REFINING MEASUREMENT STRUCTURE OF PARENTING DIMENSIONS: AN ITEM RESPONSE THEORY APPROACH

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ABSTRACT

REFINING MEASUREMENT STRUCTURE OF

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AN ITEM RESPONSE THEORY APPROACH

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Numerous studies have linked aspects of parenting to psychological outcomes including anxiety, depression, and problem behavior. More recently, there has been a shift in focus from parenting styles (e.g., authoritarian, authoritative, permissive, uninvolved) to parenting dimensions (e.g., warmth, rejection, control). This research has produced a large number of parenting dimension measures that, while useful in exploring what components may be most important in predicting child developmental outcomes, have accumulated in overwhelming numbers. The amount of available parenting measures, each with different factor structures and many overlapping labels for constructs, can make measure selection in research studies feel arbitrary and creates ambiguity in our measurement and interpretation of parenting. No published study has yet attempted to comprehensively review and consolidate the large number of dimensions across several measures. The present study attempts to do so through adopting an item response theory approach to data reduction. Item response theory (IRT) is a psychometric framework that identifies measure items with the most reliable, valid, and informative properties. In this study, 998 participants completed a survey of 251 items across 14 measures including 119 parenting dimension items extracted from five established measures, demographics, childhood trauma, adverse childhood experiences, trait affect, self-esteem, anxiety, depressive symptoms, externalizing problem behavior, and flourishing/well-being. Data was split into two samples using a cross-validation approach. Ordinal factor analysis on sample one was used to identify the

factor structure with best fit and to select the best items for each factor. The model and selected items were then confirmed using sample two data. This produced a 48-item long form and 24-item short form self-report measure that captured six parenting dimensions and had reliability comparable to previously established measures, although one factor related to Involvement appeared weaker than the rest. Explanations and recommendations for future research are offered. Overall, the consolidated and improved measure of parenting dimensions should help to clarify construct ambiguity in the field and further research on parenting and its relation to adult mental health.

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Introduction

Overview

While the parenting one receives in childhood and adolescence is known to predict psychological outcomes in adulthood (Smetana, 2017), the field of parenting research lacks a common consensus on the core components of parenting and the best way to measure them. Researchers use a large number of measures with many different factor structures and overlapping constructs, which may contribute to conceptual ambiguity, complicated operationalizations of parenting, and inaccuracies in predicting outcomes. Establishing a comprehensive, reliable, and conceptually well-defined measure of parenting dimensions should improve predictive validity, improve clinical understanding of the origins of psychological conditions, and improve education on parenting.

The majority of research to date has focused on exploring potentially novel parenting dimensions, which has been useful in expanding our understanding of those aspects important in parenting and in predicting youth outcomes. However, this ongoing research has produced an overwhelming number of related constructs that may be too complex to be useful. Studies using factor analysis to identify the constructs that are most prominent and replicable have helped somewhat in clarifying the picture. However, these often focus on refining one specific measure or framework and may fail to acknowledge or incorporate other constructs deemed important by other lines of research. To my knowledge, no published study has yet attempted to comprehensively review and group the large number of parenting dimensions proposed by the literature. Additionally, no study has yet taken an item response theory approach to select the most informative, reliable, and valid items across several parenting measures.

This paper will: a) review the interest in and importance of parenting in predicting developmental outcomes for children and adolescents in adulthood, b) summarize foundational research on parenting styles, c) illustrate developments in parenting dimension research, d) describe current conceptual and psychometric challenges in the field, e) outline item response theory as a methodological framework, and f) apply item response theory in the creation of a consolidated parenting measure.

Parenting in Predicting Developmental Outcomes

It has long been presumed that environments possess the ability to shape human development, as is the premise of Galton's classic nature vs. nurture debate with roots all the way back to Ancient Greek philosophy (Royle & Moore, 2019). Research continues to uncover more and more links between environmental factors like nutrition or socioeconomic status and health outcomes like diabetes, depression, and alcohol or drug abuse (Stein et al., 1975; Lawlor et al., 2006; Gilman et al., 2003; Melchior et al., 2007). A subset of this research has focused on the early childhood environment and its ability to shape the developmental trajectory and predict adult outcomes. Many researchers have been particularly interested in parenting practices and how differences in parent-child interactions that relate to these practices predict better or worse psychological outcomes for the child in adulthood. For example, among the most commonly used classifications of parenting are the authoritarian, authoritative, permissive, and uninvolved parenting styles, each of which has been associated with different outcomes for the child (Baumrind, 1967; Maccoby & Martin, 1983). The authoritarian style is characterized by an emotionally distant, punitive, and autocratic approach to parenting where passive obedience to absolute authority is demanded (Bi et al., 2018). While children of these parents tend to perform well in school, the style has been associated with a number of negative outcomes including lower

family cohesion (Bornstein & Zlotnik, 2008; McKinney & Renk, 2011), lower self-esteem, more negative self-talk, poor emotion regulation, and overall worse mental health (Chong & Chan, 2015).

The authoritative style, in contrast, balances high expectations of child behavior through use of reason and explanation with expressions of love and affection (Chong & Chan, 2015). It has been associated with the most positive outcomes including high family cohesion (Nelson et al., 2011), academic achievement, sociability, self-esteem, goal-setting, (Huang & Prochner, 2003; Turner et al., 2009), positive self-talk, and better mental health (Chong & Chan, 2015).

Both the permissive and uninvolved parenting styles make little effort to control behavior and as a result, both styles tend to be associated with problem behavior, substance use, and delinquency (McKee et al., 2013). However, the permissive style is characterized by expressions of affection while the uninvolved style demonstrates emotional coldness or harshness. Therefore, while children of permissive parents tend to develop normal self-esteem, those of uninvolved parents often exhibit higher internalizing problems, such as depression and anxiety, in addition to conduct disorders and are usually considered to have the worst developmental outcomes (McKee et al., 2013).

Some research has taken an alternative approach, looking at specific dimensions of parenting, such as tendencies to express or withhold affection or to restrict or promote autonomous decision-making, rather than general parenting styles. For example, the dimension of parental warmth, characterized by expressions of love and affection, has been associated with increased wellbeing as well as decreased internalizing and externalizing symptoms (McKee et al., 2013). Conversely, parental hostility, coercion, and inconsistent discipline have been associated with psychosocial maladjustment and increased internalizing and externalizing

symptoms (McKee et al., 2013). Additionally, parental psychological control, the extent to which manipulation, love withdrawal, and guilt are used to restrict autonomy and control behavior, has been previously associated with youth depression and low self-esteem (Barber & Harmon, 2002; Caron et al., 2003). Soenens et al. (2005) found that this relationship was mediated by the development of perfectionist cognitions and behaviors as a means of coping with parental manipulation and the conditional parental affection they received. In any case, both parenting styles and dimensional approaches illustrate the ways in which early childhood environments shape psychological development.

Continued research on parenting practices is important for several reasons. First, many individuals may have complex trauma associated with the parenting they received (i.e., repeated, or ongoing victimization, vulnerability, and insecurity within the home environment) (James & MacKinnon, 2012). Understanding how and why certain approaches to parenting foster or hinder mental well-being can improve our understanding of psychological conditions and the best ways to treat and prevent them. Second, understanding how parenting is associated with adult psychological outcomes further emphasizes mental illness as a byproduct of one's environment, rather than a fault of the self, and may help to decrease associated stigma. Lastly, research that advances our understanding of parenting practices provides a means of improving the education of future parents. To achieve these outcomes in research and practice, the development of a valid and prospectively useful assessment of parenting requires a careful and comprehensive review of the historical perspectives on parenting styles and dimensions.

Review of Parenting Styles

The notion of the authoritarian, authoritative, permissive, or neglectful parent as described above has captured the interest of the general population and has been particularly

pervasive in research over the last several decades. While this specific conceptualization of parenting was developed by Baumrind (1967), attempts to study aspects of parenting date back to the early 20th century, and the refinement of measures continues today. To understand the current position of parenting research and the purpose of the current study, we will first briefly review empirical attempts to identify and measure aspects of parenting throughout history.

During the 1930s, researchers in the field of Western psychology shifted away from measuring specific parenting behaviors, like breastfeeding versus bottle feeding or spanking versus using time-outs as punishment, to measuring one's general parenting approach across various situations. This shift was the result of attempts to improve prediction of the socio-emotional development in children, as efforts to use parenting behaviors as predictors were usually unsuccessful (Power, 2013). The first attempts to classify parenting approach started with parent interviews and parent-child observational studies, where researchers noted common themes in interaction across families. Results of factor analyses reported by these studies consistently revealed warmth and control as important aspects of parenting (Power, 2013). Warmth can be conceptualized as a parent's responsiveness to a child through providing kindness, affection, support, and emotional availability in times of needed comfort, teaching, and discipline (Skinner et al., 2005). Alternatively, a parent that is low in warmth may instead be emotionally inhibited and express hostility, rejection, and criticism toward the child (Skinner et al., 2005). Control describes the extent to which the child's autonomy is either restricted through demands and strict obedience versus promoted through suggestions, encouragement, and the ability to make their own choices (Power, 2013). Although these two factors were ubiquitous among early attempts to measure parenting, this is likely because they were the only types of interactions that were usually noted by the researchers (Power, 2013). Efforts to discover

additional factors continued throughout the 1960s, eventually identifying structure as another important aspect of parenting, which describes the extent to which discipline is used as a means of shaping behavior (Power, 2013). Parents that score highly on structure have clear rules and expectations and follow through with disciplinary practices, while parents low in structure have few expectations of the child and do not attempt to enforce rules or shape behavior (Skinner et al., 2005). This early work on dimensions of warmth, control, and structure laid the empirical foundation for the development of parenting styles.

Baumrind (1967) first established the concept of parenting styles through a series of observational studies. This work identified three major types of behavior in preschool children, and each was associated with a particular parenting style that varied in combinations of warmth and control. These three parenting styles included authoritarian – low warmth high control, authoritative – high warmth high control, and permissive – high warmth low control. In a later study, Baumrind expanded upon these three styles to include eight subtypes (Baumrind, 1971). This study used a cluster-analytic approach, identifying 12 patterns of parental behavior, based on the Parents Behavior Rating Scale, through observational interviews (i.e., firm enforcement, encourages independence, passive-acceptance, rejecting, self-confident, promotes nonconformity, authoritarianism, expected participation in chores, enrichment, directive, discourage emotional dependence, and discourage infantile behavior). These parenting behaviors were then cluster-analyzed again for patterns with child behavior, resulting in eight subtypes of parenting style. These included Authoritarian-rejecting or not rejecting, Authoritative-nonconforming or not nonconforming, Permissive-nonconforming (not permissive or authoritative) or nonconforming (permissive) or not nonconforming, and Rejecting-neglecting. These subtypes allowed for additional variation in the extent to which parents engaged in

particular aspects of parenting. For example, according to Baumrind (1971) the authoritarian style is characterized only by commanded obedience to authority and strict use of rules and punishment. In this sense, authoritarian parents can vary in their extent of warmth and affection. Thus, while both Authoritarian subtypes score high on firm enforcement and authoritarianism, and low on encourages independence, passive-acceptance, and nonconformity, the Authoritarian-rejecting subtype scores highly on the rejecting pattern of behavior, while the Authoritarian-not rejecting scores neither high nor low. Additionally, while the Authoritarian-not rejecting and Authoritative-not nonconforming are similar in most aspects, they are distinct because the authoritative parent scores high on encourages independence and because they use reason rather than force (Baumrind, 1971). Thus, each of the eight subtypes captures a unique combination of parenting behaviors.

In the initial study, Baumrind (1967) was able to classify 30% of parents into one of the three main parenting styles, suggesting that 70% of parents did not fit neatly into one of these three categories (Power, 2013). However, Baumrind (1971) found that 75% of parents fell into one of the eight parenting subtypes, suggesting that increasing the number of constructs to include more than just warmth and control allowed for more nuanced measurement of parenting. Despite this improvement, no measure was developed to formally assess these eight observed subtypes and the original conceptualization of three parenting styles remained widely used by researchers.

Later work by Maccoby and Martin (1983) identified an additional style called neglectful, characterized by low warmth low control. In combination with Baumrind's three main styles described above, these two conceptualizations have been some of the most influential in parenting research, with Baumrind's two studies (1967, 1971) receiving over 15,000 citations

to date and Maccoby and Martin's addition accumulating over 5,000 citations since 1983. However, since these widely accepted additions, no other studies have established grounds for any additional parenting styles and the framework developed by Baumrind (1967) and Maccoby and Martin (1983) remains the only widely used classification of parenting styles in the field (Power, 2013). Instead, researchers have turned their focus from parenting styles to parenting dimensions and have begun to explore the potential of other dimensions beyond the well-established aspects of warmth and control.

Contemporary Research on Parenting Dimensions

The Parents as Social Context Questionnaire (PASCQ), developed by Skinner, Johnson, and Snyder (2005) separates the original three, bipolar dimensions of warmth, control, and structure into six unipolar dimensions of warmth, rejection, structure, chaos, autonomy support, and coercion. These two factor structures were compared through confirmatory factor analysis, and researchers found that the six-factor structure was better able to predict differences in various youth outcomes including academic competence, self-worth, substance use, and problem behavior than the original 3 dimensions (Skinner et al., 2005). Additionally, correlations among the six factors supports the use of a unipolar structure. Correlations between warmth and rejection ($r = -.66$), structure and chaos ($r = -.50$), and autonomy support and coercion ($r = -.56$), are all moderate, suggesting that while there is some overlap in opposite directions, both are capturing a unique construct. This suggests, for example, that measuring aspects of parental warmth and rejection separately, each ranging from low to high, captures parenting more accurately than using a single bipolar dimension with rejection on one end and warmth on the other. This is reasonable, as parenting across the entirety of development includes thousands of parent-child interactions (Skinner et al., 2005). A parent may adopt a warmer approach to

parenting in one occasion or context and express more rejection in another, but they are not necessarily mutually exclusive. In the present study, it is important to adopt a similar, unipolar measurement in order to best capture diverse combinations of parenting dimensions and accurately predict outcomes.

The Young Parenting Inventory was developed by Young, Klosko, and Weishaar (2006) through their experience treating challenging personality disorders. The measure was created to help therapists identify parenting behaviors that may have contributed to a client developing specific negative cognitions referred to as maladaptive schemas (Louis et al., 2018). The idea is that identifying these maladaptive schemas and where they may have originated from can guide practitioners on where to focus treatment efforts, although it has since been successfully applied to nonclinical samples as well (Louis et al., 2018). The original Young Parenting Inventory used an 18-factor structure with each factor representing a maladaptive schema and associated parenting behaviors. Despite its development in 2006, the measure has demonstrated inconsistencies in the factor structure across multiple validation attempts.

Attempts to replicate the 18-factor structure produced a 9-factor, 6-factor structure , and most recently a 10-factor structure instead (Sheffield et al., 2005; Louis et al., 2018; Louis, 2022). The 10-factor structure included some aspects that could be seen as overlapping with other models of parenting, including degradation and rejection, overprotection and overindulgence, punitiveness, and control. A novel factor that arose was termed competitiveness and status seeking. Additionally, the factor emotional inhibition and deprivation, was established as separate from the rejection dimension (Louis, 2022). These findings may suggest novel aspects of parenting that have not previously been considered or at least conceptualized in this way. However, the Young Parenting Inventory does not measure aspects of parental warmth or

structure, and its focus exclusively on negative parenting behaviors may limit its ability to capture all aspects of parenting and to predict positive developmental outcomes.

It should be noted that the majority of parenting research has been dominated by Western cultural perspectives. However, there is evidence to suggest that what is considered a core aspect of parenting is subject to cultural influence (Smetana, 2017). For example, while it is widely accepted that authoritative parenting offers the most positive outcomes to youth in the U.S., some research suggests that authoritarian parenting may be more common in Asian and Arab cultures and may or may not be more conducive to positive youth outcomes (Bi et al., 2018; Smetana, 2017). It is possible that the aspects of parenting important in predicting outcomes for Western youth differ from those important for non-Western youth. More cross-cultural research is needed in order to better understand whether any aspects of parenting can be considered universally important. However, there still exists a great need for research syntheses and cohesion within Western parenting research, which is the focus of this study.

Limitations of Previous Research

Despite continued interest and research on parenting over the last several decades, the field still lacks a clear consensus on which components of parenting are the most meaningful in shaping development and predicting adult outcomes. Research on both parenting styles (i.e., the broad classifications of authoritarian, authoritative, permissive, and uninvolved) and parenting dimensions (i.e., specific aspects such as warmth, rejection, control, etc.) have produced a number of different measures, however, there appear to be inconsistencies in the way parenting dimensions are labeled. This in combination with the large number of available parenting measures can make comparing results across studies difficult as the extent to which they operationalize constructs similarly is unclear. Additionally, parenting measures tend to vary

widely in their factor structure, raising concern for their construct and criterion validity and making measure selection feel arbitrary and complicated. Identification and consolidation of the relevant components of parenting is necessary to advance research and improve our understanding of associated developmental outcomes.

The work by Baumrind (1967) and Maccoby and Martin (1983) in classifying parenting styles was based on observation and interview and no survey-based assessment method was developed by these researchers. Other researchers have attempted to create measures to assess the four parenting styles but have many problems of their own. According to Shyny (2017), many measures do not assess the uninvolved style established by Maccoby and Martin (1983). Alternatively, because the nature of parenting styles includes aspects of both warmth and control, many measures have lengthy item structure and double-barreled questions which can make interpretation of the results difficult.

Additionally, since the shift in focus from parenting styles to parenting dimensions, there is research to suggest that dimensions account for a greater proportion of variance in psychological outcomes than styles do. Using a global, nonclinical sample, Louis et al. (2018) compared a revised version of the Young Parenting Inventory (YPI) to the Parental Authority Questionnaire (PAQ) (Buri, 1991), one of the most commonly used measures of parenting style. Through hierarchical regression, they found that the YPI demonstrated incremental validity, accounting for a statistically significant proportion of variance in wellbeing, depression, anxiety, stress, experience of gratitude, and aspects of personality beyond that accounted for by the PAQ, equivalent to that of a small effect size (Louis et al., 2018; McCullough et al., 2002; Rohner & Khaleque, 2005). Despite this, a large portion of parenting research continues to use measures of

parenting style. One potential explanation for this is that the alternative framework of parenting dimensions also lacks a single unified and widely established measure.

Although the literature review provided earlier describes several well-established dimensions of parenting behavior (i.e., warmth, control, structure), studies since the 1930s have been proposing a multitude of different dimensions and have often used a variety of different terms to refer to similar concepts. For example, researchers have frequently used the terms warmth, acceptance, love, approval, and support when referencing and describing the same concept, that of the original conceptualization of warmth in the 1930s. The dimensions of rejection, control, structure, and autonomy each experience a similar issue. In reviewing 59 measures of parenting, over 80 different terms for various dimensions were used and over half of the coined terms were used in only one measure. Some dimensions also appear to be recurrent across measures. The most commonly referenced dimensions were warmth, acceptance, hostility, rejection, control, psychological control, structure, autonomy, and involvement. However, as stated above, many of these appear to overlap conceptually.

This abundance of dimensions and related terms complicates efforts to identify the core, foundational aspects of parenting and to develop a comprehensive parenting measure. By using different terminology for the same concept, we introduce unnecessary ambiguity into our operationalizations and decrease the criterion and construct validity of our measures (Clark & Watson, 1995; Watson & Clark, 1984). Additionally, while the large number of proposed dimensions represents attempts to expand aspects of parenting beyond those established in the 1930s, it may be time to begin consolidating this information in a way that is most efficient and useful for future research.

Item Response Theory

It can be overwhelming to consider the large number of parenting measures and their many labels, constructs, and items within one theoretical framework. One way to address this problem is through the use of data reduction techniques such as item response theory. Item response theory (IRT) is a psychometric framework that describes the characteristics of measure items with the goal of identifying the most informative items in estimating a construct. IRT is a factor analytic approach that can be used to estimate how well an item is associated with its latent trait, in this case - aspects of parenting, and how difficult the item is to endorse (Thissen & Steinberg, 1986; Steinberg & Thissen, 1995). This approach can help researchers select items that are most reliable and conceptually distinct, reducing measurement error and improving predictive validity.

Item difficulty describes how much of the underlying latent trait is needed for an individual to endorse or agree with an item. For example, an item with low difficulty would suggest that the majority of participants would agree with or endorse the item. Conversely, an item with high difficulty would have low endorsement from participants. For example, asking individuals if they could afford to purchase a coffee versus a jet plane are two questions that both assess perceived disposable wealth, but that vary in their difficulty of endorsement. It would be very difficult, if not impossible, for the average person to endorse being able to afford a jet plane, and so this item would likely have few responses on the high end compared to the item that asks about affording a coffee. Difficulty of endorsement is important because it provides us with different information for different types of people. Particularly easy or difficult items may not be very informative for individuals of average trait, but they may be informative for those on extreme ends of the trait. For example, if someone does not endorse being able to afford a coffee

or does endorse being able to afford a jet plane, it can tell us a lot about where they lie on the underlying latent trait of perceived disposable wealth. As such, including items of various difficulties in a measure allows the measure to capture a wider array of information.

Item discrimination describes how strongly an item is associated with the latent trait and is often quantified in the form of a factor loading parameter. It describes the steepness at which endorsement transitions from a low to high probability as one increases in the trait. When an item has high discrimination, the relationship between endorsement and the trait has a steeper slope and the item can be considered a good measure of the trait. On the other hand, when an item has low discrimination, the relationship between endorsement and the trait has a flatter slope. This is important because it suggest that the item may not be measuring the same underlying factor as other more discriminant items, and that this item overall provides less useful information. IRT looks at the item responses in relation to endorsement difficulty and discrimination in order to select items that convey the most information and ultimately improve measurement reliability and validity.

Considering the large number of parenting measures and dimensions through an item response theory lens may prove useful in consolidating information in a way that is helpful for future research. Attachment researchers encountered a similar problem during the 1990s whereby the measures being used at the time employed a categorical approach to measuring attachment. Specifically, when trying to assess attachment style via self-report, it was usually determined by averaging or summing scores of individual items. This approach relies on arbitrary cut off points in creating categorical styles from the continuous construct of attachment security (Fraley et al., 2000). However, this limits the amount of variation available for analysis, and incorrectly suggests that all individuals within an attachment category have the same strength and stability

of attachment security. As a result, attempts to classify individuals in this way complicated interpretations and raised concerns about fundamental measurement imprecision (Fraley et al., 2000). To address this problem, Fraley, Waller, and Brennan (2000) employed item response theory analysis, which was a relatively novel technique at the time.

Classical IRT as used by Fraley et al., (2000) assesses item discrimination (called the 'a' parameter) and difficulty (called the 'b' parameter) as well as plots called item characteristic curves (ICC), item information curves (IIC), and test information curves (TIC). A related approach to classical IRT is called ordinal factor analysis, which differs primarily in the parameter estimation method used. Ordinal factor analysis produces parameters that are mathematically related to the 'a' and 'b' parameters used in classical IRT (Asparouhov & Muthén, 2020). Instead of 'a', ordinal factor analysis estimates factor loadings 'λ' which are interpreted similarly and provide information about an item's reliability, with higher values indicating greater reliability. Instead of 'b', ordinal factor analysis estimates thresholds 'τ', which conveys information about the percentage of individuals in each ordinal response category. As related to difficulty, an item of high difficulty will have the majority of responses on the low end of the scale and the location of thresholds will be shifted to the right. Higher thresholds suggest that it takes more of the underlying latent trait to be able to endorse a higher ordinal response category, making the item difficult to endorse.

The ordinal factor analysis approach used in the present work can also be used to generate ICCs, IICs, and TICs, which are useful in identifying items that are most informative (see Figure 1). An ICC plot illustrates the probability that an individual will endorse an item across all levels of the underlying latent trait. The steepness of the ICC slopes is determined by the item's factor loading, thus a high factor loading and steep slope suggests the item has greater

discrimination ability than others. The location of the curves along the latent trait axis illustrates the thresholds. Curves further to the left indicate low thresholds and easy difficulty, while curves to the right indicate high thresholds and greater difficulty of endorsement. An IIC plot displays the amount of information that is provided by items on the vertical axis across various levels of the latent trait. As described previously, items vary in their difficulty of endorsement. This influences where the peaks appear on IICs and helps researchers identify items that are most informative at specific levels of the latent trait. Similarly, a TIC displays the amount of information that a measure provides on the vertical axis across various levels of the latent trait. It essentially illustrates the compiled information provided for all items in a measure. Therefore, a tall, flat TIC is characteristic of a measure with good discrimination items across a range of low and high difficulties. Fraley and colleagues (2000) analyzed the discrimination and difficulty parameters of several hundred items across over a dozen measures of attachment and inspected ICCs and TICs to create an improved measure. Their efforts resulted in two short scales that assessed the two main components of attachment – anxiety and avoidance – better than all previously used self-report measures. Their revised version captured 60% more information for attachment anxiety and 33% more information for attachment avoidance while maintaining a low item count, exemplifying IRT as a useful technique for measure refinement.

The Present Study

While parenting styles are a considerable topic of interest in the field, the present study focuses exclusively on parenting dimensions for several reasons. The primary reason for not including parenting styles in the present study is that parenting styles inherently describe groups of parenting dimensions. For example, the main four parenting styles established by Baumrind (1967) and Maccoby and Martin (1983) describe styles characterized by low and high warmth

and control. Viewing these dimensions together as a pair is what provides context for the parenting styles and separating them into dimensions would not be theoretically sound. An additional reason is that, while the four main parenting styles developed by Baumrind (1967) and Maccoby and Martin (1983) remain empirically supported and unchanged, the parenting dimensions framework continues to raise evidence for additional components. A study that focuses on consolidating terminology and forming a consensus on core parenting dimensions, and a reliable way to measure them, is needed. An additional motivation for focusing on parenting dimensions is that research suggests they provide better predictive validity than styles for various aspects of personality and mental illness (Louis et al., 2018). Thus, the present study attempts to develop a measure of parenting dimensions that is conceptually comprehensive, reliable, and related to psychological outcomes.

It is important to note that research on parenting has often used a variety of different reporting methods, including parent and child self-reports and observational coding, all of which have their own unique strengths. Studies comparing the relative accuracy of these different methods is sparse and findings have been mixed (Herbers et al., 2017, Hurley et al., 2014; Morsbach & Prinz, 2006; Winsler et al., 2005). Research comparing parent-report to observational methods has often found little to no concordance between the two (Herbers et al., 2017; Sheh, 2013). Whereas it is generally accepted that observational methods provide a more accurate depiction of parenting than parent-reports, which are vulnerable to social desirability bias (Gardner, 2000; Halty & Berástegui, 2021; Herbers et al., 2017; Jones et al., 2015; Lotzin et al., 2015; Morsbach & Prinz, 2006), observational methods are also limited in that they are typically only collected in laboratory settings for limited time duration. Additionally, while many studies have found observed parenting to be related to and potentially predictive of child

behavioral functioning, (Jennings et al., 2008; Rubin et al., 2002; van der Bruggen et al., 2010), Sheh (2013) found that parent-report was actually better at predicting parent-reported child behavioral functioning than observational methods. Even fewer studies have attempted to compare child-self reports to observational coding, although findings here appear to be equally mixed (Greco & Morris, 2002; Parker, 1981; Parker et al, 1979).

A consideration often not mentioned in this research is that child-reports are uniquely beneficial in that they acknowledge the subjective experience of parenting, which is likely to be important in predicting how they navigate challenges in their environment through adulthood. Interestingly, most of the studies described here were conducted when the children were still young, and research using retrospective adult child-reports is lacking. In recognizing the importance of the subjective experience in predicting adult psychological outcomes, the present study aims to create a self-report measure targeted for use with adults retrospectively reporting on the parenting they received as children.

In the context of the present study, the emerging adult population is of particular interest. This developmental period of 18-25 years of age is ideal time for the parenting someone receives in childhood to manifest into outcomes for the emerging adult. It is during this period of time that most emerging adults are granted more autonomy and control over their own lives. Many will move away from home during this time and learn to live on their own, or they may learn to cohabit with others as many students do upon attending college. Their ability to handle the increased demands and responsibilities of adulthood are tested. In a way, emerging adulthood can represent a culmination of parenting efforts over the past 18 years and many aspects of the developing adult have been solidified over this time including expectations for work ethic, rules, and standards, as well as personal goals and self-identity. Additionally, it is likely that the

influence of parenting is most salient and memorable during this time and should capture impressions of parenting more accurately than if measured later in development. Beyond the reasons described above, undergraduate college students are an accessible subgroup of emerging adults that are of particular interest because of the additional responsibilities and pressures they experience around academics. Thus, the present study focuses on young adult college students and developing a reliable and valid self-report measure for this population.

Participants were asked to reflect on all of the parenting they received before the age of 18 in order to achieve a retrospective report of their upbringing, rather than their perceptions of their caregiver's current approach. While a caregiver's parenting approach is likely to change over the span of 18 years, measuring parenting across multiple points in time is beyond the cross-sectional scope of the present study. However, because the present study uses continuous measures of parenting, it should be relatively robust to variations in parenting over time.

While the majority of past parenting research has collected reports of mother's parenting by default, or occasionally parenting from both mother and father, this approach may not be inclusive to individuals that were raised by a nonparent figure (e.g., grandparent, stepparent, aunt, uncle, sibling) or individuals whose mother or father is not involved in their life. Additionally, while there is evidence to suggest that multiple caregiving influences can be associated with differential outcomes (Simons & Conger, 2007), asking participants to report on multiple caregivers is beyond the scope of the present study. In order to minimize participant burden while allowing representation of nontraditional family structures, the present study instead asked individuals to choose one caregiver that they feel was most influential on their upbringing. Participants were asked to identify what caregiver they chose (e.g., mother, father, grandmother, etc.) and to elaborate on why they chose them as their primary caregiver. In the

case that individuals were raised in a traditional two-parent household and feel they both contributed equally, they were asked to defer to reporting the parenting received from their mother as has been the default in past literature.

To my knowledge, no published articles have yet attempted to apply IRT to several different parenting measures. Therefore, this study seeks to apply a psychometric analysis to a large pool of items assessing various parentings dimensions. This approach allows for selection of the most informative items across several measures resulting in a unified measure that captures various levels of difficulty, high discrimination, improved validity and reliability, and reasonable survey length. Additionally, convergent and discriminant validity of the final measure is assessed and compared to other established measures of parenting.

Study Aims

The objectives of the current study are: 1) to create a single, comprehensive measure of parenting dimensions; 2) that the new measure will be a) made for use with emerging adults (18-25y/o), b) a retrospective report of parenting, c) inclusive of nontraditional family structures, d) represent "parenting" received from primary caregiver, or default to mother, and e) that the new measure will be brief, reliable, and have good convergent and discriminant validity; and 3) to apply item response theory (IRT) as a framework for selecting the best items and creating the measure.

Methods

Participants and Procedure

This study consisted of a one-time survey collected throughout Fall 2022 and Spring 2023. It used a convenience sample of students at Northern Arizona University collected via the human subjects pool. Participants were required to be between ages 18 and 25 and were able to

complete the study for PSY101 credit. Based on recommendations put forth by general sources (Kline, 2018), a minimum sample size of 500 was needed. Survey data was allowed to vary naturally, and no oversampling techniques were employed. After completing data collection and prior to factor analysis, the data was screened for careless responders, which can pose a particular threat to psychometric studies such as this one (Meade & Craig, 2012; Ward & Meade, 2023). Following recommended best screening practices (Meade & Craig, 2012; Ward & Meade, 2023), individuals were identified as careless based on response time (< 8.3 min. i.e., less than 2 seconds per item), failing to pass attention checks, and low self-reported effort, as well as by comparing longstring indices and opposite items pair congruence (similar to psychometric antonyms) to theoretically derived cutoffs deemed reasonable for the data. Screening protocols resulted in removal of 78 careless participants (7.82% of initial sample), and a final sample size of 920. This sample was then split randomly into two data sets, sample one and sample two, to be used for cross-validation analysis.

Both samples were predominately Caucasian (sample one = 67%, sample two = 65%) or Hispanic or Latino (sample one = 18%, sample two = 20%), while a minority of participants identified as Black or African American (sample one = 5%, sample two = 4%), American Indian or Alaskan Native (sample one = 3%, sample two = 4%), Asian (sample one = 3%, sample two = 4%), Native Hawaiian or Pacific Islander (sample one = 0%, sample two = 1%), or Other (sample one = 3%, sample two = 2%). Participants were predominately female (sample one = 81% , sample two = 78%), and the majority were 18-19 years old (M_{age} = 18.6). Most students lived either on or off campus with roommates (sample one = 94%, sample two = 92%), and very few lived with a parent or caregiver (sample one = 2%, sample two = 3%). Nontraditional family structures appeared to be fairly common, as only 54% of sample one and 58% of sample two

identified their parents as currently married and living together. Additionally, while most participants identified their biological mother as their primary caregiver (sample one = 84%, sample two = 84%), a considerable minority identified an adoptive mother (sample one = 10%, sample two = 11%), or other non-maternal figure (sample one = 5%, sample two = 5%).

Ethical Statement

Informed consent was collected from all participants in the study. Participation was completely voluntary, and participants were able to withdraw at any point in time before submitting their survey. Upon submission, their participation could no longer be withdrawn as responses were entirely anonymous and data was de-identified. Participants were made aware of this in the informed consent as well as any associated risks. This study did not exceed minimal risk. Although asking about childhood trauma may seem like a sensitive topic, research suggests that it is no less stressful for students than asking about their course grades (Becker-Blease & Freyd, 2006; Cromer et al., 2006; Jaffe et al., 2015; Yeater et al., 2012). The study was classified as exempt and was approved by Northern Arizona University's IRB prior to data collection (Approval No. 1934408-3).

Surveying Relevant Dimensions

A scoping review was conducted to identify the range of parenting dimensions and the most commonly used measures present in the literature. This review informed measure and item selection as well as factor structure for the ordinal factor analysis. The literature search revealed 59 measures including revised versions. For each, the components of the measure (i.e., dimensions or subscale factors) were noted and the frequency of each was summed across the 59 measures, which identified the most commonly used components. Across the 59 measures, 82 dimensions were identified. From these, the most commonly used dimensions (determined by

use in five or more measures) were: warmth, acceptance, hostility, rejection, control, psychological control, structure, autonomy, and involvement. Of the 82 dimensions identified, these nine were used in 35% of parenting measures. Over half (59%, 48/82) of the dimensions were used in only one measure. Factor and measure selection was guided by the above nine dimensions that occurred most frequently. Selection was also guided by the citation frequency and relative impact of the measures in the literature. Often, well-cited measures utilized a combination of the nine components discussed above. Additionally, effort was made to include measures that captured the breadth of each dimension, and less commonly cited measures were included if they appeared to contribute a unique or nuanced perspective on the constructs.

Next, efforts were made to consolidate these nine components into well-defined dimensions. This was done by grouping related constructs as informed by Skinner et al. (2005). Of the nine components discussed prior, warmth and acceptance were grouped together. Following a similar unipolar framework as Skinner et al. (2005), hostility and rejection were also grouped, but considered separate from warmth and acceptance. Psychological control was kept as separate from behavioral control as suggested by Barber (1996) and Schaefer (1965). Additionally, autonomy was retained as a separate dimension. Again, referencing Skinner et al.'s (2005) related constructs, a large majority of the remaining 73 dimensions reasonably fell under one of these five groups, which supports the use of them as the primary dimensions of parenting (see Table 1).

Names for the final grouping of dimensions were determined by selecting the terms that were referenced more often in the observed literature. For example, as acceptance was used more frequently than warmth, the name acceptance was retained for the dimension that includes both. The final list of dimensions includes acceptance (warmth and acceptance), rejection (hostility

and rejection), behavioral control (control, structure, involvement), psychological control, and autonomy.

Measures

The survey used in the present study was comprised of 119 parenting items extracted from five previously established measures and an additional 132 items measuring demographics and other variables associated with perceptions of parenting (i.e., childhood trauma, adverse childhood experiences, positive and negative trait affect) as well as convergent and discriminant validity measures related to mental health outcomes (i.e., self-esteem, anxiety, depressive symptoms, and externalizing problem behavior, and flourishing. A list of all measures is provided in Table 2 and a comprehensive listing of materials administered is available on the open science framework page: https://osf.io/3wb6x.

Parenting Measures

Parents as Social Context Questionnaire – Revised (PASCQ). Skinner and colleagues (2005) developed this revised, 24-item adolescent-self-report that assesses parental warmth, rejection, structure, chaos, autonomy support, and coercion. This version has demonstrated good reliability across replication samples (Skinner et al., 2005). The PASCQ asks participants to rate how well a statement describes their parent with responses ranging from "Not at all true" to "Very true".

Children's Report of Parental Behavior Inventory – Revised 30-item (CRPBI). The CRPBI is a highly cited self-report measure of parental acceptance, rejection, psychological control, autonomy, firm control, and lax control. The present study uses an unpublished 30-item version developed by Schludermann and Schludermann (1988), which has demonstrated good reliability and validity comparable to the 108-item version (Schludermann & Schludermann,

1970). The CRPBI asks participants to rate how well a statement describes their parent with responses ranging from “Not Like” to “A lot Like”. The CRPBI-30 as it was developed by Schludermann and Schludermann (1988 unpub.) uses two separate 30-item questionnaires for mother and father. The items for the two questionnaires are identical in content and differ only by their use of she/her versus he/him. As the present study asks participants to reflect on parenting received from their primary caregiver, this phrasing was adjusted so that one single 30-item questionnaire could be used to refer to either parent/caregiver.

Colorado Self-Report of Family Functioning Inventory – Revised (CSRFFI). Created by Barber and colleagues in 1994, this 35-item measure assesses aspects of behavioral and psychological control at the individual and family level. 14 items from this revised CSRFFI overlap identically with items on the CRPBI-30 and were omitted from the version used in the present study. Additionally, Barber et al. (1994) noted that five items appeared to measure both psychological and behavioral control, however, several studies have suggested that psychological and behavioral control are best measured as separate constructs (Becker, 1964; Schaefer, 1965; Barber, 1996; Schludermann & Schludermann, 1988 unpub.; Steinberg, 1990; Steinberg et al., 1989; Steinberg et al., 1991; Steinberg et al., 1992). In keeping with these recommendations, the five overlapping items were excluded in order to maximize construct clarity within the item pool, resulting in the 16 unique items retained in the present study. This included eight items that measure psychological control and three items that measure behavioral control, both adapted from the original CSRFFI (Bloom, 1985) in which participants are asked to rate how well a statement describes their family with responses ranging from “Very untrue for my family” to “Very true for my family”. Additionally, the five items adapted from Dornbusch et al.’s (1987)

parental monitoring scale were retained. These items asked participants to rate how informed their parent is about aspects of their life ranging from they "Don't Know" to they "Know a Lot".

Psychological Control Scale – Youth Self-Report (PCS). The PCS, developed by Barber and colleagues (1996) is a reliable, 8-item measure that assesses aspects of psychological control. It asks participants to rate how well a statement describes their parent with responses ranging from "Not Like" to "A lot Like".

Young Parenting Inventory – Revision 3 (YPI). The YPI is a relatively new measure that focuses exclusively on negative parenting practices. The original version, created by Young and colleagues (2006), has since been revised and the version used in the present study consists of 41 items across 10 subscales (Louis, 2022). While psychometric validation of this new 41-item version is limited, the previous version demonstrated adequate reliability across several subscales as suggested by Clark and Watson (1995) (Louis et al., 2018). The YPI-R3 with additional subscales could be expected to have improved reliability and a full psychometric review of this measure is currently underway (Louis, personal communication). The YPI-R3 asks participants to rate how well a statement describes their parents with responses ranging from "Completely Untrue" to "Describes Him/Her Perfectly.

Response Format of Parenting Measures

Minor changes were made to the parenting measures in order to best address the aims of the study and to ensure semantic consistency across items. In order to reflect retrospective reports of parenting, any items using present tense were adjusted to past tense. To allow for nontraditional family structures, the word "caregiver" was chosen to replace any item references to "mother", "father", or "parent". Additionally, it was important to the analysis method that all parenting measures utilized the same measurement scale. Thus, all parenting scales were

converted to a 4-point Likert-type scale using response options: “Strongly disagree”, “Disagree”, “Agree”, “Strongly Agree”.

Participant Background, Mood, Mental Health, and General Functioning Measures

Participants completed a standard battery of demographic questions including those on race, gender, age, year in college, first-generational status, current housing situation, siblings, and current relationship status. The literature review revealed several factors that could influence parenting beyond parenting dimensions including parental mental illness (McKee et al., 2013). Additionally, many outcomes commonly associated with parenting (e.g., self-esteem, mental health) have also been associated with childhood trauma, abuse, neglect, or adverse childhood experiences (ACEs) (Felitti et al., 1998). Thus, the following were measured in order to evaluate convergent and discriminant validity of the new measure.

Childhood Trauma Questionnaire – Short Form (CTQ-SF). Bernstein and colleagues (2003) developed this 28-item self-report of emotional, physical, or sexual abuse, emotional and physical neglect, and minimization of maltreatment. The short form has demonstrated adequate to good reliability across samples (Bernstein et al., 2003). The CTQ-SF asks participants to reflect on experiences in childhood and adolescence with Likert-type responses ranging from “Never true” to “Very often true”.

Adverse Childhood Experiences Scale (ACEs). Felitti and colleagues (1998) developed this 18-item measure that assesses childhood emotional, physical, and sexual abuse as well as experiences of household dysfunction including parental substance abuse, mental illness, domestic violence, incarceration, and divorce. The measure has demonstrated good to excellent test-retest reliability when used to retrospectively report on adverse childhood experiences (Dube

et al., 2004). Participants are asked to respond to a series of binary Yes or No questions regarding the previously described adverse childhood experiences.

Positive and Negative Affect Scale (PANAS). This 20-item measure of trait positive and negative affect was created by Watson and colleagues (1988). The PANAS asks participants to rate the extent to which they usually feel a range of positive and negative emotions (e.g., excited, upset, nervous, etc.). The response measurement scale ranges from "Very slightly or not at all" to "Extremely".

Rosenberg Self-Esteem (RSE). The RSE scale, created by Rosenberg in 1979, is a 10-item measure of self-esteem with high reproducibility, high test-retest reliability, and had been validated against other measures of self-esteem (Rosenberg, 1979). The RSE scale asks participants to rate how much they agree with various statements about the self with responses ranging from "Strongly agree" to "Strongly disagree".

Generalized Anxiety Disorder-7 (GAD). Developed by Spitzer and colleagues (2006), The GAD-7 is a widely used 7-item self-report screening tool for anxiety symptoms based on the DSM-IV criteria for generalized anxiety disorder. The scale asks participants to rate how often they are bothered by a list of problems with responses ranging from "Not at all" to "Nearly every day".

Patient Health Questionnaire-9 (PHQ). The PHQ-9, developed by Kroenke and colleagues (2001), is a widely used 9-item self-report screening tool for depressive symptomatology based on the nine DSM-IV criteria for major depressive disorder. The scale asks participants to rate how often they are bothered by a list of problems with responses ranging from "Not at all" to "Nearly every day".

Strengths and Difficulties Questionnaire - Youth Self-Report (SDQ). Goodman (1997) developed this 25-item youth self-report measure of internalizing and externalizing problems as well as prosocial behavior. The prosocial subscale is not used to calculate internalizing and externalizing problems, and as this is the outcome of interest in the present study, these five items were excluded to reduce unnecessary participant burden and the remaining 20 items were used. The SDQ has demonstrated good internal consistency as well as content, structural, and concurrent validity across various ethnic groups (Paalman et al., 2013). The SDQ asks participants to rate how well a statement describes themselves over the past six months with responses ranging from "Not true" to "Certainly True".

Flourishing Scale (FS). The FS, created by Diener and colleagues (2010), is an 8-item measure used to assess wellbeing. The measure asks participants to rate their agreement with several statements with response options ranging from "Strongly disagree" to "Strongly agree".

Analysis Strategy

The analyses were completed in three stages using a cross-validation approach (Brown, 2006). This included comparing potential factor structures and retaining the one with the best model fit, running an initial ordinal factor analysis using sample one data, and following up with second ordinal factor analysis on the final version of the measure using sample two data. Factor Analyses were performed in *MPlus* 8.9 (Muthén & Muthén, 2017) using the weighted least squares with mean and variance adjusted (WLSMV) estimator, which has been found to be robust against categorical data as it does not assume a normal distribution (Wirth & Edwards, 2007). Additionally, models were identified using the item marker method, whereby the first item in each factor was fixed at one.

After screening, 4- and 6-factor structures were tested in comparison to the proposed 5-factor model in order to ensure the final measure achieved the best possible fit. Two 4-factor and two 6-factor alternative structures were developed theoretically, prior to any investigation of the 5-factor model. These included Model 4a: combined Acceptance and Rejection; Model 4b: combined Behavioral Control and Psychological Control; Model 6a: separated Involvement (i.e., monitoring, codependency) from Behavioral Control; and Model 6b: separated Behavioral Control into Structure (i.e., rules) and Demandingness (i.e., punishment). Resulting model fit indices (χ^2, RMSEA, etc.), chi-squared difference tests, and factor correlations were considered when choosing which model to retain for item-level assessment. Model fit indices were interpreted using general recommendation cut offs for acceptable fit provided by Hu and Bentler (1999) (SRMR .08 or less, RMSEA = .06 or less, CFI and TLI = .95 or greater).

Next, an ordinal confirmatory factor analysis (CFA) was conducted on sample one data to assess initial factor loadings and thresholds of all 119 items. Items with standardized factor loadings less than 0.5 were removed from consideration from future analysis in order to maintain a baseline level of reliability. Then, factor-specific item information curves (IICs) were generated to select a pool of items that demonstrated high factor loadings, as evidenced by taller height on the IIC, as well as adequate coverage across a range of endorsement rates, as evidenced by a variety of low and high threshold values and presence of a wide, flat IIC (Steinberg & Thissen, 1995; Thissen & Steinberg, 1986). In addition, the semantic content of items was checked to ensure that the full breadth of the construct was captured by the retained items. This process continued until a reasonable survey length was achieved for both a long and short form measure. Secondary ordinal CFAs were then completed for both the long and short form using sample two data to test the robustness of the final measures. Finally, reliability and validity

correlations among the new measure, previously established parenting measures, and various mental health and general functioning measures were analyzed using combined sample one and two data in SAS 9.4 (SAS Institute, 2014). Pearson's r correlations are interpreted via Cohen (1992), whereby weak = .1-.3, moderate = .3-.5, and strong = .5+.

Results

Factor Structure

Although all models had objectively good fit for the data, the 6-factor: Involvement (Model 6a) solution provided the best fit (see Table 3 for all model fit statistics). The initially proposed 5-factor structure was used as a base model and compared to theoretically derived 4-factor and 6-factor models using χ^2 difference tests (see Table 4 for all $\chi 2$ difference tests results). Comparisons revealed that both of the 4-factor models had significantly worse fit than the 5-factor model (Model 4a $\chi^2_{diff} = 184.34$, $p<.001$, Model 4b $\chi^2_{diff} = 108.82$, $p<.001$). In addition, difference tests for the 6-factor models revealed that both Model 6a and 6b fit significantly better than the 5-factor model (Model 6a $\chi^2_{diff} = 338.10$, $p<.001$, Model 6b $\chi^2_{diff} = 286.04$, $p<.001$). However, because the two 6-factor models are not nested within one another, a χ^2 difference test cannot be used to compare their fit. Instead, examination of the other fit indices (RMSEA, CFI, TLI, SRMR) indicated that Model 6a provided the best fit to the data and was retained for further analysis χ^2 (6887) = 12602.74, $p < .01$, RMSEA=.041 [90%CI:.041,.044], CFI=.943, TLI=.942, SRMR=.076. This model included factors Acceptance, Rejection, Autonomy, Involvement, Behavioral Control, and Psychological Control and fit the data well.

Initial Analysis Using Sample One

Examination of standardized item factor loadings and item information curves (IICs), and application of the decisions rules described earlier were used in identifying and selecting quality

items from the ordinal factor analysis on sample one data (see Figure 2 for IICs). Fully standardized item factor loadings for the Acceptance factor ranged from .793 – .922. Of the 14 items included in this factor subscale, eight high quality items were retained with factor loadings .898 – .922. The item with the highest factor loading was CRPBI 8: "…Believed in showing their love for me", and other items were retained based on the location of their IIC. For example, the threshold profile and corresponding IIC for CRPBI 10 suggested that this item provided particularly good discrimination among individuals with higher levels of the underlying latent trait. In contrast, the endorsement rate on the CRPBI 4 was higher, resulting in an IIC covering a lower range of the latent trait. The four best performing items (i.e., highest factor loadings, distinct thresholds, full coverage of construct breadth) from the long form were retained for the short form. This included CRPBI 4 (λ=.919), CRPBI 5 (λ=.920), CRPBI 8 (λ=.922), and CRPBI 10 (λ=.915). The test information curves (TIC) representing the composite reliability of each factor across the range of the latent traits are provided in Figure 3. The endorsement patterns of the items for this measure result in a composite measure that is best suited for discriminating among individuals with low to moderate levels of latent Acceptance.

Standardized factor loadings for the Rejection factor ranged from .613 – .942. Of the 14 items included in this factor, the eight retained items had factor loadings .870 – .942. YPI 13 ("…Treated me as if I was stupid or untalented") had a particularly high factor loading compared to others in the subscale. Additionally, PASCQ 6 and PASCQ 8 contributed valuable information about individuals higher or lower on the latent trait, respectively. Four of the best performing long form items were selected for use in the short form, which included PASCQ 6 (λ=.911), PASCQ 8 (λ=.925), YPI 11(λ=.916), and YPI 13 (λ=.942). The TIC for Rejection indicates that

the resulting measure is best suited for discriminating among individuals with moderate to high levels of the latent trait.

The absolute value of standardized item factor loadings for Autonomy ranged from .599 – .916. Of the 11 items included in this subscale, eight items (λ=.599 – .916) were retained for the long form. PASCQ 18 ("My caregiver accepted me for myself") had the highest factor loading and PASCQ 20 appeared to provide good discrimination among individuals on the upper end of the latent trait. PASCQ 9 and PASCQ 12 were also retained in the long form due to wide, flat IICs, despite lower factor loadings relative to others in the subscale. The four best performing items from the long form were retained for the short form. This included items PASCQ 11 (λ=.825), PASCQ 18 (λ=.916), PASCQ 19 (λ=.823), and PASCQ 20 (λ=.863). Item endorsement patterns for this measure indicate that it is best suited for discriminating among individuals with low to moderate levels of latent Autonomy.

The absolute value of standardized factor loadings for Involvement ranged from.127 – .872. Of the 13 items included in this factor, eight items with factor loadings .516 – .855 were retained for the long form. Two items (CSRFFI 2: "Family members felt guilty if they wanted to spend some time alone" and CSRFFI 8: "It seemed like there was never any place to be alone in our house") had distinctly higher factor loadings than the rest. CSRFFI 3, CSRFFI 4, and CSRFFIM 5 were all more difficult to endorse and therefore provided additional information about individuals with higher levels of the latent trait. Additionally, YPI 31 had a wide IIC and was retained despite a lower factor loading. The four best items from the long form were retained for the short form, which included CSRFFI 2 (λ=.872), CSRFFI 8 (λ=.855), CSRFFIM 5(λ=-.596), and YPI 31(λ=.521). The TIC for Involvement suggests that this measure is best suited for discriminating among individuals with moderate levels of latent Involvement.

The absolute value of standardized item factor loadings for the Behavioral Control factor ranged from .240 – .958. Of the 25 items included in this factor subscale, eight items were retained with factor loadings .536 – .958. The item with the highest factor loading was YPI 8: "Everything had to be on their terms". YPI 32 and CRPBI 22 provided good discrimination among individuals high and low on the underlying trait, respectively, and were therefore valuable to include in the final measure. Additionally, despite relatively low factor loadings, CRPBI 21, CSRFFI 7, and CRPBI 23 were retained in the long form measure due to their wide thresholds. The four best items from the long form – CRPBI 22 (λ=.810), YPI 8 (λ=.958), YPI 9 (λ=.912), YPI 32 (λ=.922) – were retained for the short form. The endorsement patterns of the items for this measure result in a composite measure that is best suited for discriminating among individuals with moderate levels of latent Behavioral Control.

Standardized factor loadings for Psychological Control ranged from .513 – .916. Of the 42 items included in this subscale, eight high quality items (λ=.789 – .916) were kept for the long form. Items with the highest factor loadings were YPI 5: "Made me feel guilty if I did not put their needs ahead of mine" and YPI 34: "Abused me verbally: did things like calling me names, screaming at me, swearing at me, or threatening me". YPI 25 and YPI 26 provided a high level of information on the upper end of the latent trait, and PCS 4 appeared to be an easier item to endorse, informing the lower end of the trait. The four best performing items from the long form were retained for the short form. It should be noted here that despite YPI 34's high factor loading, it was chosen not to be included in the short form due to concerns surrounding construct ambiguity and potential conflation with verbal abuse, which is further considered in the discussion. Thus, the short form was comprised of CRPBI 15 (λ=.876), PCS 4 (λ=.789), YPI 5 (λ=.916), and YPI 25 (λ=.869). Endorsement patterns for Psychological Control items indicate

that the composite measure is best suited for discriminating among individuals with moderate to high levels of the latent trait.

Confirmatory Analysis Using Sample Two

In total, the long form was comprised of 48 items. Secondary ordinal CFA of the long form suggested an acceptable model fit $\chi2(1065)=2896.56$, RMSEA=.061 [90%CI:.058,.064], CFI=.963, TLI=.961. Standardized factor loadings of the sample two analysis were comparable to the initial sample one analysis (λ_{ACC}=.866 - .924, λ_{REJ}=.829 - .944, λ_{AUT}=.656 - .924, λ_{INV}=.363 - .814, λ_{BEH}=.533 - .955, λ_{PSY}=.753 - .916 [see Table 5]).

Secondary ordinal CFA of the 24-item short form suggested an acceptable model fit $\chi2(237)=602.36$, RMSEA=.058 [90%CI:.052,.064], CFI=.985, TLI=.983. Standardized factor loadings of the sample two analysis were also similar to that of the sample one analysis (λ_{ACC}=.864 - .927, λ_{REJ}=.804 - .932, λ_{AUT}=.755 - .895, λ_{INV}=.499 - .699, λ_{BEH}=.751 - .933, λ_{PSY}=.764 - .867 [see Table 6]).

Reliability and Validity

Reliability of the long form, calculated via Cronbach's alpha, was overall very good (α_{ACC} = .95, α_{REJ} = .94, α_{AUT} = .91, α_{BEH} = .89, α_{PSY} = .90), with the exception of the Involvement factor which was acceptable (α_{INV} = .72). Reliability of the short form was also good, although Involvement again performed poorly relative to the others(α_{ACC} = .89, α_{REJ} = .90, α_{AUT} = .86, α_{INV} = .55,α_{BEH} = .87, α_{PSY} = .79). Potential explanations for the poor performance of the Involvement factor is further explored in the discussion section below and recommendations for improving these factors are made. In general, however, these reliability estimates are comparable to that of the previously established parenting measures (α_{PASCQ} = .83-.90, α_{CRPBI} = .88-.95, α_{CSRFFI} = .59-.79, α_{PCS} = .92, α_{YPI} = .62-.92). Of interest, the long form reliability of the

Acceptance factor is equal to that of the CRPBI acceptance subscale, despite being two fewer items. The short form reliability of the Rejection factor is equal to that of the PASCQ rejection or YPI degradation subscales using equal or fewer items. The short form Autonomy factor is equally reliable to the PASCQ autonomy support subscale, and the additional items included in the long form further improve the factor's reliability. Behavioral Control as measured by the long form was slightly more reliable than the CRPBI firm control subscale ($\alpha = .88$) and used two fewer items. The long and short form Psychological Control factors performed similarly to previously established measures ($\alpha_{CRPBI\ psy} = .93$, $\alpha_{PCS\ psy} = .92$) (see Table 10 for a list of all reliability coefficients).

Correlations between the new measure subscales and previously established parenting measures were examined to provide insight into the construct validity of the new measure. Generally, correlations among similar factors/subscales were strong (e.g., *r* Acceptance-CRPBI $_{warmth} = .98$, *r* Rejection-PASCQ $_{rejection} = .96$, *r* Psychological Control-PCS $_{psych\ control} = .90$). While, in a way, this is to be expected, given the item overlap across measures, this provides a testament of the convergent validity of the new factors and suggests that those with high correlations are measuring the same underlying construct. While most of the correlations were favorable, some concerns were raised about the validity of the Involvement and Behavioral Control factors or their presumably related subscales, which were weakly correlated (e.g., *r* Involvement-CSRFFI $_{monitoring} = .21$, *r* Behavioral Control-CSRFFI $_{behav\ control} = .19$). These measures are further discussed in the section below (see Table 10 for a list of correlations between parenting measures).

Additionally, convergent and discriminant validity were compared by examining correlations between the new measure subscales, general functioning, and mental health

outcomes. As discussed, the literature suggested that childhood trauma, ACEs, and trait affect can influence perceptions of parenting. The results of the present study confirmed this, finding a strong relationship between the new parenting measure subscales and trauma and moderate relationships with ACEs and trait affect (see Table 7). The literature also suggested that aspects of parenting (e.g., rejection, psychological control) may contribute to poor mental health in adulthood. Such relationships in the current study were found to be statistically significant, with moderate-strong associations including lower self-esteem (r = -.50), more depressive symptoms (r = .46), and externalizing problems (r = .39) (see Table 8). Acceptance and Autonomy were both negatively related to internalizing (r = -.34) and externalizing problems (r = -.37) and moderately, positively associated with flourishing (i.e., well-being) (r = .43). A list of all full correlations is provided in Table 8.

Additionally, partial correlations were calculated between parenting subscales and mental health outcomes after accounting for control variables (childhood trauma, ACEs, positive affect, and negative affect). The magnitude of all such relationships were significantly reduced to small or negligible. However, it is interesting to note that even after accounting for childhood trauma, ACEs, and trait affect, there was still some evidence of unique relationships between parenting and mental health outcomes. Here, Acceptance (r = .13) and Autonomy (r = .15) were associated with higher self-esteem, while Rejection (r = -.17), Involvement (r = -.20), Behavioral Control (r = -.13), and Psychological Control (r = -.15) were associated with lower self-esteem. Parenting subscales were not significantly related to GAD-7 anxiety symptoms after accounting for control variables. Rejection (r = .12), Involvement (r = .13), Behavioral Control (r = .13), and Psychological Control (r = .12) were all associated with reports of more depressive symptoms. Only Involvement was significantly related to increased overall internalizing symptoms (r = .13).

Autonomy was associated with decreased externalizing problem behavior (r = -.12), while Involvement was associated with increased externalizing (r = .11). Finally, Acceptance (r = .18) and Autonomy (r = .17) were both associated with increased flourishing, while it was inversely related to Rejection (r = -.11). A list of all partial correlations is provided in Table 9.

Discussion

The primary purpose of this study was to conduct a throughout review of existing research on parenting dimensions, consolidate the number of terms used, and develop a unifying measure. Additionally, this measure was aimed at retrospectively assessing adults' perceptions of the parenting they received as children, which emphasizes the subjective experience of parenting and its role in addressing adult psychological outcomes. Also relatively unique to this study was the goal of developing a flexible measure that can accommodate nontraditional family structures. This was achieved by allowing participants to identify their own primary caregiver, which may or may not be their mother, as is traditionally assumed by most parenting measures. A final aim of the study was to establish reliability and validity of the new measure compared to previously established measures in order to justify its use.

The Involvement factor was weaker across both measures, and the reliability of the short form was particularly affected. In the creation of the originally proposed 5-factor model, CSRFFI monitoring and psychological control (family-oriented social isolation and codependency) items were tried under Autonomy and Behavioral Control. However, these items did not fit well under the final 5-factor solution (λ=.101-.470). The 6-factor model, in which these items were instead included under the factor Involvement improved model fit, but examination of their sample one factor loadings shows that even then, some still appeared out of place under this factor (λ=.127-

.872). These items all came from the Colorado Self-Report of Family Functioning Inventory, which was structured somewhat differently than the other measures.

The CSRFFI focuses on parenting from a family systems perspective, with items that emphasize how the family or child was affected more generally by the parenting provided (e.g., "Family members felt guilty if they wanted to spend some time alone.", "How much did your caregiver really know who your friends were?") as opposed to the parent-focused or behavior-oriented items used by other measures (e.g., "My caregiver said 'no' to everything."). It is possible that their distinct language, emphasis on the family, and question-structured format, compared to other measures which were statement-oriented, were interpreted poorly by participants. Additionally, as seen from the items presented here, there is an emphasis on social isolation and codependency, which was found to be unrelated to monitoring. This may have resulted in the formation of an artifactual factor due to the various ambiguous constructs and styles included, hence its low reliability and convergent validity. Additionally, because measures of monitoring and involvement were not actively sought out during survey formation (as they had been grouped under Autonomy or Behavioral Control), there was a general underrepresentation of Involvement items in the pool. It should be noted, however, that monitoring is likely to be an important part of parenting and should be considered for future refinement of the new measures. The results of this study provides some evidence that monitoring may be conceptually distinct from Involvement and Behavioral Control, although the extent to which it warrants a separate factor is not yet discernable. Factor analysis with additional monitoring and other Involvement-related items would help to clearly define and strengthen this subscale of parenting. As a general recommendation, use of the short form Involvement subscale is not recommended due to its very low reliability. Researchers interested in including the

Involvement factor should retain the full 8-item long form subscale until further modifications have been made to improve it.

The Autonomy factor was also entirely constructed of items from the PASCQ and could benefit from a more expansive item pool. Autonomy, which can be seen as personal freedom, trust, independence, and parental acknowledgement of personal identity, was also very highly correlated with Acceptance (i.e., warmth, loving, kindness). While it is reasonable to expect that parents high on Acceptance would also support their child's Autonomy, there may be some construct overlap between the two.

While most factors transferred well from the long to short form with minimal loss in reliability, the Psychological Control scale was particularly affected, which warrants additional elaboration. Factor analysis revealed that YPI 34: "Abused me verbally: did things like calling me names, screaming at me, swearing at me, or threatening me" was a driving component of the Psychological Control factor and thus it was included in the long form. However, its inclusion may raise concerns regarding conflation with verbal abuse, a construct arguably distinct from parental manipulation, guilt, and love withdrawal, and therefore not a component of parenting, but rather strictly abuse. Although a classical IRT, data-driven approach would be to select items based on factor loading alone, attention to qualitative nuance and construct clarity was crucial throughout the item selection process, and it was decided that this item should not be retained for the short form. Thus, the resulting short form saw lower reliability. Future research is needed to clarify distinctions between abuse and Psychological Control or even Rejection, which may all include aspects of degradation and fear to some extent.

As indicated by the literature review, there were some considerable correlations between the new measure subscales and mood, mental health, and general functioning measures (e.g.,

trauma, ACEs, anxiety, depression). In order for the new measures to offer full predictive utility, it is important to demonstrate that they can predict the outcomes above and beyond the effects of the potential covariates. The partial correlations suggest that while the relationship between parenting and adult mental health can mostly be explained by childhood trauma, ACEs, and trait effect, parenting subscales were often still related to some mental health outcomes. This may have interesting clinical implications in recognizing parenting as a stressor distinct from overt trauma and adversity.

One concern that has not yet been acknowledged surrounds the intercorrelations between parenting dimension factors and potential constructural redundancy. For example, Acceptance and Rejection (r = -.83), Autonomy and Acceptance (r = .88), Rejection and Psychological Control (r = .89), and Behavioral Control and Psychological Control (r = .81) were all correlated very highly, suggesting they may be assessing similar underlying constructs (see Table 11 for a full list of intercorrelations among factors). These results are despite previous research suggesting that Acceptance and Rejection should be measured separately (Skinner et al., 2005), as well as Psychological and Behavioral Control (Barber, 1996; Schaefer, 1965).

One potential explanation for this is that the intercorrelations described here are true-score correlations not impacted by measurement error, meaning they will naturally be stronger than correlations among composite subscale scores, which is likely to have been reported in prior work (e.g., Skinner et al., 2005). It could be argued that the item-selection process did not favor discriminant validity enough and may have resulted in items that potentially cross-loaded onto multiple factors. However, the fact that the items in each factor also correlate highly with conceptually distinct subscales from other parenting measures (e.g., r Acceptance-PASCQ $_{\text{rejection}}$ = -.82, r Behavioral Control-CRPBI $_{\text{psych control}}$ = .83), makes it unlikely that the overlap is unique

to the items selected in the present study. This suggests that the high factor correlations seen here may be evident of a larger phenomenological issue, rather than a measurement issue. However, this still raises questions about the discriminant validity of the new measure, as well as previously established measures of parenting. More work is needed to investigate the discriminant and predictive validity of these factors. For example, if future research finds that Acceptance is related to a specific outcome, but Rejection is unrelated, it would support that there is something useful about differentiating between the two. As it currently stands, the results of the present study do not support this distinction.

In general, the present study has important implications for research synthesis and cohesion, which is needed to draw strong conclusions about parenting research. In its current state, the measure(s) developed here is intended to be used as a research instrument. Future developments of this instrument may have clinical utility. although a lot more work is required to refine this measure for clinical contexts.

Conclusions

The present study was the first to attempt a formal consolidation and restructuring of the parenting dimensions literature. The resulting long and short form measures utilized a 6-factor structure: Acceptance, Rejection, Autonomy, Involvement, Behavioral Control, and Psychological Control. In general, the resulting measures were comparable in reliability to previously established measures of parenting, with the exception of the Involvement subscale which requires additional modifications. There is some evidence of convergent validity, in that the parenting factors were correlated with similar factors from other measures and outcomes in the expected direction. However, the ability to make claims about discriminant validity is limited, with the exception of Involvement, due to high correlations among the factors. It is

believed that the measures created here, particularly the long form assessment, represent a culmination of parenting dimensions research to date. Although research is continuously exploring potentially new components of parenting, consolidation of the existing literature and unification of quality assessments is crucial to good scientific practice. In order to confidently compare result across studies, identify childhood origins of mental health conditions, and form evidence-based curriculums for future parents, it is important that we establish a consensus on the core components and that we continue to strive for improved measurement.

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Tables

Table 1. *Grouping of Parenting Dimensions and Measures Used*

Superordinate Dimension	*Acceptance*	*Rejection*	*Autonomy*	*Behavioral Control*	*Psychological Control*
Definition *(Skinner et al., 2005; Grolnick & Slowiaczek, 1994); Brown et al., 1993;Barber, 1996)*	Expressions of **affection**, **love**, appreciation, kindness, regard, emotional availability, support, and genuine caring	Expressions of aversion, **hostility**, **harshness**, over reactivity, irritability, explosiveness, **criticism**, derision, disapproval, and dislike, often made in response to a child's request for help and attention	Encouraging **freedom of expression and action**, to attend to, accept, and value preferences and opinions, independent problem-solving, choice, and participation in decisions	Providing clear **expectations**, **rules**, **predictable guidelines**, consistent and appropriate limit setting for child behavior. Dedication of behavioral, personal, and cognitive resources, **involvement, supervision and monitoring**	Discouraging expression of emotions, personal beliefs, self-expression, and attachment through **manipulation**, pressure, **coercion**, disappointment, **withdraw of love**, **isolation**, **shame**, **guilt**, restriction, overcontrol, and demanding strict obedience.
Related constructs	**Warmth**, approval, supportive control, positive involvement, closeness	Deprecating, negative, **cold**	**Independence**, responsiveness, democratic, permissiveness	**Firm control**, organization, regulation, routine, stimulation, overprotection, intrusive support, dependence	Arbitrary control, intrusive control, **restrictiveness**
Measures Used					
PASCQ *(Skinner et al., 2005)*	X	X	X		X
CRPBI *(Schludermann & Schludermann, 1988 unpub.)*	X			X	X
CSRFFI *(Barber et al., 1994)*			X	X	
PCS *(Barber, 1996)*					X
YPI *(Louis, 2022)*		X	X	X	X

Note. PASCQ=Parents as Social Context Questionnaire, CRPBI=Children's Report of Parental Behavior Inventory, CSRFFI=Colorado Self-Report of Family Functioning Inventory, CSRFFIM= CSRFFI Monitoring Subscale, PCS=Psychological Control Scale, YPI=Young Parenting Inventory.

Table 2. *Full List of Measures*

	Measure	*Number of items*	*Appendix*
Parenting Dimensions	Parents as Social Context Questionnaire-Revised (PASCQ)	24	A
	Child Report of Parental Behavior Inventory-Revised (CRPBI)	30	B
	Colorado Self-Report of Family Functioning Inventory-Revised (CSRFFI)	16	C
	Psychological Control Scale-Youth Self-Report (PCS)	8	D
	Young Parenting Inventory-Revised (YPI)	41	E
Background, Mood Mental Health, and General Functioning	Demographics	10	F
	Identify Caregiver	2	G
	Childhood Trauma Questionnaire (CTQ)	28	H
	Adverse Childhood Experiences Scale (ACEs)	18	I
	Positive and Negative Affect Scale (PANAS)	20	J
	Rosenberg Self-Esteem (RSE)	10	K
	Generalized Anxiety Disorder-7 (GAD-7)	7	L
	Patient Health Questionnaire-9 (PHQ-9)	9	M
	Strengths and Difficulties Questionnaire-Youth Self-Report (SDQ)	20	N
	Flourishing Scale (FS)	8	O
Total Number of Items		251 (119 parenting items)	

Table 3. *Model Fit Statistics for Factor Structure Analysis*

Model	(*df*) χ^2	CFI	TLI	RMSEA [90% CI]	SRMR
M1 – 4-factor A (Acc_Rej)	(6896) 13470.85	.935	.934	.046 [.044, .047]	.078
M2 – 4-factor B (Beh_PsyC)	(6896) 13257.42	.937	.936	.045 [.044, .046]	.077
M3 – 5-factor (base)	(6892) 13150.92	.938	.937	.044 [.043, .046]	.077
M4 – 6-factor A (Involve)	(6887) 12602.74	.943	.942	.041 [.041, .044]	.076
M4 – 6-factor B (Struct+Demand)	(6887) 12913.58	.940	.939	.044 [.042, .045]	.077

Note. Table describes model fit statistics for the various 4-, 5-, and 6-factor models tested using sample one data. Model descriptions: 5-factor (base) contained Acceptance, Rejection, Autonomy, Behavioral Control, and Psychological Control; 4-factor A (Acc_Rej) combined Acceptance and Rejection; 4-factor B (Beh_PsyC) combined Behavioral Control and Psychological Control; 6-factor A (Involve) added Involvement as separate from Behavioral Control; 6-factor B (Struct+Demand) split Behavioral Control into Structure and Demandingness. All models were identified by fixing the first item in each factor at 1.

Table 4. *Results of Model Factor Structure Chi-squared Difference Testing*

	Model (χ^2)	(*df*) $\chi^{2\ dif}$	*p*
4A - 5	4A (13471); 5 (13151)	(4) 184.34	< .001
4B - 5	4B (13257); 5 (13151)	(4) 108.82	< .001
5 - 6A	5 (13151); 6A (12603)	(5) 338.10	< .001
5 - 6B	5 (13151); 6B (12914)	(5) 286.04	< .001

Note. Table describes cross-model comparisons, whereby the more complex model is tested against the simpler model. Model descriptions: 5 (base), 4A (Acc_Rej), 4B (Beh_PsyC), 6A (Involve), 6B (Struct+Demand).

Table 5. *Factor Loadings and Thresholds for the New Measure Long Form*

	Sample One				Sample Two			
	Unstd. λ | Std. λ	τ_1	τ_2	τ_3	Unstd. λ | Std. λ	τ_1	τ_2	τ_3
Acceptance								
PASCQ 2 *My caregiver enjoyed being with me.*	0.992 | .913	-1.98	-1.33	-0.35	0.983 | .906	-2.30	-1.22	-0.28
PASCQ 3 *My caregiver was always glad to see me.*	0.989 | .910	-1.74	-1.10	-0.25	0.957 | .882	-1.98	-0.97	-0.15
CRPBI 3 *Was able to make me feel better when I was upset.*	0.979 | .900	-1.27	-0.71	0.09	1.002 | .924	-1.32	-0.69	0.16
CRPBI 4 *Enjoyed doing things with me.*	0.999 | .919	-2.02	-1.11	-0.32	0.967 | .892	-2.06	-1.10	-0.18
CRPBI 5 *Cheered me up when I was sad.*	1.000 | .920	-1.36	-0.75	-0.01	1.000 | .922	-1.39	-0.74	0.04
CRPBI 6 *Gave me a lot of care and attention.*	0.977 | .898	-1.43	-0.85	-0.13	0.964 | .889	-1.69	-0.87	0.03
CRPBI 8 *Believed in showing their love for me.*	1.002 | .922	-1.55	-1.07	-0.28	0.939 | .866	-1.67	-1.07	-0.21
CRPBI 10 *Was easy to talk to.*	0.995 | .915	-1.09	-0.51	0.25	0.991 | .913	-1.03	-0.44	0.31
ψ_{ACC}	.846	-	-	-	.849	-	-	-
Rejection								
PASCQ 5 *Sometimes I would wonder if my caregiver liked me.*	0.950 | .870	0.29	0.65	1.37	0.906 | .844	0.21	0.64	1.33
PASCQ 6 *My caregiver thought I was always in the way.*	0.995 | .911	0.55	1.17	1.98	0.902 | .841	0.40	1.19	1.91
PASCQ 7 *My caregiver made me feel like I was not wanted.*	1.011 | .926	0.61	0.99	1.67	0.963 | .898	0.47	1.02	1.59
PASCQ 8 *Nothing I did was good enough for my caregiver.*	1.010 | .925	0.23	0.84	1.35	0.964 | .899	0.20	0.78	1.40
YPI 11 *Put me down and made me feel ashamed of myself if I didn't do well.*	1.000 | .916	0.33	0.77	1.29	1.000 | .932	0.30	0.75	1.21
YPI 12 *Saw me as having little to contribute.*	0.976 | .894	0.50	1.07	1.60	0.906 | .844	0.60	1.12	1.57
YPI 13 *Treated me as if I was stupid or untalented.*	1.029 | .942	0.80	1.27	1.65	1.013 | .944	0.69	1.25	1.79
YPI 14 *Would call me names (like "stupid" or "idiot") when I made mistakes.*	0.950 | .870	0.63	0.98	1.46	0.890 | .829	0.55	0.92	1.40
ψ_{REJ}	.839	-	-	-	.869	-	-	-
Autonomy								
PASCQ 9 *When I wanted to do something, my caregiver showed me how.*	0.757 | .693	-1.42	-0.76	0.36	0.835 | .772	-1.42	-0.72	0.40
PASCQ 10 *When I wanted to understand how something works, my caregiver explained it to me.*	0.856 | .784	-1.55	-0.88	0.08	0.882 | .815	-1.62	-0.78	0.19
PASCQ 11 *If I ever had a problem, my caregiver helped me to figure out what to do about it.*	0.901 | .825	-1.42	-0.85	-0.02	0.925 | .855	-1.48	-0.81	0.09
PASCQ 12 *My caregiver explained the reasons for our family rules.*	0.654 | .599	-1.09	-0.40	0.556	0.710 | .656	-1.06	-0.40	0.57
PASCQ 17 *My caregiver trusted me.*	0.919 | .841	-1.50	-0.97	-0.11	0.889 | .822	-1.53	-0.81	0.08
PASCQ 18 *My caregiver accepted me for myself.*	1.000 | .916	-1.60	-0.87	-0.20	1.000 | .924	-1.51	-0.80	-0.13
PASCQ 19 *My caregiver let me do the things I thought were important.*	0.899 | .823	-1.51	-1.08	-0.03	0.848 | .784	-1.69	-0.88	0.14
PASCQ 20 *My caregiver tried to understand my point of view.*	0.942 | .863	-1.08	-0.45	0.39	0.950 | .878	-1.08	-0.42	0.50
ψ_{AUT}	.838	-	-	-	.855	-	-	-
Involvement								
CSRFFI 2 *Family members felt guilty if they wanted to spend some time alone.*	1.675 | .872	-0.02	0.65	1.39	1.206 | .704	-0.04	0.61	1.42

CSRFFI 3 *Family members found it hard to get away from each other.*	1.492 | .777	-0.16	0.75	1.65	1.115 | .674	-0.23	0.67	1.55
CSRFFI 4 *Family members felt pressured to spend most free time together.*	1.276 | .665	-0.16	0.67	1.45	0.955 | .558	-0.13	0.69	1.50
CSRFFI 8 *It seemed like there was never any place to be alone in our house.*	1.641 | .855	0.03	0.67	1.21	1.394 | .814	0.01	0.63	1.25
CSRFFIM 2 *How much did your caregiver really know where you were most afternoons after school?*	-0.991 | -.516	-1.84	-1.42	-0.60	-0.623 | -.363	-1.74	-1.33	-0.46
CSRFFIM 5 *How much did your caregiver really know who your friends were?*	-1.145 | -.596	-1.67	-1.11	-0.31	-0.986 | -.575	-1.53	-0.99	-0.21
YPI 28 *Did too many things for me instead of letting me do things on my own.*	1.009 | .525	0.00	0.75	1.50	0.901 | .526	0.01	0.80	1.46
YPI 31 *Overprotected me.*	1.000 | .521	-0.63	0.08	0.86	1.000 | .584	-0.60	0.13	0.91
ψ_{INV}	.271	-	-	-	.341	-	-	-
Behavioral Control								
CRPBI 21 *Believed in having a lot of rules and sticking with them.*	0.581 | .536	-0.67	0.29	1.18	0.595 | .533	-0.59	0.22	1.17
CRPBI 22 *Insisted that I must do exactly as I am told.*	0.878 | .810	-0.60	0.16	0.89	0.880 | .787	-0.61	0.12	1.01
CRPBI 23 *Was very strict with me.*	0.680 | .627	-0.56	0.29	1.00	0.826 | .739	-0.65	0.28	1.06
CSRFFI 7 *There was strict punishment for breaking rules in our family.*	0.649 | .598	-0.47	0.39	1.28	0.658 | .589	-0.42	0.42	1.25
YPI 7 *Put a lot of pressure on me to meet all of my responsibilities.*	0.814 | .751	-0.75	-0.16	0.56	0.836 | .748	-0.70	-0.14	0.61
YPI 8 *Everything had to be on their terms.*	1.038 | .958	-0.14	0.42	1.03	1.067 | .955	-0.16	0.41	1.04
YPI 9 *When we disagreed, they always needed to be right.*	0.989 | .912	-0.34	0.10	0.72	1.032 | .924	-0.37	0.09	0.60
YPI 32 *They relied more on punishment than praise and rewards.*	1.000 | .922	0.19	0.72	1.27	1.000 | .895	0.20	0.67	1.23
ψ_{BEH}	.850	-	-	-	.801	-	-	-
Psychological Control								
PASCQ 16 *My caregiver got mad at me with no warning.*	0.924 | .846	-0.10	0.51	1.14	0.970 | .843	-0.10	0.433	1.08
CRPBI 15 *Wanted to control whatever I did.*	0.956 | .876	0.01	0.63	1.22	0.983 | .854	-0.12	0.57	1.22
CRPBI 16 *Was always trying to change me.*	0.954 | .875	0.50	0.83	1.39	1.024 | .890	0.00	0.77	1.43
PCS 4 *Acted like they knew what I was thinking or feeling.*	0.924 | .789	-0.53	0.08	0.82	0.877 | .762	-0.58	-0.10	0.79
YPI 5 *Made me feel guilty if I did not put their needs ahead of mine.*	1.000 | .916	0.32	0.65	1.19	1.000 | .869	0.21	0.69	1.24
YPI 25 *Seemed to get pleasure out of hurting me.*	0.948 | .869	1.31	1.79	2.38	0.944 | .820	1.22	1.62	2.06
YPI 26 *Used me or took advantage of me.*	0.913 | .837	1.11	1.60	2.11	0.867 | .753	1.11	1.46	1.98
YPI 34 *Abused me verbally: did things like calling me names, screaming at me, swearing at me, or threatening me.*	0.993 | .910	0.51	0.87	1.33	1.055 | .916	0.42	0.81	1.21
ψ_{PSY}	.840	-	-	-	.755	-	-	-

Note. Unstd. λ=unstandardized factor loading, Std. λ=standardized factor loading, ν=intercept, α=factor mean, ψ=factor variance, PASCQ=Parents as Social Context Questionnaire, CRPBI=Children's Report of Parental Behavior Inventory, CSRFFI=Colorado Self-Report of Family Functioning Inventory, CSRFFIM= CSRFFI Monitoring Subscale, PCS=Psychological Control Scale, YPI=Young Parenting Inventory

Table 6. *Factor Loadings and Thresholds for the New Measure Short Form*

	Sample Two			
	Unstd. λ | Std. λ	τ_1	τ_2	τ_3
Acceptance				
CRPBI 4 *Enjoyed doing things with me.*	0.958 | .876	-2.06	-1.10	-0.18
CRPBI 5 *Cheered me up when I was sad.*	1.000 | .914	-1.39	-0.74	0.04
CRPBI 8 *Believed in showing their love for me.*	0.945 | .864	-1.67	-1.07	-0.21
CRPBI 10 *Was easy to talk to.*	1.014 | .927	-1.03	-0.44	0.31
ψ_{ACC}	.836	-	-	-
Rejection				
PASCQ 6 *My caregiver thought I was always in the way.*	0.866 | .804	0.40	1.19	1.91
PASCQ 8 *Nothing I did was good enough for my caregiver.*	0.960 | .892	0.20	0.78	1.40
YPI 11 *Put me down and made me feel ashamed of myself if I didn't do well.*	1.000 | .929	0.30	0.75	1.21
YPI 13 *Treated me as if I was stupid or untalented.*	1.003 | .932	0.69	1.25	1.79
ψ_{REJ}	.863	-	-	-
Autonomy				
PASCQ 11 *If I ever had a problem, my caregiver helped me to figure out what to do about it.*	0.927 | .830	-1.48	-0.81	0.09
PASCQ 18 *My caregiver accepted me for myself.*	1.000 | .895	-1.51	-0.80	-0.13
PASCQ 19 *My caregiver let me do the things I thought were important.*	0.844 | .755	-1.69	-0.88	0.14
PASCQ 20 *My caregiver tried to understand my point of view.*	0.962 | .861	-1.08	-0.42	0.50
ψ_{AUT}	.802	-	-	-
Involvement				
CSRFFI 2 *Family members felt guilty if they wanted to spend some time alone.*	1.117 | .596	-0.04	0.61	1.42
CSRFFI 8 *It seemed like there was never any place to be alone in our house.*	1.311 | .699	0.01	0.63	1.25
CSRFFIM 5 *How much did your caregiver really know who your friends were?*	-0.935 | -.499	-1.53	-0.99	-0.21
YPI 31 *Overprotected me.*	1.000 | .533	-0.60	0.13	0.91
ψ_{INV}	.285	-	-	-
Behavioral Control				
CRPBI 22 *Insisted that I must do exactly as I am told.*	0.882 | .751	-0.61	0.12	1.01
YPI 8 *Everything had to be on their terms.*	1.095 | .933	-0.16	0.41	1.03
YPI 9 *When we disagreed, they always needed to be right.*	1.067 | .909	-0.37	0.09	0.60
YPI 32 *They relied more on punishment than praise and rewards.*	1.000 | .852	0.20	0.67	1.23
ψ_{BEH}	.726	-	-	-
Psychological Control				
CRPBI 15 *Wanted to control whatever I did.*	0.977 | .847	-0.12	0.57	1.22
PCS 4 *Acted like they knew what I was thinking or feeling.*	0.881 | .764	-0.58	-0.10	0.79
YPI 5 *Made me feel guilty if I did not put their needs ahead of mine.*	1.000 | .867	0.21	0.69	1.25
YPI 25 *Seemed to get pleasure out of hurting me.*	0.907 | .787	1.22	1.62	2.06
ψ_{PSY}	.752	-	-	-

Note. Unstd. λ=unstandardized factor loading, Std. λ=standardized factor loading, ν=intercept, α=factor mean, ψ=factor variance, PASCQ=Parents as Social Context Questionnaire, CRPBI=Children's Report of Parental Behavior Inventory, CSRFFI=Colorado Self-Report of Family Functioning Inventory, CSRFFIM= CSRFFI Monitoring Subscale, PCS=Psychological Control Scale, YPI=Young Parenting Inventory.

Table 7. *Validity Correlations between New Measure Subscales and General Functioning*

	Trauma	ACEs	Positive Affect	Negative Affect
Accept	-.63 | -.62	-.44 | -.42	.31 | .32	-.36 | -.36
Reject	.68 | .66	.48 | .45	-.27 | -.26	.41 | .39
Autono	-.62 | -.62	-.44 | -.43	.32 | .30	-.37 | -.37
Involve	.29 | .30	.24 | .24	-.14 | -.17[a]	.32 | .31
BehavC	.53 | .56	.37 | .40	-.17 | -.23	.35 | .36
PsychC	.67 | .61	.50 | .46	-.23 | -.22	.42 | .40

Note. Each cell describes correlations between the new measure subscales and relevant mood and general functioning measures using the format (long form) | (short form). All correlations significant at $p<.0001$ unless otherwise denoted. [a] $p = .0004$. Trauma = Childhood Trauma Questionnaire (CTQ), ACEs = Adverse Childhood Experiences Scale, Positive and Negative Affect = Positive and Negative Affect Scale (PANAS).

Table 8. *Validity Correlations between New Measure Subscales and Relevant Outcomes*

	Self-Esteem	Anxiety	Depression	Internalizing Symptoms	Externalizing Symptoms	Flourishing
Accept	.47 | .46	-.35 | -.34	-.41 | -.41	-.34 | -.33	-.37 | -.36	.43 | .43
Reject	-.50 | -.48	.38 | .39	.46 | .46	.37 | .37	.37 | .36	-.40 | -.39
Autono	.48 | .48	-.36 | -.35	-.42 | -.42	-.35 | -.33	-.40 | -.38	.44 | .42
Involve	-.34 | -.31	.31 | .31	.32 | .32	.35 | .33	.24 | .23	-.22 | -.19
BehavC	-.39 | -.43	.35 | .35	.40 | .41	.32 | .33	.34 | .36	-.27 | -.32
PsychC	-.47 | -.46	.40 | .39	.46 | .44	.40 | .38	.40 | .37	-.34 | -.32

Note. Each cell describes correlations between the new measure subscales and relevant mental health outcomes using the format (long form) | (short form). All correlations significant at $p<.0001$. Self-Esteem = Rosenberg Self-Esteem (RSE) scale, Anxiety = Generalized Anxiety Disorder-7 (GAD-7), Depression = Patient Health Questionnaire-9 (PHQ-9), Internalizing and Externalizing Symptoms = Strengths and Difficulties Questionnaire (SDQ), Flourishing = Flourishing Scale (FS).

Table 9. *Partial Correlations between New Measure Subscales and Relevant Outcomes*

	Self-Esteem	Anxiety	Depression	Internalizing Symptoms	Externalizing Symptoms	Flourishing
Accept	**.13** | .12	-.04 | -.03	-.06 | -.06	.01 | .01	-.06 | -.05	**.18** | **.17**
Reject	**-.17** | **-.17**	.05 | .07	.12 | **.14**	.02 | .05	.03 | .04	-.11 | -.12
Autono	**.15** | **.16**	-.04 | -.04	-.05 | -.07	.00 | .02	-.12 | -.09	**.17** | **.17**
Involve	**-.20** | **-.18**	.10 | .10	**.13** | **.15**	**.13** | **.15**	.11 | .09	-.06 | -.08
BehavC	**-.13** | **-.14**	.08 | .06	**.13** | .10	.03 | .01	.08 | .09	-.03 | -.04
PsychC	**-.15**| **-.15**	.07 | .08	.12 | **.13**	.07 | .07	.07 | .08	-.04 | -.03

Note. Each cell describes correlations between the new measure subscales and relevant mental health outcomes using the format (long form) | (short form). Bolded correlations are significant at p<.0001. Correlation estimates .11-.12 are significant at p<.001 and estimates .07-.10 are significant at p<.05. Self-Esteem = Rosenberg Self-Esteem (RSE) scale, Anxiety = Generalized Anxiety Disorder-7 (GAD-7), Depression = Patient Health Questionnaire-9 (PHQ-9), Internalizing and Externalizing Symptoms = Strengths and Difficulties Questionnaire (SDQ), Flourishing = Flourishing Scale (FS).

Table 10. *Correlations between New Measure Subscales and Previously Established Measures of Parenting*

			Accept	Reject	Autono	Involve	BehavC	PsychC
		α	.95 | .89	.94 | .90	.91 | .86	.72 | .55	.89 | .87	.90 | .79
PASCQ	warmth	.90	**.90 | .84**	**-.80 | -.77**	**.81 | .81**	**-.22 | -.21**	**-.58 | -.63**	**-.71 | -.66**
	rejection	.90	**-.82 | -.79**	**.96 | .93**	**-.78 | -.79**	**.34 | .32**	**.68 | .73**	**.84 | .78**
	structure	.83	**.79 | .77**	**-.68 | -.68**	**.94 | .83**	**-.30 | -.29**	**-.55 | -.63**	**-.68 | -.65**
	chaos	.84	**-.74 | -.73**	**.77 | .75**	**-.74 | -.74**	**.42 | .39**	**.69 | .75**	**.83 | .76**
	autonomy	.86	**.85 | .83**	**-.81 | -.81**	**.94 | .96**	**-.39 | -.38**	**-.70 | -.75**	**-.81 | -.78**
	coercion	.88	**-.69 | -.69**	**.74 | .75**	**-.70 | -.71**	**.49 | .48**	**.84 | .84**	**.81 | .79**
CRPBI	acceptance	.95	**.98 | .97**	**-.83 | -.82**	**.87 | .86**	**-.30 | -.29**	**-.68 | -.75**	**-.79 | -.74**
	psych contr	.93	**-.72 | -.72**	**.80 | .80**	**-.73 | -.75**	**.49 | .48**	**.83 | .85**	**.89 | .87**
	firm contr	.88	**-.53 | -.53**	**.56 | .57**	**-.53 | -.56**	**.43 | .44**	**.82 | .70**	**.63 | .63**
CSRFFI	psych contr	.79	**-.40 | -.40**	**.44 | .44**	**-.42 | -.43**	**.82 | .75**	**.60 | .53**	**.53 | .53**
	behav contr	.59	.04 | .05	-.02 | .00	.05 | .01	.04 | .07	**.19** | .05	-.02 | .00
	monitoring	.84	**.33 | .33**	**-.28 | -.27**	**.32 | .30**	**.21 | .18**	**-.16 | -.21**	**-.25 | -.22**
PCS	psych contr	.92	**-.76 | -.75**	**.81 | .81**	**-.75 | -.77**	**.46 | .44**	**.77 | .83**	**.90 | .89**
YPI	competitive	.72	**-.50 | -.50**	**.57 | .58**	**-.50 | -.51**	**.39 | .39**	**.68 | .65**	**.60 | .59**
	controlling	.92	**-.73 | -.73**	**.79 | .80**	**-.74 | -.76**	**.50 | .48**	**.89 | .93**	**.88 | .88**
	degradation	.90	**-.78 | -.77**	**.95 | .93**	**-.76 | -.77**	**.35 | .34**	**.73 | .78**	**.87 | .81**
	neglect	.66	**-.55 | -.53**	**.52 | .50**	**-.54 | -.51**	**.18 | .17**	**.32 | .43**	**.51 | .47**
	emot inhib	.84	**-.77 | -.76**	**.73 | .72**	**-.69 | -.68**	**.34 | .32**	**.63 | .69**	**.71 | .67**
	intrusive	.78	**-.59 | -.58**	**.67 | .65**	**-.57 | -.58**	**.29 | .27**	**.48 | .53**	**.69 | .64**
	overprotect	.62	**-.17 | -.20**	**.22 | .23**	**-.25 | -.24**	**.57 | .52**	**.32 | .34**	**.33 | .36**
	punitive	.78	**-.74 | -.73**	**.84 | .82**	**-.70 | -.72**	**.34 | .34**	**.77 | .82**	**.85 | .79**
	social excl	.78	**-.60 | -.59**	**.63 | .61**	**-.58 | -.57**	**.33 | .31**	**.50 | .56**	**.62 | .59**
	undepend	.76	**-.60 | -.58**	**.61 | .59**	**-.58 | -.56**	**.32 | .29**	**.46 | .53**	**.65 | .60**

Note. Each cell describes correlations between the new measure subscales and subscales of previously established parenting measures using the format (long form) | (short form). Bolding indicates significance at p<.0001. PASCQ=Parents as Social Context Questionnaire, CRPBI=Children's Report of Parental Behavior Inventory, CSRFFI=Colorado Self-Report of Family Functioning Inventory, CSRFFIM= CSRFFI Monitoring Subscale, PCS=Psychological Control Scale, YPI=Young Parenting Inventory.

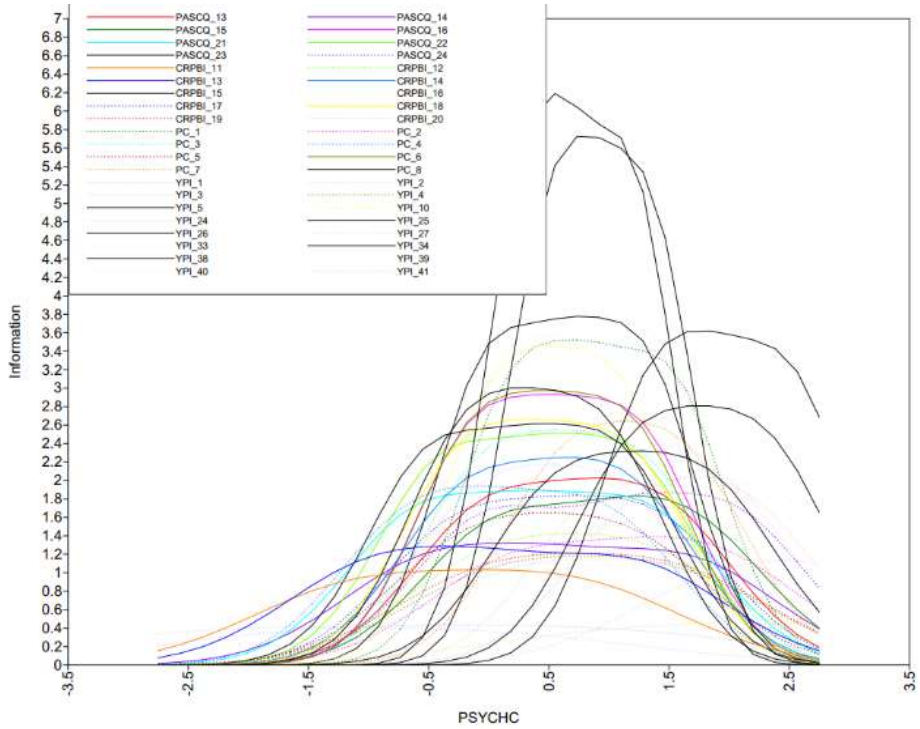
Table 11. *Intercorrelations among New Measure Subscales*

	Accept	Reject	Autono	Involve	BehavC	PsychC
Accept	*.98*	-.80	.85	-.30	-.74	-.74
Reject	-.83	*.98*	-.80	.35	.78	.83
Autono	.88	-.80	*.95*	-.36	-.75	-.78
Involve	-.30	.35	-.37	*.92*	.46	.49
BehavC	-.68	.73	-.66	.50	*.94*	.85
PsychC	-.79	.89	-.79	.48	.81	*.97*

Note. Within measure long form correlations are presented on the lower left triangle. Within measure short form correlations are presented on the upper right triangle. Within measure long-short form correlations are presented along the diagonal.

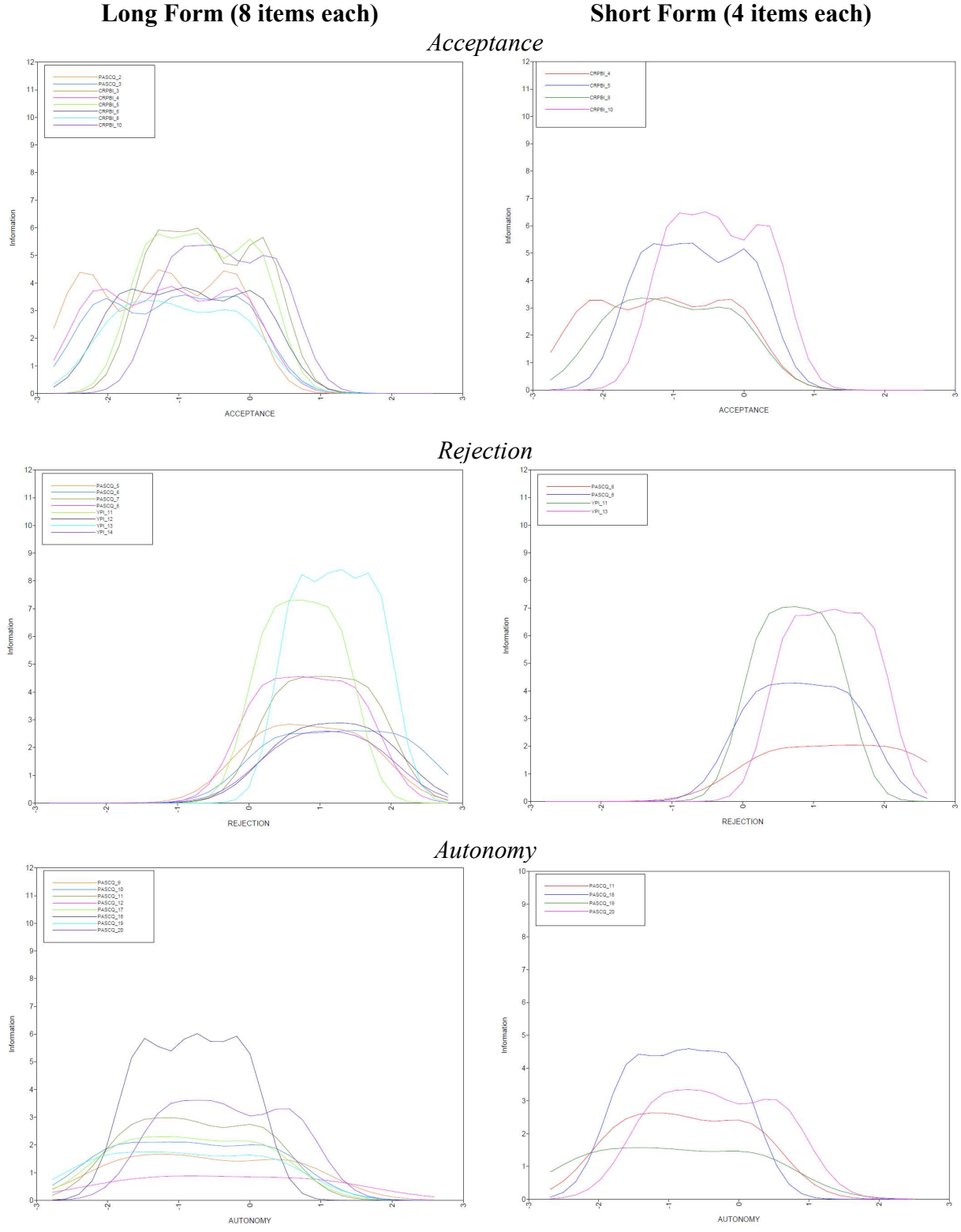
Figures

Figure 1. *Item Information Curve - New Measure: Psychological Control Subscale*

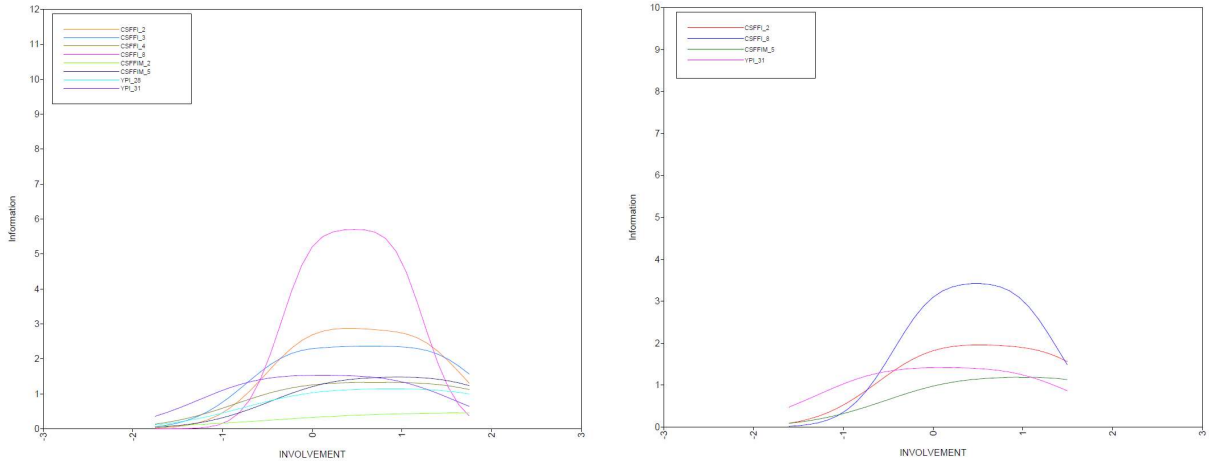


Note. Example to show selection process from initial full-item ordinal factor analysis IIC. Eight items in black show the Psychological Control items retained for the final measure

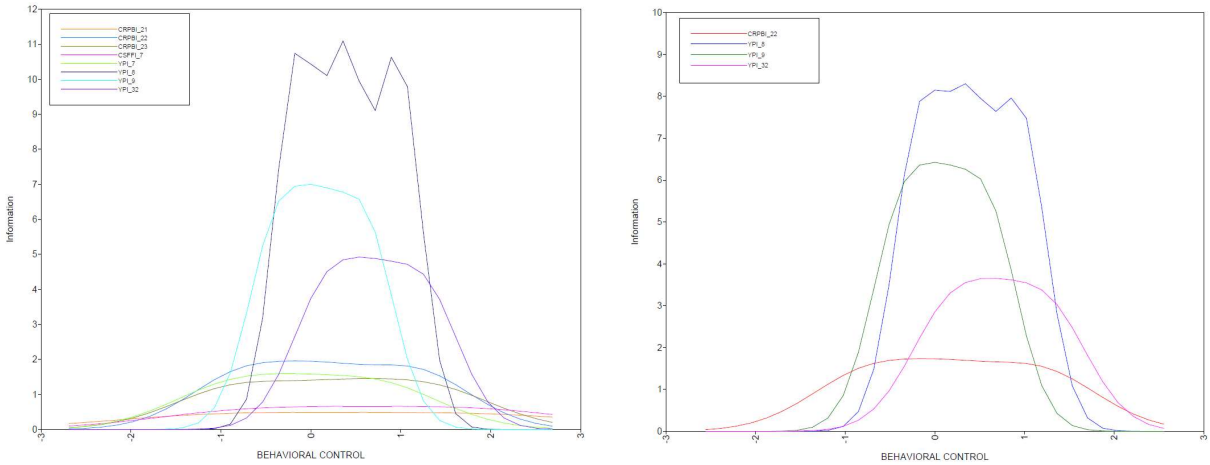
Figure 2. *Item Information Curves - New Measure*



Involvement



Behavioral Control



Psychological Control

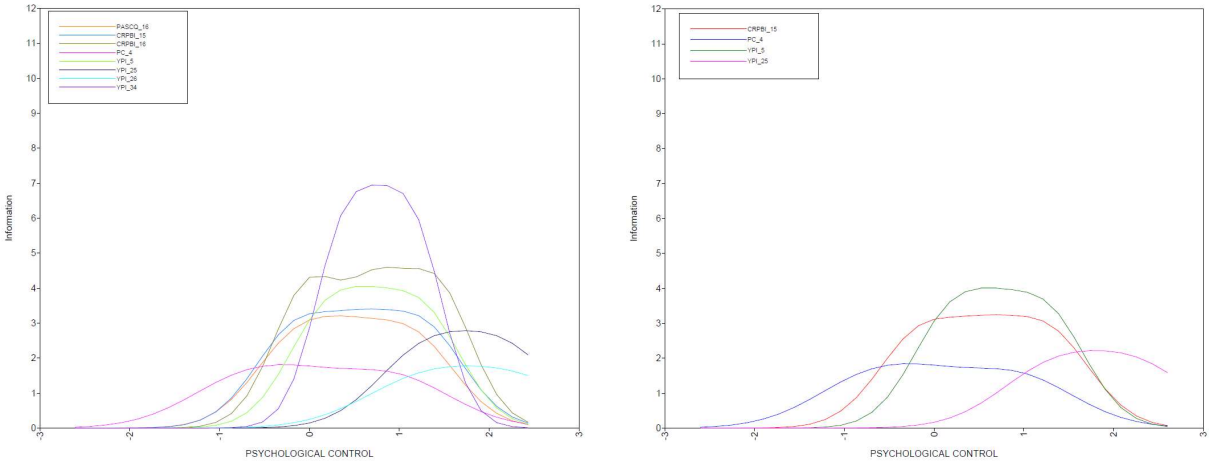
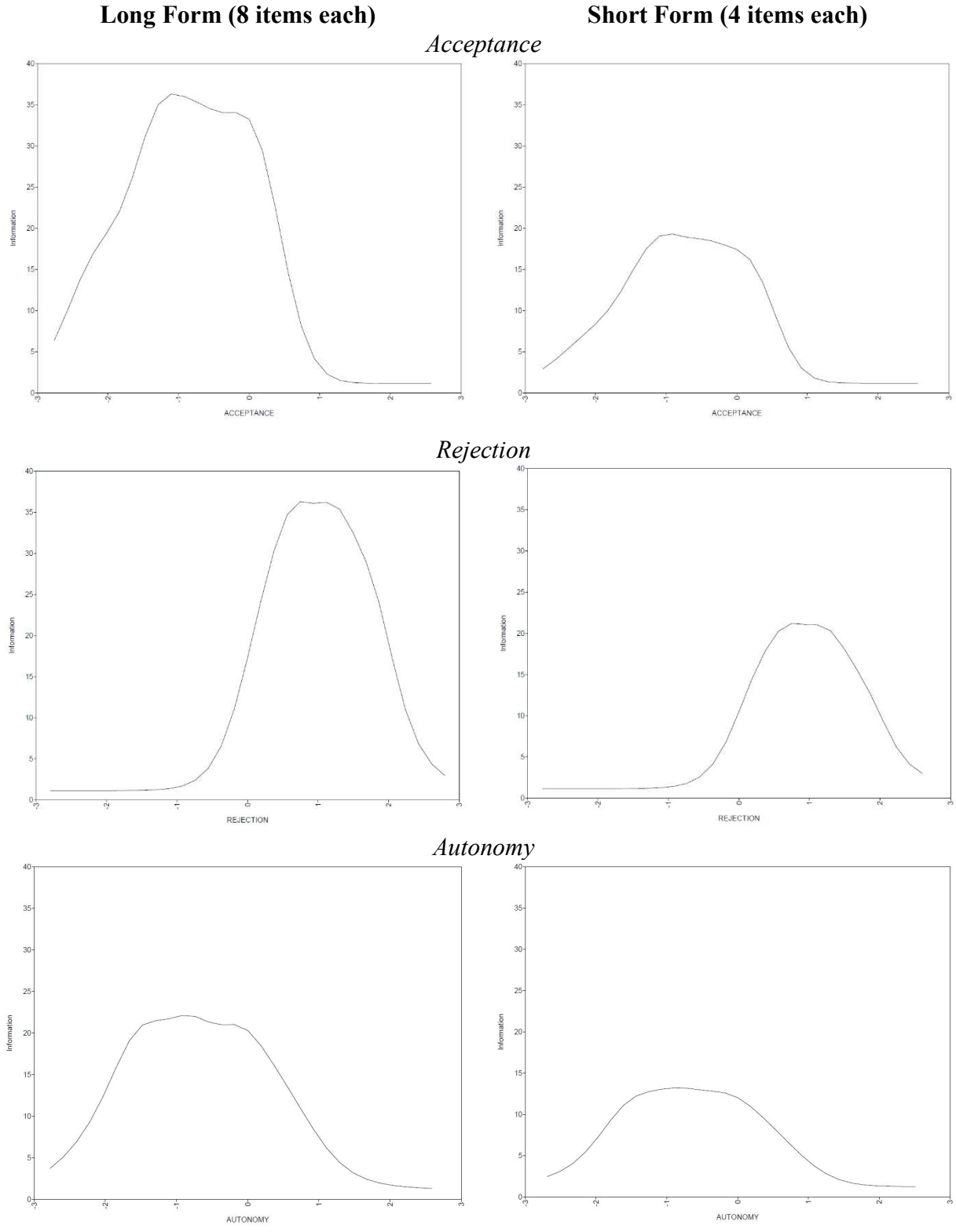
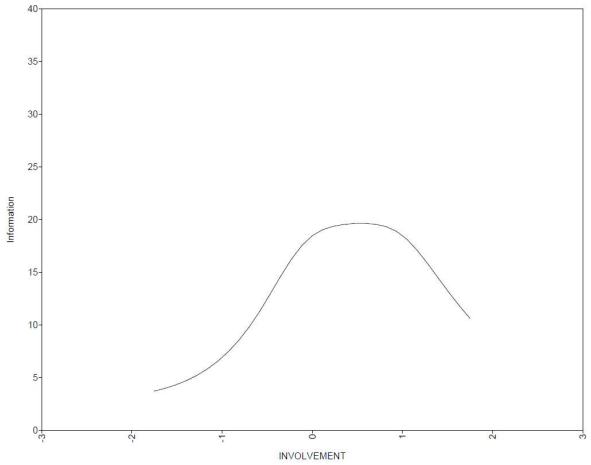
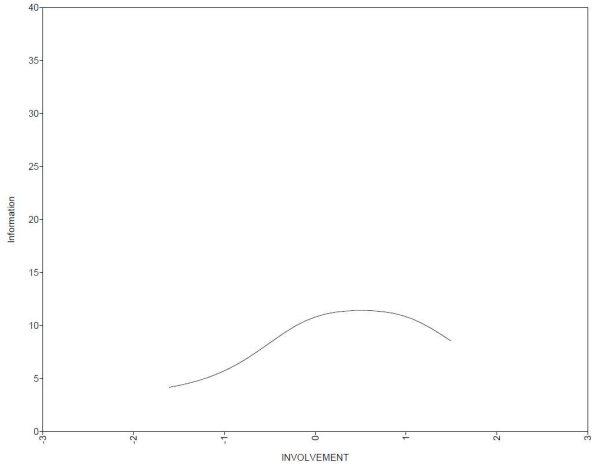


Figure 3. *Total Information Curves - New Measure*

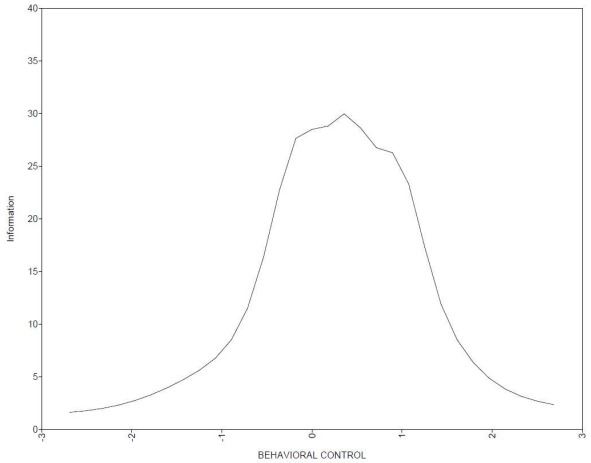


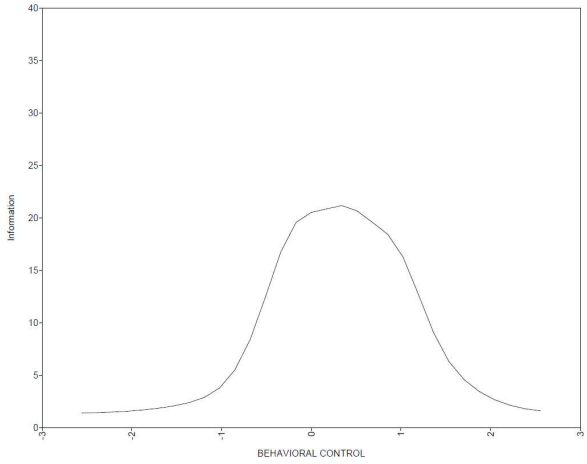
Involvement





Behavioral Control





Psychological Control