
I tell myself it's wrong to have certain thoughts*		.46	
I find it hard to focus on the thing that I'm doing*			-.54
I live my life in a way that matches what I care about	.65		
I try to avoid situations that might bring up difficult thoughts or feelings*		.68	
Even when I'm doing things that are important to me, I find myself doing them without paying attention*			-.63
I do things that matter to me, even when it is difficult	.78		
I try hard to block the feelings I don't want*		.59	
I do things without being aware of what I'm doing*			-.78
I can stick with things that I care about, even when it's difficult	.71		
I avoid things that are important to me, if there is a risk that I will feel upset*		.41**	
I often seem to do things without much awareness of what I'm doing*			-.81
My values are really reflected in my behaviour	.56		
I can keep going with something when it is important to me	.73		

Note. * denotes a reverse scored item. ** Items below .45 threshold on pattern matrix, but exceed on structure matrix.

Reliability of the CompACT-Y

Item-total correlations of the CompACT-Y (19 items, *N* = 320) were all above the recommended threshold (r >.30), which suggested retained items were conceptually similar. The Cronbach's alpha of the CompACT-Y was .87, suggesting suitable internal reliability. The Cronbach's alpha values for each subscale were also acceptable; .85 for 'valued action' (VA), .76 for 'openness to experience' (OE) and .81 for 'behavioural awareness' (BA). The average inter-item correlation across all items was .26, which was within the appropriate range of .15 and .50, and no individual item had an average inter-item correlation below .15 (Briggs & Cheek, 1986).

Validity

Correlations between the CompACT-Y total score (19-items) and the measures of similar and distinct concepts were performed on participants with complete data for all measures (*n* = 308). Table 6 summarises these results.

Convergent Validity. The CompACT-Y had a significant strong negative correlation with the AFQ-Y8 (*r* = -.6*1*) and a significant strong correlation with the CAMM (*r* = .66). The CompACT-Y showed significant strong positive/negative correlations with the progress and obstruction subscales of the VQ, respectively (*r* = .62 and -.64). These results were as expected and indicate good convergent validity. Higher scores on the CompACT-Y indicate higher levels of psychological flexibility; an inverse relationship was found with the AFQ-Y8 (a measure of psychological *inflexibility*) and the VQ obstruction subscale. Higher scores on the CompACT-Y were correlated with higher mindfulness and valued living (CAMM and VQ progress).

Concurrent Validity. The CompACT-Y was found to have significant negative correlations with depression (*r* = -.66) and anxiety (*r* =-.58) subscale scores, and the total score (*r* = -.65) on the RCADS-25. The CompACT-Y was also found to have a significant positive correlation with the SWEMWBS (*r* = .65) and WHO-5 (*r* = .57), and negative correlation with the PSS-10 (*r* = -.60). As expected, increased psychological flexibility, as indicated by higher scores on the CompACT-Y, were associated with lower scores on mental health symptom measures, and higher scores on measures of well-being. These

suggest the CompACT-Y has good concurrent validity with measures of distinct concepts in line with psychological flexibility theory.

The CompACT-Y had a strong negative correlation with the SDQ total score (r = -.63); lower scores on the SDQ indicate fewer difficulties. The CompACT-Y had moderate negative correlations with the emotional (r = -.58) and hyperactivity (r =-.54) subscales of the SDQ, and weak significant correlations with the conduct (r = -.25), peer difficulties (r = -.26) and prosocial behaviour subscales (r = .17). The moderate to strong correlations show as scores on the CompACT-Y increase (i.e., higher psychological flexibility), scores on the SDQ total difficulties, emotional and hyperactivity subscales decrease, indicating acceptable concurrent validity.

Internal Validity. To examine whether the items were answered in a socially desirable way, correlational analysis between the Crandall Social Desirability Test for Children-Short Form (CSD-S) and CompACT-Y was performed. A weak significant correlation was found (r = .35). Subsequently, a linear regression was conducted to examine the relationship between scores on the CDS-S and the CompACT-Y on 315 participants who had complete data for both measures. The regression suggested the CDS-S significantly explained variance in the CompACT-Y total scores (F (1,313) = 44.27, p < .001, Adjusted R^2 = .121).

Table 6.

Descriptive statistics and correlations between the CompACT-Y total score and other measures (n = 308).

Measure	*M*	SD	Correlation (*r)*
AFQ-Y8	12.58	7.49	-.61*
CAMM	20.49	7.85	.66*
VQ Progress	15.77	6.55	.62*
VQ Obstruction	14.80	6.42	-.64*
RCADS Total	27.85	14.98	-.65*
RCADS Depression	12.54	6.91	-.66*
RCADS Anxiety	15.32	8.89	-.58*
SWEMWBS	21.75	5.34	.65*
WHO-5	11.65	5.32	.57*
PSS-10	21.50	7.85	-.60*
SDQ Total Difficulties	15.36	6.47	-.63*
SDQ Emotional	5.17	2.88	-.58*
SDQ Hyperactivity	5.32	2.68	-.54*
SDQ Conduct	2.18	1.93	-.25*
SDQ Peer Difficulties	2.69	1.84	-.26*
SDQ Prosocial	7.06	1.92	.17*

Note. * p<.001

Compact-Y Subscale Analysis

Analysis of total scores on the three CompACT-Y subscales (valued action, openness to experience and behavioural awareness) was also performed on 308 participants with complete data and summarised in Table 7.

Convergent Validity. All three subscales had significant correlations with the other measures of conceptually similar constructs (AFQ-Y8, CAMM, VQ). The OE subscale had the highest negative correlation with the AFQ-Y8 (r = -.56), followed by the BA subscale (r = -.47) and VA subscale (r = -.41). The OE subscale had a stronger correlation to the CAMM (r = .63) compared to the BA subscale (r = .54) and VA subscale (r = .39). The VA subscale had a strong correlation with the VQ progress

subscale as expected (*r* = .65) and a moderate negative correlation with the VQ obstruction subscale (*r*= -.41). The BA and OE subscales had weak/moderate positive correlations with the VQ progress subscale (*rs* = .37 and .42 respectively), and moderate negative correlations with the VQ obstruction subscales (*rs* = -.51 and -.58).

Concurrent Validity. All three subscales of the CompACT-Y had negative correlations with the RCADS depression (*rs* = -.49 – -.54), anxiety (*rs* = -.37 – -.54) and total scores (*rs* = -.44 – -.55). There were positive correlations between the CompACT-Y subscales and wellbeing measures. The VA subscale correlated most strongly with the SWEMWBS (*r* = .57) and WHO-5 (*r* = .49). All three subscales had moderate significant negative correlations with PPS-10 (*rs* = -.41– -.55).

On the SDQ, all three CompACT-Y subscales had significant negative correlations with the SDQ Total Difficulties (*rs* = -.45 – -.56). Significant correlations were found between the CompACT-Y subscales and the SDQ emotional subscale (*rs* = -.37 – -.56). The SDQ conduct and hyperactivity subscales correlated most with the CompACT-Y BA subscale (*r* = -.35 and -.60), suggesting as mindfulness increased, behavioural difficulties and impulsiveness decreased. The VA subscale had the highest correlation with the SDQ prosocial behaviour subscale (*r* = .30). All three subscales had significant, but weak negative correlations with the SDQ peer difficulties (*rs* = -.17 – -.24). The OE subscale did not significantly correlate with the SDQ conduct (*p* = .482) and prosocial behaviour (*p* = .422) subscales.

CompACT-Y distinctiveness from psychological inflexibility

To further assess the construct validity of the CompACT-Y, an EFA was conducted with the 19-item CompACT-Y and the AFQ-Y8 (a measure of psychological inflexibility). The EFA had the same criteria as before, applying principle axis factoring with Oblimin rotation and a four-factor model based on randomly generated eigenvalues (PAF; Cattell & Vogelmann, 1977). The CompACT-Y items loaded to three factors as before, with the exception of item 6 which relates to cognitive defusion. This item cross-loaded positively on to the AFQ-Y8 factor, whilst all AFQ-Y8 items had negative factor loadings (Appendix W). This is unsurprising given the AFQ-Y8 measures cognitive fusion. This

suggests the 19-items of the CompACT-Y are largely distinct from the items on the AFQ-Y8 in terms of factor structure and loadings.

Table 7.

Correlations between the CompACT-Y subscales and other measures administered (n=308)

Measure	**Correlation (*r*)**		
	CompACT-Y VA subscale	**CompACT-Y OE subscale**	**CompACT-Y BA subscale**
AFQ-Y8	-.41**	-.56**	-.47**
CAMM	.39**	.63**	.54**
VQ Progress	.65**	.42**	.37**
VQ Obstruction	-.41**	-.58**	-.51**
RCADS Total	-.44**	-.55**	-.54**
RCADS Depression	-.49**	-.50**	-.54**
RCADS Anxiety	-.37**	-.54**	-.45**
SWEMWBS	.57**	.49**	.44**
WHO-5	.49**	.47**	.36**
PSS-10	-.41**	-.55**	-.46**
SDQ Total Difficulties	-.47**	-.45**	-.56**
SDQ Emotional	-.43**	-.56**	-.37**
SDQ Hyperactivity	-.40**	-.29**	-.60**
SDQ Conduct	-.20**	.04	-.35**
SDQ Peer Difficulties	-.19**	-.24**	-.17**
SDQ Prosocial	.30**	-.05	.13*

Note. VA = Valued Action, OE = Openness to experience, BA = Behavioural Awareness. * p<.05, ** p<.001

4. Discussion

The present study aimed to validate the CompACT-Y, a youth version of an adult psychological flexibility measure (CompACT; Francis et al., 2016). This was achieved by administering the CompACT-Y alongside other established measures of psychological flexibility, mental health, well-being and behaviour. The CompACT-Y was evaluated to determine its factor structure, validity and reliability.

The EFA process resulted in a 19-item measure of psychological flexibility, with items based on acceptance, cognitive defusion, mindfulness, values and committed action. In support of hypothesis (1), a three-factor structure was most stable, consistent with both psychological flexibility theory and the adult CompACT. Similarly, hypothesis (2) was confirmed as the CompACT-Y total score significantly correlated as predicted with convergent measures of the CAMM, AFQ-Y8 and VQ. Finally, hypotheses (3) and (4) were also confirmed, as the CompACT-Y was significantly correlated as predicted with the measures used to assess concurrent validity.

Contrary to hypothesis (5), a significant weak correlation was found between the CompACT-Y and the CDS-S, a measure of social desirability (SD) in CYP. Regression analysis indicated that CDS-S scores accounted for 12.1% of the variance in CompACT-Y scores, slightly above the minimum recommended in social science (Ozili, 2023), but below the suggested threshold of 20% for an acceptable regression model (Hamilton et al., 2015). Additionally, the internal reliability of the CDS-S in this study fell below the acceptable alpha value (.70, Nunnally & Bernstein, 1994), casting doubt on whether the items captured a unitary construct. Indeed, the validity of SD measures has been questioned in previous research. Holtrop et al. (2021) found SD measures had poor validity in measuring dishonesty, while a meta-analysis by Lanz et al. (2022) concluded SD measures do not correlate as expected with prosocial behaviour scales and do not measure response bias. Therefore, caution should be exercised in interpreting the weak correlation between the CompACT-Y and CDS-S, which does not necessarily imply concerns about the CompACT-Y's validity. It would be beneficial

for future research to revisit the question of SD and its overlap with CompACT-Y responses, considering a range of SD measures.

At the subscale level, all three CompACT-Y subscales (VA, OE and BA) had appropriate internal consistency (α >.70) which indicates the items in each subscale reliably measure the intended psychological flexibility processes. The CompACT-Y subscales mostly converged with other ACT processes measures as predicted; the VA subscale had the strongest correlation with the VQ progress subscale, a similar measure of acting in line with one's values, and the OE subscale had the strongest negative correlation with the AFQ-Y8. This is consistent with psychological flexibility theory, as the OE subscale measures acceptance and cognitive defusion, whilst the AFQ-Y8 is a measure of experiential avoidance and cognitive fusion. Although the BA subscale of the CompACT-Y did not have the highest correlation with the CAMM, a similar mindfulness measure, they were still moderately correlated.

Unexpectedly, the CompACT-Y VA subscale had the lowest correlation with the VQ obstruction subscale. In the original validation paper, Smout et al. (2014) found that the VQ obstruction subscale correlated less with another measure of valued living compared to the progress subscale, as was found in the present study. Furthermore, the VQ obstruction subscale exhibited stronger correlations with the AAQ-II and a mindfulness measure in the validation paper. Similarly, the CompACT-Y OE and BA subscale showed stronger correlations with the VQ obstruction subscale compared to the CompACT-Y VA subscale. Other research suggests psychological flexibility and inflexibility are not necessarily opposites (Rogge et al., 2019), and measuring valued-action may differ from measuring valued-*inaction*. Therefore, the weaker correlation between the VA subscale and the VQ obstruction subscale is understandable.

In terms of concurrent validity, as expected, all three subscales of the CompACT-Y were negatively correlated with measures of depression and anxiety (RCADS) and stress (PSS-10), and positively correlated with measures of well-being (SWEMWBS, WHO-5). These findings are

consistent with other research (Tyndall et al., 2020) which suggests that higher psychological flexibility leads to lower symptoms of mental health difficulties and better well-being.

Although the final CompACT-Y items are comprehensive in the sense that they cover the three overarching ACT processes (openness to experience, behavioural awareness, and valued action), the final CompACT-Y does not contain items reflecting self-as-context, and only one item relates to cognitive defusion. The CompACT-Y is a youth adapted version of the adult CompACT (Francis et al., 2016) which also does not include items relating to self-as-context, due to difficulty in operationalising the concept. Francis et al. (2016) noted ACT relies on metaphors to support individuals understanding of self-as-context, which is difficult to translate into a psychometric measure. The omission of self-as-context items in the CompACT-Y reflects limited measurement of this component in adolescent ACT research (Godbee & Kangas, 2020; Moran et al., 2018).

Furthermore, the final CompACT-Y only retained one item out of two relating to cognitive defusion from the initial 23-item CompACT-Y, although it had the lowest factor loading compared to other retained items. During adaption of these items based on cognitive interviewing (Lewis, 2020), there was difficulty in understanding the original phrasing of 'caught up', and participants had some difficulty connecting this item to the underlying psychological flexibility construct (cognitive defusion). It is possible that these difficulties remained for participants in the present study which resulted in the item not loading as strongly.

Comparison to ACT Process Measures

The AFQ-Y8 is a unidimensional measure of psychological inflexibility, whilst the CompACT-Y is intended to be a measure of psychological flexibility with three subprocesses. The present study found a significant, negative correlation between the two; that is, as scores on the CompACT-Y increased, scores on the AFQ-Y8 decreased. To support the validity of the CompACT-Y as a measure of psychological flexibility, an EFA including all items of the CompACT-Y and AFQ-Y8 was performed. This suggested all but one of the items on the CompACT-Y loaded on to different factor compared to the items of the AFQ-Y8, and indicates the CompACT-Y items measure different constructs compared

to the AFQ-Y8. This finding suggests the CompACT-Y is a measure of psychological flexibility rather than inflexibility.

Although the VQ has not previously been validated in adolescents, alternative validated values measures for CYP are limited (Reilly et al., 2019). Despite this, moderate/strong correlations between the CompACT-Y VA subscale and VQ subscales was found, as predicted; positively with the VQ progress subscale (measuring action towards values), and negatively with the VQ obstruction subscale (measuring disruptions to living by values). These correlations suggest that the CompACT-Y VA subscale is a valid measure of values and committed action. It would therefore be beneficial for future research to further examine the CompACT-Y against measures of values and committed action that have been validated in CYP.

Implications

The present study provides a possible solution to some of the issues previously highlighted regarding research on ACT for CYP. As the CompACT-Y has subscales measuring VA, OE and BA which can be examined separately, it offers the ability to explore changes in psychological flexibility subprocesses that might result from ACT interventions. This will facilitate researchers to examine which ACT components are most predictive of changes in outcomes (Fledderus et al., 2012), which has so far been limited by the availability of a validated measures of psychological flexibility subprocesses. Additionally, the CompACT-Y is the first comprehensive measure of psychological flexibility processes in adolescents. Future research will be able to utilise the measure in ACT research, addressing issues of multiple measures being required and inconsistency across studies (Fang & Ding, 2020). This will enable data between studies to be pooled and support meta-analyses to be conducted to establish the evidence-base of ACT interventions for CYP.

Limited research exists regarding how psychological flexibility develops across adolescence and in different subgroups, such as gender. Cobos-Sánchez et al. (2022) found that cognitive fusion and experiential avoidance (i.e., psychological inflexibility) were higher at mid-adolescence compared to other stages, whilst acceptance decreased, due to changes in emotional intelligence

and regulation. However, longitudinal studies examining psychological flexibility across adolescence do not exist. Research regarding gender differences varies. Further validation of the CAMM found no gender differences in mindfulness in those aged between 12 and 15 years old (Kuby et al., 2015), whilst experiential avoidance may be higher in girls than boys (Greco et al., 2008b). Although further research is needed to evaluate the test re-test reliability of the CompACT-Y, the measure could have implications for evaluating the progression of psychological flexibility during adolescence and whether differences exist in subgroups such as gender.

A validated measure of psychological flexibility for CYP also has implications for clinical practice, as the different subprocesses of psychological flexibility may have different associations with clinical outcomes. For instance, acceptance and cognitive defusion skills have been found to predict better outcomes for CYP with anxiety, whilst anxiety disorders can negatively affect mindfulness (Swain et al., 2015b). The CompACT-Y, with its subscales measuring individual psychological flexibility processes, enables tailored ACT interventions for CYP that target specific subprocesses which are more likely to contribute to symptom improvement. Moreover, it identifies areas of limited psychological flexibility, guiding ACT treatment accordingly.

The CompACT-Y offers a valuable contribution to routine outcome measurement (ROM) in child and adolescent mental health services in the UK, aligning with the CYP-IAPT framework (Wolpert et al., 2015). Research suggests ROMs improve mental health outcomes by providing clinical information for treatment adaptation and feedback on intervention effectiveness, although the implementation of ROMs for ACT interventions in clinical practice is currently hindered by the need to administer multiple measures of psychological flexibility (Waldron et al., 2018). However, the CompACT-Y addresses this concern by providing a single measure for assessing psychological flexibility in an efficient way.

Strengths and Limitations

The limitations of this study that should be considered when interpreting its results. Firstly, the sample used in this study focused on young people aged 13 years and above due to recruitment

challenges, thus excluding participants below the age of 13. Additionally, the sample lacked diversity, predominantly comprising White-British and female individuals. Due to limited recruitment in those aged 11 to 15 years old, a sufficient sample was not obtained to analyse whether the CompACT-Y had a consistent factor structure across age groups. Therefore, the generalisability of the CompACT-Y validation is limited to these specific demographics. Future research is needed to examine whether the factor structure remains stable across age groups, particularly for those aged 11 to 12 years old, and for individuals from different ethnic backgrounds. Secondly, this study relied on self-report measures, which are susceptible to response bias and socially desirable responding (Camerini & Schulz, 2018). Thirdly, the inclusion of both positively and negatively worded items in the CompACT-Y could lead to response confusion, potentially impacting the factor structure and reliability of the instrument (Chyung et al., 2018; Kam, 2023); however, this was weighed against the benefit of including both positively and negatively worded items for limiting acquiescence bias (Mayerl & Giehl, 2018). Despite these limitations, the study identified a theoretically congruent factor structure for the CompACT-Y and confirmed all hypotheses.

The strengths of this study include the threshold used for factor loadings to be included (.45) which was stringent enough so items retained are considered more relevant to the final factor structure. Also, the sample size (N = 329) was greater than the minimum required (n = 230) to provide adequate statistical power for data analyses. Finally, an extensive range of conceptually similar and distinct measures were used to validate the CompACT-Y. As the main aim of ACT is not solely the reduction of mental health symptoms (Harris, 2006), other constructs such as well-being, valued living and quality of life are important (Ong et al., 2020). There are also recommendations for ACT research to distinguish process from symptom measures and to compare process measures against behavioural outcomes (Arch et al., 2022). The SDQ, which assesses various behavioural difficulties including peer problems, conduct, and prosocial behaviour, enabled these recommendations to be met.

Content validity ensures that a measure accurately reflects the construct of interest (Mokkink et al., 2010). It is considered vital for psychometric measurement so items are relevant, comprehensive and comprehensible to the intended construct and target population of interest (Prinsen et al., 2018). To meet these criteria, the CompACT-Y underwent cognitive interviewing with CYP aged between 11 and 18-years-old to ensure the language of the items was comprehensible, followed by consultation with ACT experts to assess relevance and comprehensiveness (Lewis, 2020). This process is in contrast with the AFQ-Y and CAMM that adapted items from other measures and lacked sufficient assessment of comprehension in CYP, potentially resulting in poor relevance and thoroughness of items. As such, this contributed to robust construct validity of the CompACT-Y. This study also addressed the essential areas of structural validity and internal consistency, as recommended for outcome measurement development (Prinsen et al., 2018).

Conclusion

In summary, the present study aimed to validate the CompACT-Y, a measure of psychological flexibility for adolescents. The 19-item CompACT-Y demonstrated a stable three-factor structure consistent with psychological flexibility and ACT theory. The CompACT-Y converged with other psychological flexibility measures as expected and demonstrated concurrent validity with mental health, well-being, and behaviour measures consistent with psychological flexibility theory. The factor structure, validity and reliability of the CompACT-Y suggests it shows potential as a robust measure of psychological flexibility in adolescents, providing a consistent outcome measure across adolescent ACT research. The CompACT-Y addresses current issues in research and clinical practice by allowing measurement of different psychological flexibility subprocesses within one measure, reducing patient burden, targeting specific subprocesses in treatment, and facilitating research into associations between specific subprocesses and clinical outcomes. Further research is needed to confirm the factor structure and validity of the CompACT-Y, particularly in diverse adolescent populations aged 11-13.

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Appendix A: Journal of Contextual Behavioural Science Publishing Guidelines

JOURNAL OF CONTEXTUAL BEHAVIORAL SCIENCE

AUTHOR INFORMATION PACK

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DESCRIPTION

The *Journal of Contextual Behavioral Science* is the official journal of the Association for Contextual Behavioral Science (ACBS).

Contextual Behavioral Science is a **systematic and pragmatic approach** to the understanding of behavior, the solution of human problems, and the promotion of human growth and development. Contextual Behavioral Science uses **functional principles and theories** to analyze and modify action embedded in its historical and situational context. The goal is to **predict and influence behavior**, with precision, scope, and depth, across all behavioral domains and all levels of analysis, so as to help create a behavioral science that is more adequate to the challenge of the human condition.

Contextual behavioral science is a strategic approach to the analysis of human behavior that proposes the need for a **multi-level** (e.g. social factors, neurological factors, behavioral factors) and **multimethod** (e.g., time series analyses, cross-sectional, experimental) exploration of **contextual and manipulable** variables relevant to the prediction and influence of human behavior.

The journal considers papers relevant to a contextual behavioral approach including: Empirical studies (without topical restriction - e.g., clinical psychology, psychopathology, education,

organizational psychology, etc.)Brief reports on preliminary, but still impactful findings (e.g., pilot studies, cross-sectional research on psychological flexibility processes) Reviews (e.g., scoping reviews, systematic reviews, meta-analyses)Conceptual and philosophical papers on contextual behavioral sciencePractical innovations (descriptions of practical innovation applying contextual behavioral science)CommentariesRegistered reports

We are particularly interested in: Papers that examine theories and interventions based in CBS (e.g., process-based therapy, acceptance & commitment therapy, relational frame theory, functional analytic psychotherapy, compassion-focused therapy, etc...) to novel research areas with rigorous methodologies. We currently are especially interested in increasing the number of published articles on basic CBS research and translational research. Papers **bridging different approaches** (e.g., connecting behavioral approaches with cognitive views; or neurocognitive psychology; or evolutionary science)Papers that **challenge** a contextual behavioral science approach from an informed perspective. Papers that are written from the perspective of and/or report data collected from diverse, underrepresented, and minoritized individuals.

The journal welcomes papers written by researchers, practitioners, and theoreticians from different intellectual traditions. What is distinctive is not a narrowly defined theory or set of applied methods but whether the methodology, conceptualization, or strategy employed is relevant to a contextual behavioral approach.

JCBS has been receiving an increasing number of submissions that compete for limited space for publication. A notable portion of submissions to JCBS are cross-sectional survey studies on psychological flexibility-related processes (e.g., validating these measures, testing their relation to mental health and related outcomes). In order to balance research on these topics with other important methodologies and research areas of CBS, we are unfortunately only able to accept especially innovative and rigorous research using cross-sectional survey designs, and typically only when submitted as a brief report.

Special Issues

The Journal welcomes suggestions for Special Issues. Proposals for a themed Special Issue should be sent to the Editor-in-Chief, Michael Levin at mike.levin@usu.edu, and should include suggested Executive, Advisory or Guest Editors, a proposed call-for-papers, 6-10 provisional authors and topics (specific titles or general areas), a proposed timeline for submission, peer-reviewing, revision and publication. All manuscripts in a special issue will be subject to the normal process of peer-review.

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Acceptance and Commitment Therapy, Persistent Health Conditions, Oncology, Palliative

Care, Professional Wellbeing, Training and Supervision, Measurement

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Implicit cognition, (Tobacco) Addiction, Impulsivity, Health communication, CBS, RFT, ACT, Open science

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GUIDE FOR AUTHORS

Types of article

All manuscripts must clearly and explicitly be of relevance to CBS. You may find the JCBS article "Report of the ACBS Task Force on the strategies and tactics of contextual behavioral science research" helpful in assessing whether your manuscript is likely to be of interest to readers of this journal.

Articles should fall into one of six categories: 1. Empirical research (up to 6000 words)

2. Brief empirical reports (up to 3000 words)
3. Review articles (up to 10,000 words)
4. Conceptual articles (up to 6000 words)
5. Practical innovations (up to 6000 words)
6. Commentaries (up to 3000 words)
7. Registered reports (see instructions below)

Word limits exclude references, tables and figures but include the abstract

1. Empirical research. JCBS welcomes manuscripts across a breadth of domains from basic behavioral science to clinical trials. Potential methodologies include but are not limited to randomized controlled trials, single case experimental designs, cross-sectional and prospective cohort studies, mixed methods designs, and laboratory-based studies. For randomized clinical trials, JCBS requires that submissions follow CONSORT guidelines (http://www.consort-statement.org). Papers reporting null findings are also welcome if their methodology is sound and their power sufficient.

2. Brief empirical reports. Manuscripts may report preliminary, provocative or replicated results. Empirically sound methodology and adequate power remain important considerations.

3. Review articles. Manuscripts reviewing a wide range of topics are encouraged as long as their content is directly relevant to CBS. Systematic reviews and meta-analyses are particularly welcome. For meta-analyses and systematic reviews, JCBS requires submissions follow PRISMA guidelines (http://www.prisma-statement.org/).

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5. Practical innovations. Manuscripts in this section share innovative and practically useful descriptions of applications of CBS to a given problem area based on real world implementation, with preliminary data supporting the You may find the JCBS article directly (preferred) or indirectly through relevant conceptual and empirical references. Submissions are evaluated based on the degree to which they 1) provide information that is directly useful to applied work, 2) provide innovative information (e.g., a novel protocol, population, issue), 3) are based on real world implementation/practice, and 4) are based on preliminary data reported in the manuscript, or a strong link to existing conceptual/ empirical literature. Submissions that report empirical data should still

primarily emphasize detailed descriptions of the intervention/training protocol and/or of the applied relevance of the findings (e.g., clarifying and problem solving how to address an applied challenge identified in the study).

6. Commentaries. We will consider commentaries on other manuscripts that have been recently published in JCBS. Commentaries will be subjected to peer-review and will be held to the same standards of providing a notable contribution to our field to warrant publication. Authors will typically be informed when a commentary has been submitted on a manuscript they have published and will be given the opportunity to respond in print if the commentary is published. We encourage authors to contact the editor-in-chief prior to preparing a commentary to determine potential suitability for JCBS.

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Appendix B: Summary of mental health and wellbeing outcomes of studies

Author and condition	Variable	Measure	P	Effect Sizes
Chen et al. (2022)	Well-being	SWEMWBS-7	.003	*r* = .40
Intervention only	Depression	DASS-21	<.001	*r* = .50
	Anxiety	DASS-21	.002	*r* = .40
	Stress	DASS-21	<.001	*r* = .50
Keinonen et al. (2021)	Depression	DEPS	High <.001**	ES not reported
High vs stable vs low EA			Stable NS	
			Low <.001**	
Kraft et al. (2019a)	Depression	DASS-21	NS	
Simple app vs complex app	Anxiety	DASS-21	NS	
vs WL	Stress	DASS-21	NS	
	Well-being	MHC-SF	NS	
Kraft et al. (2019b)	Depression	DASS-21	.07	
Simple app vs complex app	Anxiety	DASS-21	.04**	WG (Complex) *d* = 1.26
vs WL				
	Stress	DASS-21	.07	
	Well-being	MHC-SF	NS	
Lappalainen et al. (2021)	Depression	DEPS	NS (ITT)	
iACTface vs I iACT vs control				
			.02**	BG iACTface vs control *d* = .20
			(Per-protocol)	BG iACT vs control *d* = .20*
				WG pre-post iACTface *d = .15*
				WG pre-post iACT *d = .16***

	Life Satisfaction	Satisfaction with Life Scale	NS (ITT)	
			.03** (Per-protocol)	BG iACTface vs control NS BG iACT vs control *d* = .25 WG pre-post iACTface *d = .19* WG pre-post iACT *d = .30*
Lappalainen et al. (2023) *iACT student+virtual coach vs iACT virtual only vs WL*	Depression	DEPS	NS (ITT) NS (Per-protocol)	
	Anxiety	STAI	NS (ITT) .04* (Per-protocol)	BG iACT (combined) vs control *d* = .30 WG iACT (combined) vs control *d* = .05
Levin (2013) *iACT vs Active control*	Depression	DASS	NS (BG ITT) NS (BG subgroup)	
	Anxiety	DASS	.03(BG ITT)* NS (BG subgroup)	BG pre-3 month f/u *d* = .26
	Stress	DASS	.006 (BG ITT)* NS (BG Subgroup)	BG pre-3 month f/u *d* = .31
	Well-being	MHC-SF	.006 (BG ITT)* NS (BG Subgroup)	BG pre-post *d* = .31 Pre-1 month f/u *d* = .28
Levin et al. (2014) *iACT vs WL*	Depression	DASS	NS (BG ITT) .018* (BG subgroup) .004**	BG *d* = .91 WG pre-f/u .97
	Anxiety	DASS	NS (ITT) .033* (BG subgroup)	BG *d* = .81

			.003**	WG pre-f/u .97
	Stress	DASS	NS (ITT)	
			NS (BG subgroup)	
			<.001**	WG pre-f/u .81
Levin et al. (2016)	Depression	DASS	NS	
iACT vs education website	Anxiety	DASS	NS	
	Stress	DASS	NS	
	Well-being	MHC-SF	NS	
Levin et al. (2017)	Distress	CCAPS-34	.013*	BG *d* = .66
iACT vs WL			.005**	WG *d* = .52
	Social Anxiety	CCAPS-34	.004*	BG *d* = .78
			<.001**	WG *d* = .69
	General Anxiety	CCAPS-34	NS (BG)	
			.031**	WG *d* = .39
	Depression	CCAPS-34	NS (BG)	
			.024**	WG *d* = .40
	Well-being	MHC-SF	.027*	BG *d* = .58
			<.001*	WG *d* = .60
Räsänen et al. (2016)	Depression	DASS-21	.07 (BG)	
iACT vs WL			<.001 **	WG pre-post *d* = 1.10
				WG pre-f/u *d* =.64
	Anxiety	DASS-21	.415 (BG)	
			.009 **	WG pre-post *d* =.42
				WG pre-f/u *d* =.60
	Stress	DASS-21	.416 (BG)	
			.004 **	WG pre-post *d* =.56
				WG pre-f/u *d* =.54
	Depression	BDI-II	.003 *	BG pre-post *d* = .69

			<.001**	WG pre-post *d* = 1.12 WG pre-f/u *d* =.87
	Stress	PSS-10	.028* <.001**	BG pre-post *d* = .54 WG pre-post *d* = .76 WG pre-f/u *d* =.69
	Life satisfaction	VRS	<.001* <.001**	BG pre-post *d* = .65 WG pre-post *d* = .82 WG pre-f/u *d* =.63
	Self-esteem	VRS	<.001* <.001**	BG pre-post *d* = .63 WG pre-post *d* = .72 WG pre-f/u *d* = .66
	Well-being	MHC-SF	.006* <.001 **	BG *d* =.46 WG pre-post *d* = .61 WG pre-f/u *d* = .65
Räsänen et al. (2020) *iACT vs WL*	Depression	BDI-II	.003*	BG *d* =.69
	Stress	PSS-10	.028*	BG *d* = .54
	Well-being	MHC-SF	.008*	BG *d* = .46

Appendix C: Summary of ACT process measures outcomes for studies

Author and condition	Variable	Measure	P	Effect Sizes
Chen et al. (2022) *Intervention only*	Psychological Inflexibility	AAQ-II	.002	*r* = .40
	Mindfulness	MAAS	.003	*r* = .40
Keinonen et al. (2021) *High vs stable vs low EA*	Experiential Avoidance and Fusion	AFQY-8	High <.001** Stable NS Low NS	ES not reported
Kraft et al. (2019a) *Simple vs complex vs WL*	Valued Action	VQ	NS	
Kraft et al. (2019b) *Simple vs app vs*	Valued Action	VQ	.03* (Progress subscale; Complex and WL) .04** (WG; WL) NS (WG; Intervention groups)	ES not reported *d* = .49
Lappalainen et al. (2021) *iACTface vs iACT vs control*	Experiential Avoidance and Fusion	AFQY-8	NS (ITT) NS (Per-protocol)	
Lappalainen et al. (2023) *iACT student+virtual coach vs iACT virtual only vs WL*	Psychological Flexibility	CompACT (Total) VA, OE, BA Subscales CompACT (Total) OE and BA Subscales VA Subscale	NS (BG ITT) NS (BG ITT) NS (Per-protocol) NS (Per-protocol) .02* (Per-protocol)	 WG iACT (combined) *d* = .08
	Self-Compassion	SCS-SF	NS (ITT) .03* (Per-protocol)	 WG iACT (combined) *d* = .12

Author and condition	Variable	Measure	P	Effect Sizes
Levin (2013)	Experiential Avoidance and	AFQY-8	NS (BG ITT)	
iACT vs Active control	Fusion		<.001** (WG ITT)	pre-3 month f/u (iACT) *d* = .39
				pre-3 month f/u (control) *d* =.59
			NS (BG subgroup)	
			<.001** (WG subgroup)	pre-3 month f/u (iACT) *d* =.55
				pre-3 month f/u (control) *d* =.58
	Values	PVQ: Relationship subscale	NS (BG ITT)	
			NS (BG or WG Subgroup)	
		PVQ: Education subscale	NS (WG subgroup)	
			NS (BG subgroup)	Pre-1 month f/u (iACT) *d* = -.29
			.039** (Subgroup)	
	Mindfulness	FFMQ: Acting with awareness	NS (BG or WG subgroup)	
			NS (BG subgroup)	
		FFMQ: Non-reactivity	.006** (WG Subgroup)	Pre-post (iACT) *d* = .37
			.001** (WG Subgroup)	pre-1 month f/u (iACT) *d* = .46
			.008** (WG Subgroup)	pre-3 month f/u (iACT) *d* = .37
Levin et al. (2014)	Psychological Inflexibility	AAQ-II	NS (BG ITT or subgroup)	
iACT vs WL			NS (WG)	
	Values	PVQ: Relationship (Success)	NS (BG)	
			043**	Pre-f/u (iACT) *d* = .78
		PVQ: Relationship (Motivation)	NS (BG or WG)	
		PVQ: Education (Success)	.024*	pre-post (iACT) *d* = .54
			.033**	pre- f/u *d* = .92
		PVQ: Education (Motivation)	.035*	pre-post (iACT) *d* = .51
			NS	

Author and condition	Variable	Measure	P	Effect Sizes
Levin et al. (2016) *iACT vs education website*	Experiential Avoidance and Fusion	AFQY-8	NS (BG or WG ITT)	
	Values	PVQ: Relationship PVQ: Education	NS (BG or WG ITT) NS (BG or WG ITT)	
	Mindfulness	FFMQ	NS (BG or WG ITT)	
Levin et al. (2017) *iACT vs WL*	Psychological Inflexibility	AAQ-II	NS (BG or WG)	
	Cognitive Fusion	CFQ	NS (BG or WG)	
	Values	VQ: Progress VQ: Obstruction	NS (BG) .012* <.001**	 BG *d* = .65 WG pre-post (iACT) *d* = .82
	Mindfulness	PHLMS: Acceptance	.038* <.001**	BG *d* = .53 WG pre-post (iACT) *d* = .62
		PHLMS: Awareness	NS (BG or WG)	
Räsänen et al. (2016) *iACT vs WL*	Psychological Inflexibility	AAQ-II	NS (BG) .0004**	 WG pre-post (iACT) *d* = .51 WG pre-post (control) *d* = .40 WG pre-f/u (iACT) *d* = .63
	Mindfulness	FFMQ	.0075* .0008**	BG *d* = .49 WG pre-post (iACT) *d* = .62 WG pre-f/u (iACT) *d* = .62
	Sense of coherence	OLQ-13	.005* .0003**	BG *d* = .53 WG pre-post (iACT) *d* = .52

Author and condition	Variable	Measure	P	Effect Sizes
Räsänen et al. (2020) *iACT vs WL*	Psychological Inflexibility	AAQ-II	NS (BG or WG)	
	Mindfulness	FFMQ: Observing	.00418*	BG *d* = .27
		FFMQ: Describing	.057*	BG *d* = .23
		FFMQ: Acting with awareness	NS	
		FFMQ: Non-judging	NS	
		FFMQ: Non-reactivity	.027*	BG *d* = .58
	Automatic Negative Thoughts - Cognitive defusion)	ATQ	NS	
	Sense of Coherence	SOC-13: Meaningfulness	.012*	BG *d* = .43

Appendix D: Gatekeeper Letter

Dear [SCHOOL CONTACT],

I am a Doctoral student on the South Wales Doctoral Programme in Clinical Psychology and am undertaking research to develop a new psychological measure for adolescents. I would be very grateful if we could involve students from your school in this project. Further details about the project are outlined below:

Project Title: Validating a new measure of psychological flexibility in young people: CompACT-Y

Supervisor: Dr Victoria Samuel (Senior Research Tutor, South Wales Doctoral Programme in Clinical Psychology, Cardiff University)

Project Background:
Psychological flexibility refers to a set of psychological skills which contribute to positive wellbeing and functioning (Kasdan & Rottenberg, 2010; Tyndall et al., 2020). These skills are the focus of a therapeutic approach called 'Acceptance and Commitment Therapy' (ACT), which is increasingly being used as an effective approach to support young people with their mental health.

Currently, a questionnaire does not exist to reliably measure psychological flexibility processes for young people. This makes it difficult to capture whether ACT interventions are working according to predicted theory. As psychological flexibility is so strongly associated with emotional resilience, it is also important to develop a measure than can be used to assess this skill set in young people.

Project Aims:
The project aims to validate a new measure of psychological flexibility: the CompACT-Y. The items for this measure were developed in a previous study. We are now looking to validate the measure by assessing how scores on the CompACT-Y relate to other established measures of well-being, mental-health, quality of life and sub-processes of psychological flexibility. Many of these other questionnaires are commonly used with young people in a range of mental health and school settings, both in therapeutic and research settings.

What would be involved:
We are recruiting young people to complete a range of questionnaires online to gather the data needed to validate the CompACT-Y. A total of 10 different questionnaires would be completed by each young person.

Schools participating in the project will need to distribute an information sheet about the study to all parents using their preferred distribution method (e.g., school platforms/email etc). This gives parents the opportunity to opt-out of the study if they do not wish their child to take part.

We would ask you to generate a unique number code for each student to use to keep their data anonymous. We would then need you to share the link to the online survey with the students, who would be asked to consent to take part and be informed that their participation is optional.

Benefits:
Although there are no direct benefits, schools involved will be contributing to furthering

understanding of key processes associated with wellbeing for young people. Being involved would also be an opportunity for students to take part in real-world psychological research and learn about research and scientific processes, which may help for future learning in higher education.

Participating students would also be offered the choice of entering a prize draw to win gift vouchers up to the value of £45.

In recognition of the support from schools involved in this project, I can also offer a talk to students such as discussing a career in clinical psychology, or an introductory ACT seminar for school staff.

Next Steps:
If your school agrees to take part, we will provide you with a detailed information sheet outlining the study protocol, including how we will ensure the confidentiality and security of the data and safeguarding of the students. If you have further questions before deciding, we can also arrange a time to meet.

Thank you for taking the time to read this letter in your busy schedule. If you would like to hear more about this project you can contact me at moreya@cardiff.ac.uk.

You can also register your interest at the following link:
https://cardiffunipsych.eu.qualtrics.com/jfe/form/SV_1z8fPMNHNpGLTee

Yours Sincerely,

Mr Alex Morey Dr Victoria Samuel

Trainee Clinical Psychologist Clinical Psychologist / Senior Research Tutor

Doctoral Programme in Clinical Psychology, Cardiff University
11th Floor, Tower Building, 70 Park Place, Cardiff CF10 3AT

Appendix E: Study Procedures

Validating a new measure of psychological flexibility in young people: CompACT-Y
Study Protocol Information for Schools

Thank you for considering being involved in this research project. This document outlines procedures in place regarding consent, data protection, safeguarding and confidentiality.

Consent Procedures

The study uses a 'Parental Opt Out, Student Opt In' procedure. If a parent does not want their child to take part in the research, they can contact the school and 'opt out' their child. All students whose parents have not opted out, and wish to take part in the research, will have to give their consent to be involved before completing the questionnaires.

Parental Opt Out

- The parents/carers of all school students will be contacted by your schools preferred communication systems about the research project.
- A study description and information sheet will explain that the research is taking place, the nature of the research and consent processes. Parents/carers will be informed what information their child will have received and will be informed of the Student Opt-in process.
- Every parent/carer will be given the opportunity to discuss the research project with the research team, if they would like.
- Parents/carers will have 2 weeks from the information being sent to contact the school if they do not want their child to take part.

Student Opt In

- Students who choose to participate in the research study, and for whom there has not been parental opt-out, will be provided with a detailed information sheet which describes the aim of the study, what will be involved, how data will be used and that participation is voluntary. An easy-read format and a Key Summary about the project will also be provided.
- If students consent to take part, they will need to confirm they have read the 'Information Sheet' and confirm consent by checking a designated box.
- To commence the surveys, students will need to enter the unique identifying number given by their school. This could include existing student IDs or a randomly generated number.
- Students will be provided with the researcher's contact details, so they can ask any questions at any time during the process.

Confidentiality

All data collected from students will be confidential. Students will not enter their name into the survey platform, but will use a unique identifying number given to them by a nominated school staff member.

Nominated staff members will need to keep a record of unique identifying numbers for each students taking part in the project and only these staff members will have access to the unique identifying number associated with each student. The research team will not know which number is

associated with each student to keep data anonymous. Only the research team will have access to the questionnaire data.

Data Protection
Questionnaire data will be held confidentially using password protected databases and only members of the research team will be able to access this. The database will not include any identifiable information connecting the data to an individual. The database will be stored for 5 years in line with Cardiff University's guidance on storing research related data.

The data collected will be included in a research report submitted to the South Wales Doctoral Programme in Clinical Psychology. In the future, the research findings may also be published in academic journals, presented at conferences and used in teaching and training.

Safeguarding
Before administration, students will be reminded participation is completely optional and they can withdraw at any time. Participants will also have the option to skip any questions they do not wish to answer, although some questions will require a response as part of the safeguarding procedure, such as the unique identifying number and school name.

If a questionnaire score suggests there are concerns around a student's mental health or wellbeing, this will be raised with school staff involved and/or pastoral lead for your school by providing the unique identifying number associated with the score. However, questionnaire data will not be shared. Your school can then follow normal procedures to ensuring the well-being of the identified pupil.

Researcher Contact Details
Alex Morey
Trainee Clinical Psychologist
moreya@Cardiff.ac.uk
02920 870 582

Appendix F: Letter to parents

Dear Parent / Carer / Guardian,

I am writing to make you aware of a research project based at Cardiff University, which will involve recruiting students at **[NAME OF SCHOOL].**

What is the Aim of the Study?

The aim of this research study is to develop a new wellbeing questionnaire for adolescents measuring a concept called 'psychological flexibility'.

What is The Study About?

'Psychological flexibility' is a set of skills which help young people to do what is important to them, guided by personal values - even when they have difficult thoughts and feelings. Higher levels of psychological flexibility are associated with increased resilience and better well-being.

In earlier stages of our research, we developed a new questionnaire measuring psychological flexibility for young people. In this current stage, we need to check that the questionnaire measures what it should measure, by assessing how it relates to scores on other similar measures.

Once our study is complete, researchers, teachers and health professionals will be able to use the questionnaire to get an overview of a young person's coping skills and to monitor change after interventions.

What Would the Study Involve for My Child if They Took Part?

We will be inviting all students from [Years 7 to 11/13] to participate in the research study. Each student will be asked individually whether they wish to participate. If a student agrees to participate in the study, they will be asked to complete a number of questionnaires online. These questionnaires will ask about: wellbeing; personal values; coping skills for thoughts and feelings; stress; mood (positive and negative) and behaviours.

Aside from the new questionnaire that we hope to develop, all the other questionnaires have been validated for young people and are routinely used in schools, research and NHS services.

Can I Find out More?

I have enclosed the information sheet that we will be providing to each student, in order to help them make an informed choice about taking part. The information sheet outlines how the responses a student provides will be used and stored. Please read this and do not hesitate to contact us if you have any questions. You can contact the research team by emailing moreya@Cardiff.ac.uk

Can I Choose if My Child Takes Part?

Your child's participation in this research project is completely voluntary. If after reading the information sheet you decide you would prefer that your child did not complete the questionnaires,

please could you let the research team know by completing the attached slip by [dd/mm/202X] and returning it to _____, so we can ensure your child is not included.

Yours sincerely,

Alex Morey

Trainee Clinical Psychologist

South Wales Doctoral Programme in Clinical Psychology.

Supervised by:

Dr Victoria Samuel

Senior Research Tutor

South Wales DClinPsy

I would prefer that my child _____, Year_____,

does not participate in the research project, '*The Development and Validation of the Comprehensive Assessment of Acceptance and Commitment Therapy – Youth (CompACT-Y) in an Adolescent Population'.* I understand that by completing this form, my child **will not** be able to complete the questionnaires.

Signed: _____ Name: _____

Date:

Appendix G: Participant information sheet

The following information outlines why we are doing this study and what it involves for you.

What is the research about?
Young people can sometimes find it difficult to cope with difficult thoughts and feelings and the pressures they face appear to be increasing. Acceptance and Commitment Therapy (ACT) is a theory that explains how the way we respond to thoughts and feelings affects the impact they have. ACT helps people to learn various skills to become freer to do what matters even if difficult thoughts and feelings are there – this is called Psychological Flexibility. Therapists across the UK and internationally are using ACT more and more to help young people manage difficult challenges.

Why are you doing the research project?
Researchers and therapists use questionnaires (surveys) to gain an overview and understanding of how people cope with difficult thoughts and feelings and to track change over time. At the moment there is a questionnaire of Psychological Flexibility for adults, but not for young people.

This research project hopes to develop a new questionnaire of Psychological Flexibility just for young people. We will be conducting this research project as the final stage of a bigger research project. In this stage, we will be comparing the new questionnaire with existing questionnaires that measure similar things.

What will I be doing if I decide to take part?
We will be asking students in schools to complete the new questionnaire and some other questionnaires to check that the new questionnaire of Psychological Flexibility is valid. This will involve you answering a number of questionnaires online. The questions will be about your well-being, mood and behaviours and how you tend to respond to any difficult thoughts and feelings.

Who are the researchers?
The research team consists of:

- Alex Morey, Trainee Clinical Psychologist – South Wales Doctoral Programme in Clinical Psychology at Cardiff University

Under the supervision of:

- Dr Victoria Samuel, Senior Research Tutor/Clinical Psychologist, South Wales Doctoral Programme in Clinical Psychology

Why have I been invited to take part?
You have been invited to take part as you are in aged between 11-18 years of age and are attending a secondary school on a full-time basis.

Do I get anything for taking part?
Every student who agrees to take part and completes all questionnaires will be offered the choice of entering a prize draw to win one of the following prizes:

1 x £45 Gift Voucher;1 x £25 gift Voucher; 1 x £20 Gift Voucher;1 x £10 Gift Voucher

The winner will be selected at random by a computer programme. The research team will contact the winner's school to alert each of the winners once data collection has finished. Aside from this, the other benefit is that you will directly be playing a crucial part in developing a future questionnaire that will be used with children and young people in the United Kingdom and potentially in other countries.

Do I have to take part?
No, it is completely up to you whether you want to take part or not. Read this sheet and if you have any questions please email or ask a teacher or parent to email Alex Morey (email at the end). Every student will have the option to complete the questionnaires, and having completed the questionnaires choose whether they want to be entered in to the prize draw.

What if I change my mind?
This is not a problem, you can stop taking part in the research project at any point. If you decide to stop, you can do so immediately (no notice is required) and you will not be asked to give a reason.

As all of the data is anonymised, if you have completed the questionnaires then this data will be used for the research (but will not be identifiable as your information).
With respect to your unique identifying number, this is held by the school and will be retained by them as this remains their/your unique identifier within school.

How will my information be used?
We will ask the school to give each student who participates a unique identifying number, which you will be asked to enter before you complete the questionnaires.
The research team will **not** know which number is associated with each student to keep data anonymous. This means that when the research team looks at the questionnaire data, we will not know which student has answered it. Your school will keep a record of which unique identifying number is associated with each student.

Only nominated school staff will have access to the number. Only the research team will have access to the questionnaire data.

If the research team notice that certain questionnaire responses suggest that you may need some additional support with your feelings, then the research team will contact the pre-identified staff within your school (e.g. Head of Pastoral Care) and give them your unique identifying number so they can follow their usual procedures and meet with you to check how you have been and whether you need further support. The staff will not know how you have answered the questionnaires.

The research project is being completed as part of a Doctoral of Clinical Psychology. The findings will be included in a research report, which may also be published in academic journals. In the future, the findings of the research may also be presented at conferences and used in teaching and training. It will not be possible to identify which students took part or to link any individual with their

questionnaire responses.

How will my information be stored (GDPR Specific)?
Cardiff University is the Sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the Data Controller for this study. This means that we are responsible for looking after your information and using it properly. Cardiff University will keep identifiable information about you for 5 years after the study has finished. The legal basis we will rely upon to collect and store your information is called 'public task'.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained.

To safeguard your rights, we will use the minimum personally-identifiable information possible. You can find out more about how we use your information at: https://www.cardiff.ac.uk/public-information/policies-and-procedures/data-protection
The University's Data Protection Officer can be contacted at: inforequest@cardiff.ac.uk

For this research study, the research team will not store any information which could identify you. All information (questionnaire data) will be kept on electronic files/databases or locked filing cabinets at Cardiff University, which can only be accessed by the research team. All questionnaire information will be kept for 5 years and deleted after this period.

Are there any benefits or disadvantages to taking part?
The nature of this type of questionnaire means that we will be asking you about your yourself, your feelings and mood. It is possible this may be upsetting, and we would encourage you to talk to somebody if this is the case (a member of the research team, teacher, parent/carer).

We also hope that you will learn some things about yourself through this process and may potentially become interested in psychology, research or indeed both.

What can I do if I have concerns about the research project?
You can speak directly to a member of the research team, and they can be contacted using the information below. You can also tell a member of the school staff or your parent/carer if you have any worries about the research project, and they will then be able to let us know.

Alternatively, you can contact Professor Andrew Thompson (Director of the Doctoral Programme in Clinical Psychology): ThompsonA18@cardiff.ac.uk
Address: 11th Floor, School of Psychology, Tower Building, 70 Park Place, Cardiff, CF10 3AT.
Telephone: 02920 870582

Who has reviewed the research project?
The research project has been approved by Cardiff University School of Psychology Ethics Committee. They have reviewed the study to ensure we are running it in a way which protects your

rights and your safety.

If you have any questions relating to ethical issues and how this study is reviewed, please contact Cardiff University School of Psychology Ethics Committee: **Email**: psychethics@cardiff.ac.uk **Telephone**: 029 2087 0707

What If you have any questions?
You can contact us by telephone, email or post. Our contact details are:

Mr Alex Morey
Trainee Clinical Psychologist
School of Psychology
Cardiff University
57 Park Place
Cardiff
CF10 3AT
Email: MoreyA@cardiff.ac.uk

Dr Victoria Samuel
Senior Research Tutor/Clinical Psychologist
School of Psychology
Cardiff University
57 Park Place
Cardiff
CF10 3AT
Email: SamuelV3@cardiff.ac.uk

Thank you for considering being involved in this research project.

Appendix H: Years 7-11 easy read information sheet

The Development and Validation of the Comprehensive Assessment of Acceptance and commitment Therapy – Youth (CompACT-Y) in an Adolescent Population

What is a research study?

A research study is what we do when we want to find out new things. This sheet is to help you choose if you want to take part in this study.

Why is this research being done?

Young people at times find their thoughts and feelings upsetting or confusing. Acceptance and Commitment Therapy (ACT) is a theory that explains how we can cope differently with difficult thoughts and feelings to make them easier to manage. A lot of young people from across the world are already using ACT.

What will I be asked to do?

We have made a new questionnaire about ACT. To check that it is effective, we need your help.

We will ask you to answer a number of questionnaires online which ask questions about your thoughts, feelings and your behaviours.

Why me? Do I have to say yes?

You have been invited as you are in school and between 11-18 years old.

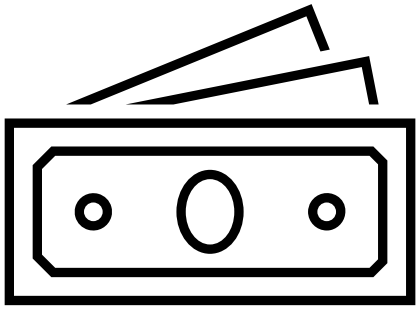
Can I change my mind?

Yes, at any time. It is up to you!! Just say you don't want to join in, and nobody will mind or ask you why.

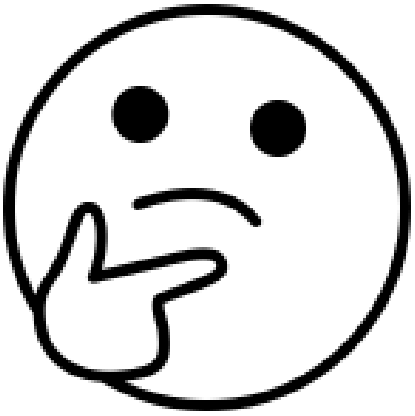
Do I get anything?

Each student who takes part in will be offered the choice of entering a prize draw to win one of the following prizes:

- a £45 Gift Voucher; or
- a £25 Gift Voucher; or
- a £20 Gift Voucher; or
- a £10 Gift Voucher;



The winner will be chosen randomly by computer. The research team will contact the winner's school to alert each of the winners, when the study has finished (May 2023).



What will you do with my answers?

There is a group of people, as well as your Head Teacher, who have checked everything we are doing to make sure what we are doing is ok. There are also lots of laws and rules about what we must do to keep everything you tell us safe.

We will be using your answers and other young people's answers to see if the new questionnaire is valid and can be used in schools, like yours, to 'check-in' on how a young person is doing.

Only the research team will have access to your questionnaire answers. Your school will not have access to this.

If some of the answers on your questionnaires suggest you need some extra support, we will let the agreed teacher in your school know. This is so they can check in with how you are feeling and if you need any extra help. They will not see the answers to your questionnaires.

Can I ask people about the study?

You can ask your parents (or carer) or your teachers. They have been sent lots of other information. You can also ask the research team, who are called Alex and Victoria. You can email us at MoreyA@Cardiff.ac.uk

Anything else?

Thank you very much for taking the time to read this sheet. If you want more information on anything then you can either ask or there is a longer sheet that you can read.

Appendix I: Years 12-13 easy read information sheet

The Development and Validation of the Comprehensive Assessment of Acceptance and commitment Therapy – Youth (CompACT-Y) in an Adolescent Population

What is a research study?

A research study is used find out or prove new things, ideas or concepts. This sheet is to help you choose if you wish to take part in this study.

Why is this research being done?

Young people at times find their thoughts and feelings upsetting or confusing. Acceptance and Commitment Therapy (ACT) is a theory that explains how we can cope differently with difficult thoughts and feelings to make them easier to manage. A lot of young people from across the world are already using ACT.

What will I be asked to do?

We have made a new questionnaire about ACT. To check that it is effective, we need your help.

We will ask you to answer a number of questionnaires, online, which have questions about your thoughts, feelings and your behaviours.

Why me? Do I have to say yes?

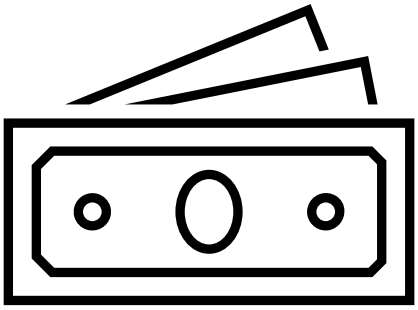
You have been invited as you are in school and between 11-18 years old.

Can I change my mind?

Yes, at any time. It is up to you!! Just say you don't want to join in, and nobody will mind or ask you why for your reasons.

Do I get anything?

Each student who takes part will be offered the choice of entering a prize draw to win one of the following prizes:



- a £45 Gift Voucher; or
- a £25 Gift Voucher; or
- a £20 Gift Voucher; or
- a £10 Gift Voucher;

The winner will be chosen randomly by computer. The research team will contact the winner's school to alert each of the winners, when the study has finished (May 2023).

What will you do with my answers?

There is a group of people, as well as your Head Teacher, who have checked everything we are doing to make sure what we are doing is ok. There are also lots of laws and rules about what we must do to keep everything you tell us safe.

We will be using your answers and other young people's answers to see if the new questionnaire is valid and can be used in schools, like yours, to 'check-in' on how a

young person is doing. Only the research team will have access to your questionnaire answers. Your school will not have access to this.

If some of the answers on your questionnaires suggest you need some extra support, we will let the agreed teacher in your school know. This is so they can check in with how you are feeling and if you need any extra help. They will not see the answers to your questionnaires.

Can I ask people about the study?

You can ask your parents (or carer) or your teachers. They have been sent lots of other information. You can also ask the research team, who are called Alex and Victoria. You can email us at MoreyA@Cardiff.ac.uk

Anything else?

Thank you very much for taking the time to read this sheet. If you want more information on anything then you can either ask or there is a longer sheet that you can read.

Appendix J: Informed Consent

Please read the following statements:

1. I have read the information sheet and have had the opportunity to ask questions.
2. I understand that I am free to withdraw from completing the questionnaires at any point.
3. I am happy to complete the questionnaires to help evaluate a new measure of Psychological Flexibility.
4. I understand the information I share will be confidential (only shared with the research team) and made anonymous when it is used to write up the findings of the research study.
5. I understand that if I report anything in the questionnaires, which indicate that I may be experiencing increased distress, the research team will need to report this to a member of the school staff.
6. I understand that I should try to answer all questions, even if I am unsure which best applies to me.
7. I understand that in order to enter the prize draw, I need to select "I want to enter the prize draw", which is at the end of the questionnaires.

☐ **I agree to all of the above statements and am happy to take part in this research study.**

☐ **I do not wish to take part in this research study.**

Appendix K: Demographic Information

Below are some background information questions. We are asking these questions so we can look at group differences in the data we collect. For example, we want to check there are no differences in how people answer the questionnaires based on their gender.

We will **not** be sharing any of these answers with your teacher, school or others, and the research team will be unable to identify you from these answers. For any item, you also have the option of not providing an answer.

Q1 Unique ID from teacher
Please make a note of this number

_____

Q2
We are asking these next few questions (2-4) so we are able to link your data with your school. We might need to let your school know if we are concerned about you based on answers you provide. The research team will still not know who you are, we will just pass on your unique ID number so your teacher can match the number with your name. Your teacher will never see any of your answers.

2. Name of school

_____

3. Year Group

_____

4. Class/Form Name
If applicable. e.g. 8A

_____

Background Information

5. How would you best describe your gender?
We are asking this information so we can analyse data to make sure the measure we have developed is the same for all young people, regardless of gender

Male

Female

Non-binary / third gender

Prefer not to say

6. Age (in years)

We are asking for this information so we can check that there aren't any differences in how different aged students respond to our new questionnaire. We need a response to this question so the correct questionnaires for your age are displayed.

_____

7. Ethnicity

It is important to us to make sure that our questionnaire is valid for people of all ethnicities

Other ethnicity, please describe

_____

Appendix L: CompACT-Y (23 items)

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

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 (CompACT Total score).
- Twelve items are reverse scored before summation (items 2, 3, 4, 6, 8, 9, 11, 12, 15, 16, 18, and 19).

Openness to Experience (OE) subscale

Calculated as the sum of scores for items: 2 (reversed), 4 (reversed), 6 (reversed), 8 (reversed), 11 (reversed), 13, 15 (reversed), 18 (reversed), 20, and 22.

Subscale scores range from 0-60, 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: 3 (reversed), 9 (reversed), 12 (reversed), 16 (reversed), and 19 (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, 5, 7, 10, 14, 17, 21, and 23.

Subscale scores range from 0-48 with higher scores indicating greater engagement in valued actions (meaningful activity)

CompACT Total

Calculated as the sum of the three subscale scores, the full-scale CompACT Total score ranges from 0-138, with higher scores indicating greater psychological flexibility.

Appendix M: Avoidance and Fusion Questionnaire Youth – 8

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

Appendix N: Child and Adolescent Mindfulness Measure (CAMM)

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

Appendix O: Short Warwick-Edinburgh Mental Well-being Scale

Short Warwick Edinburgh Mental Wellbeing Scale (S) WEMWBS

Below are some statements about feelings and thoughts.

Please select the answer that best describes your experience of each over the last 2 weeks.

	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

Appendix P: World Health Organisation- Five Well-Being Index

Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks. Notice that higher numbers mean better well-being.

Example: If you have felt cheerful and in good spirits more than half of the time during the last two weeks, put a tick in the box with the number 3 in the upper right corner.

Over the last two weeks:	All the time	Most of the time	More than half of the time	Less than half of the time	Some of the time	At no time
1. I have felt cheerful and in good spirits	5	4	3	2	1	0
2. I have felt calm and relaxed	5	4	3	2	1	0
3. I have felt active and vigorous	5	4	3	2	1	0
4. I woke up feeling fresh and rested	5	4	3	2	1	0
5. My daily life has been filled with things that interest me	5	4	3	2	1	0

Appendix Q: Revised Child, Anxiety and Depression Scale-25

RCADS-25

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

1. I feel sad or empty	Never	Sometimes	Often	Always
2. I worry when I think I have done poorly at something	Never	Sometimes	Often	Always
3. I would feel afraid of being on my own at home	Never	Sometimes	Often	Always
4. Nothing is much fun anymore	Never	Sometimes	Often	Always
5. I worry that something awful will happen to someone in my family	Never	Sometimes	Often	Always
6. I am afraid of being in crowded places (like shopping centers, the movies, buses, busy playgrounds)	Never	Sometimes	Often	Always
7. I worry what other people think of me	Never	Sometimes	Often	Always
8. I have trouble sleeping	Never	Sometimes	Often	Always
9. I feel scared if I have to sleep on my own	Never	Sometimes	Often	Always
10. I have problems with my appetite	Never	Sometimes	Often	Always
11. I suddenly become dizzy or faint when there is no reason for this	Never	Sometimes	Often	Always
12. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)	Never	Sometimes	Often	Always
13. I have no energy for things	Never	Sometimes	Often	Always
14. I suddenly start to tremble or shake when there is no reason for this	Never	Sometimes	Often	Always
15. I cannot think clearly	Never	Sometimes	Often	Always
16. I feel worthless	Never	Sometimes	Often	Always
17. I have to think of special thoughts (like numbers or words) to stop bad things from happening	Never	Sometimes	Often	Always
18. I think about death	Never	Sometimes	Often	Always
19. I feel like I don't want to move	Never	Sometimes	Often	Always
20. I worry that I will suddenly get a scared feeling when there is nothing to be afraid of	Never	Sometimes	Often	Always
21. I am tired a lot	Never	Sometimes	Often	Always
22. I feel afraid that I will make a fool of myself in front of people	Never	Sometimes	Often	Always
23. I have to do some things in just the right way to stop bad things from happening	Never	Sometimes	Often	Always
24. I feel restless	Never	Sometimes	Often	Always
25. I worry that something bad will happen to me	Never	Sometimes	Often	Always

Appendix R: Perceived Stress Scale-10

A more precise measure of personal stress can be determined by using a variety of instruments that have been designed to help measure individual stress levels. The first of these is called the Perceived Stress Scale.

The Perceived Stress Scale (PSS) is a classic stress assessment instrument. The tool, while originally developed in 1983, remains a popular choice for helping us understand how different situations affect our feelings and our perceived stress. The questions in this scale ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the number of times you felt a particular way; rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:
0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often

_____ 1. In the last month, how often have you been upset because of something that happened unexpectedly?

_____ 2. In the last month, how often have you felt that you were unable to control the important things in your life?

_____ 3. In the last month, how often have you felt nervous and stressed?

_____ 4. In the last month, how often have you felt confident about your ability to handle your personal problems?

_____ 5. In the last month, how often have you felt that things were going your way?

_____ 6. In the last month, how often have you found that you could not cope with all the things that you had to do?

_____ 7. In the last month, how often have you been able to control irritations in your life?

_____ 8. In the last month, how often have you felt that you were on top of things?

_____ 9. In the last month, how often have you been angered because of things that happened that were outside of your control?

_____ 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix S: Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been for you over the last six months.

Your Name ..... Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings	☐	☐	☐
I am restless, I cannot stay still for long	☐	☐	☐
I get a lot of headaches, stomach-aches or sickness	☐	☐	☐
I usually share with others (food, games, pens etc.)	☐	☐	☐
I get very angry and often lose my temper	☐	☐	☐
I am usually on my own. I generally play alone or keep to myself	☐	☐	☐
I usually do as I am told	☐	☐	☐
I worry a lot	☐	☐	☐
I am helpful if someone is hurt, upset or feeling ill	☐	☐	☐
I am constantly fidgeting or squirming	☐	☐	☐
I have one good friend or more	☐	☐	☐
I fight a lot. I can make other people do what I want	☐	☐	☐
I am often unhappy, down-hearted or tearful	☐	☐	☐
Other people my age generally like me	☐	☐	☐
I am easily distracted, I find it difficult to concentrate	☐	☐	☐
I am nervous in new situations. I easily lose confidence	☐	☐	☐
I am kind to younger children	☐	☐	☐
I am often accused of lying or cheating	☐	☐	☐
Other children or young people pick on me or bully me	☐	☐	☐
I often volunteer to help others (parents, teachers, children)	☐	☐	☐
I think before I do things	☐	☐	☐
I take things that are not mine from home, school or elsewhere	☐	☐	☐
I get on better with adults than with people my own age	☐	☐	☐
I have many fears, I am easily scared	☐	☐	☐
I finish the work I'm doing. My attention is good	☐	☐	☐

Appendix T: Valuing Questionnaire

Instructions:

Please read each statement carefully and then circle the number which best describes how much the statement was true for you DURING THE PAST WEEK, INCLUDING TODAY.

		Not at all true	1	2	3	4	5	Completely True
1	I spent a lot of time thinking about the past or future, rather than being engaged in activities that mattered to me	0	1	2	3	4	5	6
2	I was basically on "auto-pilot" most of the time	0	1	2	3	4	5	6
3	I worked toward my goals even if I didn't feel motivated to	0	1	2	3	4	5	6
4	I was proud about how I lived my life	0	1	2	3	4	5	6
5	I made progress in the areas of my life I care most about	0	1	2	3	4	5	6
6	Difficult thoughts, feelings or memories got in the way of what I really wanted to do	0	1	2	3	4	5	6
7	I continued to get better at being the kind of person I want to be	0	1	2	3	4	5	6
8	When things didn't go according to plan, I gave up easily	0	1	2	3	4	5	6
9	I felt like I had a purpose in life	0	1	2	3	4	5	6
10	It seemed like I was just 'going through the motions', rather than focusing on what was important to me	0	1	2	3	4	5	6

Appendix U: Crandall Social Desirability Test for Children-Short Form

Item	Socially Desirable Answer
1. I sometimes feel angry when I don't get my way	**FALSE**
2. I never say anything that would make a person feel bad	**TRUE**
3. Sometimes I argue with my parent(s) to do something they don't want me to	**FALSE**
4. I have never been tempted to break a rule or a law	**TRUE**
5. I would never hit anyone who was smaller than I am	**TRUE**
6. Sometimes I do not feel like doing what my teachers want me to do	**FALSE**
7. I am always polite even to people who are not very nice	**TRUE**
8. I never borrow anything without asking permission first	**TRUE**
9. Sometimes I say things just to impress my friends	**FALSE**
10. I am always careful about keeping my clothes neat and my room picked up (tidy)	**TRUE**
11. Sometimes I don't feel like obeying my parents	**FALSE**
12. Sometimes I feel like staying home from school even if I am not sick	**FLASE**

Appendix V: Structure Matrix Factor Loadings for 19-item CompACT-Y

CompACT-Y Item	Three Factor Solution		
	Factor 1 (VA)	Factor 2 (OE)	Factor 3 (BA)
I can work out what matters to me in life and go after these things	0.52		
I rush through activities that are important to me, without really paying attention			-0.52
I try to distract myself to block out difficult thoughts and feelings		0.67	
I behave in ways that reflect what is important to me	0.53		
I get so tangled up in my thoughts that I don't do the things that really matter to me		0.51	
I choose to do what's important to me, even if it brings up difficult emotions	0.63		
I tell myself it's wrong to have certain thoughts		0.48	
I find it hard to focus on the thing that I'm doing			-0.64
I live my life in a way that matches what I care about	0.66		
I try to avoid situations that might bring up difficult thoughts or feelings		0.68	
Even when I'm doing things that are important to me, I find myself doing them without paying attention			-0.63
I do things that matter to me, even when it is difficult	0.79		
I try hard to block the feelings I don't want		0.60	
I do things without being aware of what I'm doing			-0.79
I can stick with things that I care about, even when it's difficult	0.72		
I avoid things that are important to me, if there is a risk that I will feel upset		0.52	
I often seem to do things without much awareness of what I'm doing			-0.80
My values are really reflected in my behaviour	0.57		
I can keep going with something when it is important to me	0.74		

Appendix W: Pattern Matrix Factor loadings for items from the CompACT-Y and AFQY-8

CompACT-Y Item	Factor 1 (VA)	Factor 2 (OE)	Factor 3 (BA)	Factor 4 (AFQY8)
I can work out what matters to me in life and go after these things	.45			
I rush through activities that are important to me, without really paying attention		.51		
I try to distract myself to block out difficult thoughts and feelings			.63	
I behave in ways that reflect what is important to me	.55			
I get so tangled up in my thoughts that I don't do the things that really matter to me				.41
I choose to do what's important to me, even if it brings up difficult emotions	.63			
I tell myself it's wrong to have certain thoughts			.41	
I find it hard to focus on the thing that I'm doing		.53		
I live my life in a way that matches what I care about	.61			
I try to avoid situations that might bring up difficult thoughts or feelings			.66	
Even when I'm doing things that are important to me, I find myself doing them without paying attention		.61		
I do things that matter to me, even when it is difficult	.74			
I try hard to block the feelings I don't want			.67	
I do things without being aware of what I'm doing		.73		
I can stick with things that I care about, even when it's difficult	.66			
I avoid things that are important to me, if there is a risk that I will feel upset			.35	
I often seem to do things without much awareness of what I'm doing		.78		
My values are really reflected in my behaviour	.57			
I can keep going with something when it is important to me	.72			
AFQY-8 Items				
My life won't be good until I feel happy				-0.48
My thoughts and feelings mess up my life				-0.78
The bad things I think about myself must be true				-0.71

If my heart beats fast, there must be something wrong with me	-0.52
I stop doing things that are important to me whenever I feel bad	-0.66
I do worse in school when I have thoughts that make me feel sad	-0.61
I am afraid of my feelings	-0.73
I can’t be a good friend when I feel upset	-0.61