

Relationship quality, parenting practices, and adolescent mental health across diverse U.S. populations

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Abstract

Various parenting practices and attitudes have been consistently linked to children and youth's mental health outcomes (Pinquart, 2016; Pinquart, 2017) through identified psychological and biological mechanisms (Hoeve et al., 2009). The quality of the dyadic parent-child relationship is less commonly studied but may be important in mediating the efficacy of parenting practices and understanding cultural and ethnic differences in how parenting practices affect development outcomes (Ho et al., 2008; Lansford, 2022). To explore these issues, we fielded a questionnaire through a probability-based sample provided by Gallup, collecting data from 6,643 U.S. parents and 1,580 teenagers. We conducted a factor analysis using measures of parenting practices, parent-child relationship quality, and exposure to adverse experiences, and identified four factors related to the parent-child relationship. We replicated this analysis separately for Black, Hispanic, and non-Hispanic White parent-child dyads, identifying small but noteworthy structural differences in the correlational patterns. Pooling all racial groups, we find large effects of parent-child relationship quality on adolescent mental health ($r = 0.37$ to 0.41). These effects are consistent across groups when we use group-specific factor structures. In combination with adverse childhood experiences and parenting practices, parent-child relationship quality explains 36% of the variation in adolescent mental health. We replicate the well-established finding that parenting practices—summarized as warm responsiveness and demandingness—predict better mental health, but we find most of the effect is indirect through better relationship quality. Our findings inform future research exploring more complex causal pathways between parenting and youth development in different cultural contexts.

Keywords: Parenting, Parent-child relationship quality, Adolescents, Mental health, dyadic relationship, authoritative parenting

Parenting is a complex construct composed of a set of behaviors including physical caregiving, cognitive stimulation, warmth, control and monitoring, and discipline. By engaging in these behaviors, parents often exert substantial influence on their children's lives. In fact, specific parental behaviors have been linked to important outcomes for children, including cognition, mental health, and wellbeing. For example, physical contact between parent and child is thought to be essential for healthy infant development (Feldman, 2011), and parental touch reduces social vigilance in children and adolescents (Brummelman, 2019). Parenting has also been shown to influence the physiological mechanisms responsible for mental health problems like anxiety and depression. For instance, a secure attachment between a parent and their child buffers against high cortisol levels in infants and protects against cognitive impairment, anxiety, and depression (Bergman et al., 2010; Spruit et al 2020).

Other parenting practices and behaviors have been shown to support children's mental health. These include parental engagement in everyday activities – as a form of monitoring and control behaviors – as well as emotional warmth and guidance (Tramonte et al., 2015; Spera, 2005). A systematic literature review of parenting research identified 59 articles published between 2010 and 2019, concluding that parental warmth, behavioral control, and autonomy granting predict fewer internalized mental health problems among adolescents (Gorostiaga et al 2019). This is consistent with a meta-analysis linking warm but demanding parenting to fewer internalizing and externalizing symptoms among children (Pinquart, 2016; Pinquart, 2017). These outcomes apply to young children and adolescents, as documented in Sternberg's (2001) review of the literature. Adolescents whose parents were characterized as authoritative (expressing emotional warmth towards their children while setting rules and taking a discipline-oriented approach to parenting), reported lower levels of depression and anxiety while they

scored higher on measures of self-reliance and self-esteem (Sternberg, 2001), consistent with a well-established theoretical framework (Larzelere et al 2013; Maccoby and Martin 1983).

Exploring a possible mechanism for these established links, in the current paper, we investigate how parent's and their adolescent children's perceptions of the general quality of the dyadic relationship mediates the effects of parenting practices on child mental health.

Importantly, we explore this relationship among U.S. Black, Hispanic, and White families separately to account for possible differences in how various parenting practices might contribute to positive perceptions of the dyadic relationship in different cultural contexts. We focus on adolescents because it is a particularly vulnerable period for the onset of mental health problems, including depression and anxiety, as children navigate their social environments, and recent trends have raised alarms (Udapa et al 2023). As reported in the CDC's Youth Risk Behavior Survey (CDC 2022), from 2009 to 2021, the share of high school students reporting that they had a debilitating bout of sadness or hopelessness—defined as stopping usual activities—that lasted at least two weeks out of the previous year rose from 26% to 42%.

Cultural Differences and Similarities

Parenting practices, like all other social behaviors, are dynamic behaviors embedded within cultural systems which change over time and as a function of context (Lansford, 2022). Therefore, specific aspects of parenting practices as well as how they influence children's wellbeing may differ across groups of people with distinct cultural or social norms. For example, there are large differences across various cultures in the style of physical contact between parents and their children (Diamond, 2012) often resulting from different cultural norms and beliefs about what children are expected to be capable of at various ages (Lansford, 2022). Within the

U.S., parenting practices, expectations, level of discipline, and emphasis on self-control differ among White, Black, and Hispanic parents (Julian et al., 1994; Jambunathan et al., 2000).

Yet, there are also similarities across different societies and within the same country in some parenting practices and their effect on children's mental health outcomes. For example, in a Canadian representative sample, parental harshness was positively related to aggressive behaviors in children among all ethnic groups studied (Ho et al., 2008). Moreover, a meta-analysis including work from 31 countries in five continents concluded that feeling accepted by parents was related to better psychological outcomes across the countries, and feeling rejected by parents was related to psychological maladjustment (Khaleque & Ali, 2017). Within the U.S., in a sample of low-income African American children, structured play between toddler and parent was observed along the dimensions of parental sensitivity, positive regard, and cognitive stimulation (Bocknek et al 2009). These features of parenting predicted greater growth in emotional regulation between the ages of 1 and 3 (Bocknek et al 2009). Moreover, a cross-cultural study of parents from China, Colombia, Italy, Jordan, Kenya, Philippines, Sweden, Thailand, and the U.S. found that parental warmth and control were significantly associated with better outcomes on internalizing and externalizing symptoms for children ages 8 to 13 (Rothenberg et al 2020).

These positive associations between children's outcomes and parental involvement and warmth reflect children's universal need for feeling loved, accepted, and supported (Rohner & Smith, 2019). While the satisfaction of this drive may be related to psychological wellbeing for children across various cultures, parents in different cultural groups may express love or support differently. This suggests that the set of practices or behaviors that compromise a warm relationship, or practices that are perceived as discipline or control behaviors, may vary among

different cultural groups. We explore this possibility within the U.S. population of parents. Specifically, in the current research, we explore 1. whether various parenting practices that have been shown to matter in the context of child mental health are grouped together in similar or different ways among Black, Hispanic, and White parents in the U.S., and 2. Whether the effect of the interrelated set of parenting practices and behaviors among each group on children's mental health is mediated by perceptions of the general parent-child relationship quality.

Parent-Child Relationship Quality

Perceived relationship quality between parents and in particular their adolescent children has been shown to influence children's mental health. For example, among Dutch adolescents, perceived quality of their relationship with their parents predicted depressive symptoms (Branje et al., 2010). Moreover, reinforcing a bidirectional effect, relationship quality is also affected by the child's mental health and associated with depressive symptoms (Branje et al., 2010). For parents, the perceived quality of their relationship with their child also influences their wellbeing and self-esteem (Namaguchi, 2012), qualities that may, in turn, impact many aspects of their lives including how they relate to their children.

These mutual effects between perceived parent-child relationship quality and mental health for both parties of the dyadic parent-child relationship suggest that both the parent's and the child's satisfaction with the relationship may be an essential ingredient when it comes to the link between parenting and adolescent mental health; Investigating the role of parent-child relationship quality in mediating this link among various cultural groups further illuminates patterns of how different parenting practices may contribute positively to children's mental health through the path of positive dyadic perceptions of the relationship.

Important Confounds

Within family systems, there are interconnections among environmental and familial factors that influence members' wellbeing. Importantly, children's adverse experiences, their sex, and parent's own psychological health are important factors that can influence and complement the role of parenting quality in children's mental health (Dunst, 2023). It is also well established that the adverse childhood experiences of a parent, including their exposure to harsh parenting as a child, predict the quality of their own parenting (Rowell and Neal-Barnett 2022; Belsky et al 2005; Wertz et al 2019). Moreover, parents may have experienced past traumatic or abusive relationships with partners who may have been in a parenting role as well. Relatedly, current caretakers may have to deal with past trauma related to former caretakers—including a death—or a child that is genetically predisposed toward mental illness. These factors influence the parent-child relationship in ways that are at least partly unrelated to parenting practices.

In the current research, to account for these sources of variability and facilitate future systematic investigation of causal mechanisms involved in links between parenting and children's mental health, we measured parenting practices, the general quality of the parent-child relationship both from the perspective of the parent and the child, as well as both the parent's and the child's experiences with traumatic events or abusive relationships in the past.

We also consider the potential for genetic confounding. Traits that raise the likelihood of effective parenting, as understood in the literature, may be correlated with the transmission of a genetic predisposition toward mental health; thus, we compare correlational coefficients between parenting and youth mental health for biological and non-biological parents.

Methods

Participants

Parents

6,643 adult parents in the U.S. participated in the study, which was defined as completing a majority of the survey items. The unweighted sample includes 3,218 females and 3,367 males. The average age of the parent participants was 42. 166 of parents identified as single-race Asian, 457 self-identified as single-race non-Hispanic Black/African American, 677 as Hispanic, 4,823 as single-race non-Hispanic White, and 489 as multiracial or another racial group (e.g. Alaskan Native/American Indian or Native Hawaiian or Pacific Islander). 85% of parents reported being currently married, and 5% reported raising their children without another non-resident or co-resident co-parent. 15% reported an annual household income of less than \$60,000, 53% fell between \$60,000 and \$175,000, 30% above \$175,000. Inclusion criteria for the parent sample were being a parent of a child between the ages of 3 and 19 who lives with them at least part of the time. The respondents include adoptive parents, step-parents, foster parents, and grandparents, in addition to other relations aside from biological parents, who comprise 85% of the sample. The survey was conducted only in English and all respondents lived in the United States at the time of the survey. Participants were invited via email and had the option of taking the survey on a computer or a mobile device. Parents were paid \$5 for their time.

All parent participants were drawn from the Gallup Panel, a probability-based research panel of U.S. adults who were originally selected via randomized methods (Dush et al 2023; Gallup n.d). A random sample of panel members were invited to participate. The effective

response rate was 42% for parents/caretakers, which is defined as completed surveys per invitation.

Adolescents

1,580 adolescents, between the ages of 13 and 19 also participated in the study. The adolescent sample included 761 females and 814 males. The average age of the sample was 15.6. Adolescents were not independently asked about their race/ethnicity, but data suggests that approximately 97% of births in the U.S. occur within same-race families (Annie E. Casey Foundation, 2023), and the focus of this study is on how parenting may vary by the race and ethnicity of the parent, which is relevant even for trans-racial adoption. For all analyses, we used the reporting parents' self-identified racial/ethnic group. To be included, the adolescent had to be currently living in the same household with the parent/caretaker at least some of the time. The adolescent sample was identified by asking parents who reported living with a child between the ages of 13 and 19 for permission to have their child participate in the study. 2,895 parents reported living with a child aged 13 to 19. For those with multiple children in the household, the target child was identified as the one with the next birthday to ensure randomization. Of those qualifying, 69% (2,001) agreed to have the child take the next portion of the survey, and 79% of eligible children did so, with only 8 out of 1588 declining to assent. Thus, the final sample of adolescents included 1,580 participants who assented to participation, and whose parents had also participated in the study and provided permission for their children. Adolescents were also compensated with \$5 for participating.

Survey Weights

Gallup weights samples to correct for unequal probability of selection and for nonresponses bias (Gallup, n.d.). For this study, survey weights were calculated by a Gallup statistician to equal the inverse probability of selection, given the parents' age group, race and ethnic group, sex, level of educational attainment, and geographic region. Prior to weighting, the panel includes a diverse sample of parents, but it is proportionally skewed toward adults with high levels of education, and parents are more likely to be of non-Hispanic-White ancestry in the Gallup sample than in the general population. The weighted Gallup data closely match the demographics of U.S. parents with respect to age, sex, education, and race/ethnicity. Demographic weighting targets are based on the most recent numbers from the Current Population Survey on the U.S. population of adults (Census.gov, 2022). Supplemental Table 1 shows the demographic of our sample after applying weights and compares these to the latest data from the Current Population Survey. In all cases, our weighted data closely resembles the census data. Survey weights are incorporated in all analyses presented in the *Results* section.

Measures

Parenting Practices

To include a range of parenting practices that have been shown to have robust links to children's mental health outcomes across various cultures groups, we adapted items from Robinson and colleagues' (1995) Parenting Practices Questionnaire (PRQ) and Driscoll and Pianta's (2011) Child Parent Relationship Scale (CPRS). We also added several items meant to capture aspects of character development and socialization (Maccoby 1992).

We narrowed down the items from the PRQ to include at least one item from each of the 11 factors identified in Robinson et al. (1995). These factors reflect the three identified global

dimensions of parenting. In selecting specific items, we prioritized those that capture parenting practices and methods, to reflect behaviors that are under the parent's direct influence.

Wording was revised in some cases by two of Gallup's survey methodologists to facilitate comprehension, cultural appropriateness, validity and reliability of items. Table 1 shows all measuring parental practices.

Table 1. Parental practice items included in the survey.

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1. Physical punishment, such as spanking is sometimes necessary
 2. I give my child clear commands
 3. My child doesn't need to understand the reasons for my rules
 4. It is important to point out my child's mistakes so they learn
 5. During a typical school day, my child follows a regular routine
 6. I restrict screen time (such as TV, tablet, or phone) to certain times of the day
 7. I consider my child's preferences before making decisions that affect them
 8. I am usually easygoing and relaxed when with my child
 9. I often joke and play with my child
 10. I respond quickly to my child's needs
 11. I encourage my child to talk about their feelings or problems
 12. I apologize if I act unfairly or too harshly toward my child
 13. I hug or kiss my child every day
 14. I teach my child to do the right thing, even when it is hard
 15. I encourage my child to think of others
 16. I have a hard time saying "no" to my child
 17. I set well-established rules for my child.
 18. My child completes the priorities I set for them before they are allowed to play or relax
 19. I find it difficult to discipline my child
 20. I don't always follow through on punishments
 21. My child often gets their way when we have a conflict
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Parent-child relationship quality

We measured specific aspects of parent-child relationship quality, including warmth, affection, and conflict, as well as the parent's and child's perceptions of general quality of the relationship. The specific items were adopted from the CPRS. They measured whether the parent reports arguing frequently with their child, whether they believe that their child easily becomes angry at them, and whether they believe that they share an affectionate, warm relationship with their child. Parents rated these three questions on an agreement scale of 1-5 with 1 representing "strongly disagree" and 5 representing "strongly agree".

Items that captured perceptions of the overall quality of the relationship included two items for the parents taking the survey: one asked about their perception of their own relationship with the child and another asked about their perception of the relationship between the child and the other parental figure or figures that contributes to the child's care. These items asked the parent to choose among 5 options that ranged from "very poor" to "excellent" to describe the overall quality of the relationship. The questions specifically were "Which word or phrase below best describes the overall quality of your relationship with this child?" and "How would you describe the overall quality of the relationship between your child and the other parental figure you just identified?" The choices were "very poor", "poor", "fair", "good", "excellent". In following analyses, we coded these items into continuous variables ranging from 1 (very poor) to 5 (excellent).

For the adolescent sample, one item measured their perceived overall quality of the relationship. The item asked adolescents to rate the relationship on a scale of 1-10: "On a scale of 0-10, where 0 is the weakest and least loving relationship you can imagine, and 10 is the strongest and most loving, how would you rate your relationship with your parents or the people who take care of you

the most.” Table 3 shows all items related to perceptions about the quality of the relationship, as well as items measuring traumatic experiences.

Traumatic Past Experiences

We collected six items from adolescents related to potentially traumatic experiences of children. These included questions about 1. whether the child is currently, or has ever, lived with someone who struggles with drug or alcohol abuse problems, 2. with someone who is frequently angry, 3. Whether they live with someone who makes sure that the child’s needs are met, 4. Whether a parent who had been living with them stopped living with them, 5. Whether they have felt rejected or abandoned by their biological father or mother, and 6. How often they feel safe and protected. Response options were yes/no for binary questions and “never”, “rarely”, “about half of the time”, “usually”, and “always” for questions asking about frequency.

Table 2. Survey items measuring relationship quality and traumatic experiences.

1.	I share an affectionate, warm relationship with my child
2.	Which word or phrase below best describes the overall quality of your relationship with this child? Very poor, poor,
3.	How would you describe the overall quality of the relationship between your child and the other parental figure you j poor, fair, good excellent.
4.	On a scale of 0-10, where 0 is the weakest and least loving relationship you can imagine, and 10 is the strongest and rate your relationship with your parents or the people who take care of you the most?
5.	I argue frequently with my child.
6.	My child easily becomes angry at me
7.	How often do you feel safe and protected?
8.	Do you live or have you lived with someone who struggles with drug or alcohol abuse?
9.	Do you live or have you lived with someone who is frequently angry?
10.	Has a parent who had been living with you, stopped living with you?
11.	Have you ever felt rejected or abandoned by your biological father or biological mother?

Mental Health

We measured mental health with nine items, 5 of which are reported by the parent and 4 of which are reported by the child (see Table 4). The constructs capture suicidality, self-harm, symptoms of depression, symptoms of anxiety, and overall assessments of mental health from both the parent and child. We further asked the child whether they felt certain negative emotions the day before the survey and how they evaluate their current and expected life (hope), both evaluative measures of wellbeing. We created a mental health index by calculating the average of all nine items. The index has very good reliability ($\alpha=.89$). Among the nine items, two were about the adolescent's overall mental health, with one asked of parents and the other of adolescents ($r = 0.59$).

Table 3. Items measuring adolescent mental health

Parent reported

1. In general, over the past twelve months, how often has your child seemed down, depressed, or hopeless? (1 Never, 2 Rarely, 3 Sometimes, 4 Regularly, 5 All the time). [Asked if child is 8 or older]
2. In general, over the past twelve months, how often has your child seemed nervous, anxious, or on edge? (1 Never, 2 Rarely, 3 Sometimes, 4 Regularly, 5 All the time) [Asked if child is 8 or older]
3. How would you rate the overall **mental health** of your child? (1 Very poor 2 Poor 3 Fair 4 Good 5 Excellent)
4. During the past twelve months, has your child ever harmed themselves intentionally, such as cutting, burning, or bruising? (Yes, No) [Asked if child is 12 or older]
5. During the past twelve months, has your child had thoughts related to suicide? (Yes, No). [Asked if child is 12 or older]

Adoleecent reported

1. Please imagine a ladder with steps numbered from zero at the bottom to ten at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time? (0 worst possible life to 10 best possible life)

2. On which step do you think you will stand about five years from now? (0 worst possible life to 10 best possible life)
 3. How would you rate your overall **mental health**? (1 Very poor 2 Poor 3 Fair 4 Good 5 Excellent)
 4. Did you experience the following feelings during A LOT OF THE DAY yesterday? Asked for each emotion: worry, sadness, stress, anger, lack of motivation, loneliness (Yes, No)
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Note: Cronbach's alpha = 0.89.

Procedures

The number of invitations was based on several criteria. The main research aim was to report nationally representative summary data for parents of children of different ages and to have at least 100 adolescent responses from each of the three largest racial/ethnic groups. The sample size was further constrained by the number of parents who are Gallup Panel Members and the cost, born by Gallup, of fielding the survey and compensating participants. The research team worked with Gallup methodologists to accomplish the research goal and were told that all, or nearly all, Gallup Panel members who had previously been identified as living with children were invited to participate, and that this would meet the sample size needs. Survey length was constrained to target a range of 12 to 15 minutes per respondent, which was recommended to maximize broad participation.

The survey was fielded from June 26, 2023 to July 17, 2023. The questionnaire was reviewed and approved by Gallup's Institutional Review Board. Responding parents proceeded through three modules: one on their own mental health and relationships, a second on their child—identified by proximity to birthday—and parenting practices, and a third on their demographic information. Additional demographic data on parent age, race, ethnicity, and gender

was appended by the respondent's answers from their participation in at least one previous Gallup survey.

Adolescents completed a separate questionnaire designed specifically for them, with all respondents seeing the same order of items. The questionnaire asked adolescents about their overall wellbeing and mental health, their personality, beliefs about gender, their relationship with the parents, traumatic experiences, social media and technology use, and other everyday activities. In this paper, we only report on mental health data, traumatic experiences, and parent-child relationship items.

All deidentified data used in this analysis and the replication code (Stata 18) are available [URL withheld to maintain anonymity]. The survey methodology and analysis plan were preregistered before data collection:

https://osf.io/eqt4j/?view_only=35fe33d962854c1abbcaddc6e0949aeb.

Results

Parenting Practices as a Construct

Our first research question asked whether the constructs that emerge from the parenting practice items are similar or different among Black, Hispanic, and White parents in the United States. To answer this question, we ran an exploratory factor analysis (using Stata 18's factor command) with an oblique rotation on the 21 the parenting practice items from Table 3 separately for each of the three groups of parents (see Supplemental Table 2 for summary statistics on each item). This also allows us to create group-specific parenting practice indices to be used in our next analyses on associations between parenting practices and adolescent mental

health. We used the survey weights to ensure the correlations reflect patterns among a nationally representative sample. Survey weights “weight” the data from the sample in appropriate ways based on demographic characteristics of the population represented by the sample (see Survey Weights section above for a more detailed description).

To evaluate how much the structure of the parental practices construct varies in group-specific analyses, we first ran a factor analysis on the pooled sample. Our preliminary analysis focusing on number of factors to retain suggested 2 factors. This was based on a parameter of a minimum eigenvalue of 1 to retain factors that explain sufficient variability in the data. Two factors were retained, with eigenvalues of 3.1 and 1.6. Likewise, for each of the group-specific factor analyses, a two-factor solution emerged for each group, with the following eigenvalues: Black: 3.4, 1.9; Hispanic: 3.1, 1.4; and Non-Hispanic White: 3.3, 1.8. Items that had loadings < 0.4 on any factor were eliminated (Guadagnoli & Velicer, 1988); No item loaded greater than 0.4 on both factors.

Table 4 shows the factor structure for Black, Hispanic, and White parents, as well as the structure for the pooled sample. Note that the pooled sample includes Asian, multiracial, and “other” racial/ethnic categories in addition to the three groups analyzed separately. For these other groups, the sample sizes did not reach the Gallup standard sample sizes for reporting for using the adolescent sample (Asian: $N=43$; Multiracial: $N=88$; American Indian and Alaskan Natives and Other races combined: $N=14$).

As shown in Table 5, there are broad similarities and notable differences among the three groups, but importantly, the factor structure for each group is distinct from the structure that emerges from the pooled sample, suggesting that there is conceptual advantage to exploring the structure of the parenting practices construct for each group separately.

Factor characteristics for each group: For all three groups, the first factor, explaining most of the variability in the data, can be characterized as practices related to warm, affectionate, child-centered parenting (“responsiveness” for short, following terminology of Maccoby and Martin 1983). The second factor is characterized by efforts to establish and maintain control, set limits on behavior, and enforce norms, or “demandingness” for short.

For Black parents, the first factor is strongly defined by encouraging children to talk about their feelings and problems, hugging or kissing children, and teaching children to do the right thing, even when it is hard to do so. Other items that load on this factor among Black parents are related to setting routines, rules, and priorities, while practicing relaxed parenting (e.g., joke and play with children, easygoing and relaxed around children), and respecting the child’s autonomy (e.g., considering the child’s preferences before making decisions that affect them, responding quickly to child’s needs, apologizing to child if parent acted unfairly or too harshly). Building empathy (encouraging the child to think of others) is also a strong component of this factor among Black parents. The second factor is clearly characterized by challenges in enforcing discipline. Items like “I have a hard time saying no to my child”, finding it difficult to discipline the child, failing to follow through on punishment, or allowing the child to get their way in conflict are items that all load positively on this factor. Table 4 shows these patterns.

Similar to Black parents, for Hispanic parents, the first factor is strongly defined by encouraging children to talk about their feelings and problems and teaching them to do the right thing. Also similar to Black parents, expressions of love and affection load on this factor for Hispanic parents; additionally, an easygoing and relaxed demeanor when spending time with their children is also an element of this factor for Hispanic parents. Unlike Black parents, however, for Hispanic parents, items related to setting rules, priorities, routines and clear

commands did not load on this factor. Setting rules loaded negatively on the second factor together with items that speak to challenges in enforcing discipline. (see Table 4).

The structure of both factors is considerably different among White parents compared to Black and Hispanic parents (see Table 4). Specifically, while encouraging children to talk about their feelings and problems loaded strongly on factor 1 among White parents, other items strongly loading on this factor are related to a more child-centered method of parenting (i.e., taking the child's preferences into account and apologizing to children when parent has acted unfairly or harsh are strongest loaders on this factor after 'encouraging children to talk about feelings and problems'). Showing affection and encouraging children to think of others also load on factor 1 for White parents. Unlike Black and Hispanic parents, for White parents, factor 2 is characterized by confidence in their ability to enforce rules and regulations, as items that measure enforcement challenges load *negatively* on factor 2. The items with strongest negative loading on factor 2 are finding discipline difficult and allowing the child to get their way when parent and child are in conflict. This suggests that discipline-oriented parenting that is consistently practiced is a strong element of White parents' parenting behaviors.

Table 4. Factor loadings and factor structure for parenting practice items by racial/ethnic group as well as the pooled sample. See Table 2 for the full text of all items.

		2	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		give clear commands	child's pref.	easygoing & relaxed	joke & play	respond quickly	talk about feelings & problems	I apologize	I hug or kiss	encourage to do the right thing	think of others	hard time saying "no"	set rules	priorities	discip. difficult	no follow through on punish.	child gets their way
Black	F1	0.44	0.48	0.40	0.53	0.53	0.60	0.53	0.56	0.55	0.50		0.40				
	F2											0.66			0.60	0.55	0.50
Hispanic	F1			0.45	0.48	0.50	0.61	0.46	0.49	0.54	0.42						
	F2											0.58	-0.44		0.44		0.65
White	F1		0.55		0.50	0.49	0.61	0.55	0.40	0.40	0.47						
	F2											-0.57	0.55	0.50	-0.60	-0.48	-0.61
Pooled Sample	F1		0.49	0.41	0.52	0.50	0.61	0.51	0.45	0.44	0.46						
	F2											-0.60	0.52	0.45	-0.56	-0.44	-0.60

Notes: F1 denotes "factor 1" and F2 denotes "factor 2". Items loading on Factor 1 are shown in shades of blue. Items loading on Factor 2 are shown in shades of green. Survey items 1, 3, 4, 5, and 6 did not load on any factors. Loadings < 0.4 are not shown; shades correspond to the strength of the factor loadings. Numbers in red show negative loaders. The pooled sample includes biracial and other racial/ethnic groups for which the sample size was not large enough to conduct separate analyses.

Relationship Quality and Confounds

Next, we conducted another exploratory factor analysis (with oblique rotation) on parent-child relationship quality and exposure to traumatic experiences items (see Table 3) to inform our analysis of group-specific associations between parenting practices, relationship quality, and mental health outcomes. This factor analysis informs the calculation of group-specific indices for relationship quality and traumatic experiences, to be included in our mediation analysis as a mediator and control variable, respectively. Supplemental Table 3 shows summary statistics for each item.

The results of this factor analysis on the pooled sample again indicate two retained factors, with eigenvalues of 2.3 and 1.1. However, group-specific analyses do not yield two factors for all groups. Among Black respondents, only one factor emerged, with an eigenvalue of 2.4. This single factor captures descriptions of the parent-child relationship as rated by the parent and by the child, as well as the parent's evaluation of the quality of the relationship between the child and the other parent (if any) (see Table 5). Other items that loaded on this factor for Black respondents were the child's rating of whether or not they feel safe and protected, and whether they live with someone who is frequently angry, as well as the parent's ratings on whether they frequently argue with their child and whether their child easily becomes angry at them. The collection of these parent-reported relationship quality items and child-reported experiences with adverse situations under one factor possibly reflects interrelated associations between the child's negative experiences in the dyadic relationship and perceptions of the quality of the relationship by both parties.

Among Hispanic respondents, two factors emerged, with eigenvalues of 2.1 and 2.0. The first factor strongly captures the responding parent's evaluation of their relationship with their

child. The parent's rating of the other parent's relationship (if any) with the child and the child's rating of the parent-child relationship are other items that loaded on this factor. Additionally, the parent's evaluation of whether or not they frequently argue with their child and whether their child easily becomes angry at them loaded on this factor. The second factor consistently captured the child's self-reported traumatic experiences (feeling safe and protected, living with someone who experiences alcohol or drug problems, a parent having stopped living with them, and experiences with parental rejection or abandonment). Table 6 shows the factor structure.

Among White participants also two factors emerged, though just barely, with eigenvalues of 2.9 and 1.0. The first factor is most strongly captured by the responding parent's rating of the parent-child relationship quality, followed by the child's rating. The responding parent's rating of the relationship between the child and a second parent (if any) did not load on this factor. The parent's rating of whether they frequently argue with the child and whether the child gets angry at them also loaded on this factor. The second factor captures the child's ratings of their own adverse experiences, including having been rejected or abandoned (most strong loader), living with someone with drug, alcohol, or anger problems, and feelings of safety. The pooled sample reflects a factor structure that is different from each of the three groups' structure, again showing the importance of group-specific analysis of these constructs (see Table 5).

Table 5. Factor loadings and factor structure for relationship quality and traumatic experiences items by racial/ethnic group as well as the pooled sample. See Table 3 for the full text of all items.

		1 warm relationship (parent)	2 relation. Quality (parent 1)	3 relation. Quality (parent 2)	4 relation. Quality (child)	5 argue frequently with child (parent)	6 child gets angry at me (parent)	7 feeling safe (child)	8 live with someone with drug or alcohol problems (child)	9 live with someone who is angry (child)	10 parent stopped living with you (child)	11 rejected or abandoned (child)
Black	<i>F1</i>	0.49	0.55	0.65	0.64	0.42	0.51	0.59			0.41	
	<i>F2</i>	Only one factor emerged										
Hispanic	<i>F1</i>	0.49	0.73	0.55	0.56	0.54	0.56					
	<i>F2</i>							0.64	0.58	0.56	0.66	0.67
White	<i>F1</i>	0.59	0.71		0.44	0.59	0.63					
	<i>F2</i>							0.49	0.52	0.55	0.55	0.62
Pooled Sample	<i>F1</i>	0.57	0.68	0.46	0.46	0.51	0.56					
	<i>F2</i>							0.48	0.49	0.50	0.55	0.59

Notes: F1 denotes “factor 1” and F2 denotes “factor 2”. Items loading on Factor 1 are shown in shades of blue. Items loading on Factor 2 are shown in shades of green. Loadings < 0.4 are not shown; shades correspond to the strength of the factor loadings. The pooled sample includes biracial and other racial/ethnic groups for which the sample size was not large enough to conduct separate analyses.

Analysis of Adolescent Mental Health

Next, we turn to our second research question, which has two main components: to what extent do parenting practices, adverse experiences, and child-parent relationships predict mental health of adolescents, and does the quality of the relationship mediate the effect of parenting practices? A secondary component is: Does accounting for the group-level structural differences in the parent-related factors identified above enhance the explanatory power of our parenting-related measures in predicting mental health? Insight into these questions helps identify mechanisms internal to the dyadic relationship that are associated with parenting practices and affect young people's mental health within different cultural groups.

To answer these questions, we created group-specific indices for parenting practice constructs, traumatic experiences, and perceptions of relationship quality for each racial/ethnic group based on the previously discussed group-specific factor analyses. These were standardized to have a mean of zero and standard deviation of one within each group. Then, we calculated the effect size of parenting practices, relationships, and adverse experiences on mental health, measured in r , from linear regression adjusting for adolescent sex and age—expressed in single-year binary measures. Effect sizes expressed as $r_{x,y}$ were derived directly from the regression coefficients (β) on the independent variables, following the group-specific standardization of both the independent and dependent variables. For multiple variables—such as factors 1 (responsiveness) and 2 (demandingness)—we report combined effect sizes using the sheaf coefficient (Heise 1972), which is akin to a multivariable r statistic, and calculated as the sum of the standardized regression coefficients and adjustments for the underlying correlation between the independent variables:

$$\text{Combined effect size} = \beta_1 + \beta_2 + 2(r_{1,2}\beta_1\beta_2)$$

This formula can be extended *ad infinitum* by adding additional terms to the right hand to account for all combinations of correlations between the vector of independent variables.

Using the same set up and list of controls, we also run models that replace the dependent variable of mental health with child-parent relationship quality to estimate how the three other factors (responsiveness, enforcement, and adverse experiences) predict relationship quality. Effect sizes are calculated in the same way.

This procedure allows us to a) observe and compare effect sizes for each factor and their combination on mental health and relationship quality b) calculate mediation effects (of parent-child relationship quality) by observing both direct and indirect effects of parenting practices and adverse experiences. To understand how much the group-specific factor structure affects the explanatory power of our models, we compared the results using the pooled-sample factor structure to models that incorporate the group-specific factor structures.

Using a group-specific factor-structure, we find moderately large effect sizes of relationship quality (factor 3) on youth mental health (Figure 1, top-left panel, $r=0.37$), as well as small effects from the avoidance of adverse experiences (factor 4, $r=0.27$). With respect to parenting practices, demandingness (factor 2) showed a small but significant effect ($r=0.14$) on youth mental health, but warmth/responsiveness did not ($r=-.01$). The combined effect of these constructs is 0.85, using the sheaf coefficient, a standardized multivariable regression effect estimator. Taken together, the model explains 35% of the variation in youth mental health (Table 6).

We plot these results alongside an analysis that assumes a general factor structure across racial/ethnic groups (Figure 1, top-right panel). For each factor, the effect sizes are nearly

identical to what we find using a general factor structure that pools all racial groups, and the goodness-of-fit (using adjusted r -squared) is actually slightly higher using the general factor structure (see Table 6). This pattern is observed across the racial and ethnic groups studied. One potential explanation is that the use of a group-specific factor structure weakens the explanatory power of demographic variables used in the model (age and sex in this case). The F -statistic on a vector of age-sex characteristics falls from 8.6 to 8.0 when moving from a model that uses the general factor structure to one that uses a group-specific factor-structure.

Looking across racial and ethnic groups, we find that parent-child relationship quality has large and significant associations with youth mental health in all three groups (Figure 1, top panels). Using a group-specific factor structure, the effect varies from $r=0.34$ for Hispanic parents to $r=.47$ for Black parents, with the effect falling in the middle for White parents ($r=.41$). With a general factor structure—which uses the same items for each group—the r -values range from 0.38 to 0.49. The combined effects of parent-related dynamics on youth mental health vary across the large U.S. racial/ethnic groups when we use the group-specific factor structure (.47 to 1.02) but less so, as expected, when using the general factor structure (0.73 to 1.02). The direct effects of responsiveness and demandingness are zero or small across groups.

In predicting relationship quality, responsiveness has large and consistent effects across groups, ranging from an r -value of 0.39 for White parents to 0.41 for Black parents; demandingness predicts significantly better relationships in the pooled sample ($r=.20$), for Black ($r=0.18$) and White parents ($r=0.23$), but not for Hispanic children ($r=0.09$). The absence of adverse experiences also predict higher relationship quality in each sample, except Hispanic parents.

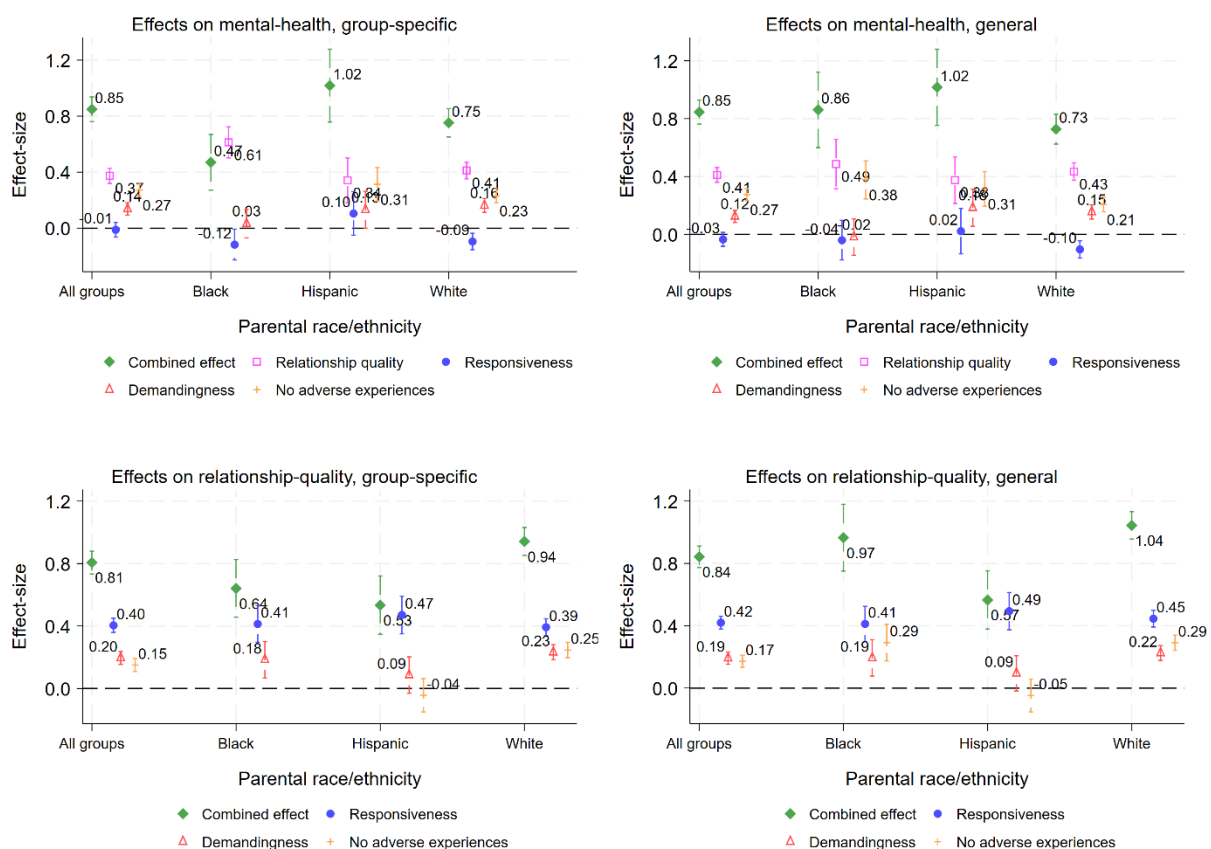
Finally, for all groups and in the pooled sample, regardless of whether we use a general or group-specific factor structure, the indirect effect of parenting practices on youth mental health dominates the direct effect. Using the general structure, for responsiveness, we find no direct effect on youth mental health, but the indirect effect can be calculated by multiplying the effect of responsiveness on relationship quality (0.42) by the effect of relationship quality on youth mental health (0.41). It equals 0.17. For demandingness, the indirect effect is 0.19 times 0.41, equaling 0.08, which is about three-quarters of the direct effect (0.12). The combined effect is roughly the same for both dimensions of parenting practices (responsiveness and demandingness). Thus, the results here would support a theoretical framework which posits that the parent-child relationship is the key driver of youth mental health, and while parenting practices contribute a great deal to this relationship, most of the benefits of parenting practices to mental health are indirect.

Table 6. Summary of model performance in explaining youth mental health and relationship quality, by race/ethnicity and for all families

	Adj R ² in predicting mental health	Adj R ² in predicting relationship quality
Factor analysis with race-ethnic group specific factors		
All groups	0.35	0.33
Black	0.40	0.21
Hispanic	0.36	0.41
White	0.38	0.33
Factor analysis with general factor structure		
All groups	0.36	0.35
Black	0.46	0.44
Hispanic	0.36	0.44
White	0.39	0.37

"All groups" includes racial and ethnic groups not shown.

Figure 1. Effect size estimates of relationship quality, parenting practices, and adverse experiences on mental health of adolescents (Panels top left and top right) and parenting practices and adverse experiences on relationship-quality by race and ethnicity (Panels bottom left and right), using group-specific (left panels) and general factor structures (right panels). Effects sizes are shown as standardized regression coefficients for specific variables and a composite of each shown. All groups refers to pooled estimates using the entire sample, which includes racial and ethnic groups not shown for lack of sample size.



Conclusions and Discussion

Our nationally representative U.S. survey of roughly 6,600 parents and 1,580 adolescents yielded measures of parent-child relationship, parenting-practices, and child perceptions of adverse experiences that together explain a large portion of the variance in adolescent mental health. We consider this to be an important finding, at a time when scholars and medical groups have raised alarms about rising mental health problems in the adolescent population.

To compare our results to those found in the literature, consider that Pinquart (2016) finds that parental warmth has a r -value of -0.20 for internalizing symptoms and authoritative parenting a value of -0.14. Demandingness was not independently studied. Looking only at parenting practices, our data reveal a correlation between youth mental health and warm responsive parenting of 0.19 and demandingness (0.28) on mental health would be very similar to those found in the literature, if independently assessed ($N=2,930$, see Supplemental Table 4). Yet, as emphasized above, parenting practices seem to be associated with better mental health largely because they predict—and may indeed lead to—a higher quality overall relationship. The effect sizes of relationship quality on mental health ($r = 0.48$) are considerably larger than those found in the literature for parenting practices. The same is true of the avoidance of adverse experiences ($r=0.38$). The combined effects of all parent-related dynamics measured in the survey are larger still, using the sheaf coefficient (0.85). A more comparable estimate would take the square root of the adjusted r -squared, obtaining a r -value of 0.60, when adjusted for child age and sex.

Our study is not designed to control for genetic confounds, but we find very similar effect sizes among adolescents whose respondent parent is not a biological mother or father ($N=493$). The raw correlation coefficients between adolescent mental health and responsiveness,

demandingness, avoiding adverse experiences, and relationship quality are 0.22, 0.25, 0.49, 0.51, respectively (see Supplemental Table 4). This does not rule out gene-environment interactions, but these results cast doubt on any explanation that attributes the results to a positive correlation between a parental genetic predisposition to warm and demanding parenting and offsprings' genes for mental health.

We interpret the relatively large effect size found here to be related to our large sample size, in part, but mostly due to the explicit measurement of parent-child relationship-quality, characterized by overall quality rated by the parent for oneself and one's spouse or co-parent, the absence of frequent arguments, low-levels of anger among parents and children, warmth and affection, and feelings of safety, as well as a strong loving bond, as rated by the child. These outcomes are consistent with the rich classical literature in that authoritarian parents are described as argumentative, easily angered, unreasoning, and coercive, whereas authoritative parents are described as warm, responsive, and demanding, firm, reasonable, and goal-directed (Robinson et al. 1995; Larzelere et al 2013; Maccoby and Martin 1983). Bowlby's work on attachment formation is also relevant, in that a strong early attachment presumably facilitates the more positive outcomes implied above. As emphasized in Larzelere et al (2013), we find that the demandingness dimension is just as important as the warm-responsiveness dimension.

Still, important limitations to this research remain. The subtle tactics of parenting are hard to measure systematically and describe. It is possible that much is lost in trying to do so, even with instruments that use best-practice techniques to refine the wording and mix of items—or even with direct observation, which is difficult to scale. Some important subtleties may be lost across cultures. Ideally, scholars could take a bottom-up approach that allows for group-specific parenting constructs based on diverse survey participants' respondents to traditional and novel,

culturally-informed measurement batteries. Just like the constructs themselves, the effects of parenting practices on children's outcomes also vary based on cultural context and other related experiences, such as adverse experiences.

In our study, we utilized a bottom-up approach to explore similarities and differences among three different racial/ethnic groups in the U.S. in the constructs of parenting and associations between these constructs and adolescent mental health. Doing so strengthened the effects of the parenting practice, though it did not improve the overall fit of our models relative to assuming a general factor structure. It may be that a common thread of mainstream culture influences Black, Hispanic, and White families' parenting experiences in United States overshadowing subtle differences. The pathways to a strong relationship between parent-and-child seem broadly similar—though not exact—across these groups, and the quality of that relationship is highly predictive of mental health across groups. These findings also inform debates on how to define “ideal” parenting in different cultures and how to measure the positive influence of these ideal practices across diverse cultures (see Levine & Levine, 2016). Our research suggests that an overall positive relationship, as defined and conceptualized by the parent and the child, affects adolescent mental health. It may be that different specific practices lead to high-quality relationships, depending on the cultural context, thus allowing for research in this field to consider cultural diversity.

Beyond practical implications, these findings inform parenting literature by introducing avenues for further research on the causal mechanisms of the influence of parenting on children's mental health. Documenting the mediating role of relationship quality in how parenting influences children's mental health provides for a starting point to ask further questions about

aspects of relationship quality and drivers of it that may play substantial roles in protecting and boosting mental health among children and youth.

One additional limitation to our study is that we did not employ a longitudinal survey design, which could help differentiate the effects of enduring genetic or personality characteristics from the effects of malleable parenting practices or specific life events, when it comes to explaining both the parent-child relationship and youth development pathways. Poor mental health, for example, could be caused by factors external to the parent-child relationship but lead to a lower-quality relationship. A twin or sibling-based design could help overcome this by partly considering genetic factors and potentially soliciting a third-party view of the relationship. Another limitation is that our group-specific sample sizes were too small to break down the factor for smaller minority populations and still further by age and race. Finally, since our population responded entirely over the internet—through a phone or computer, we likely omitted some of the most vulnerable families, who may be unsheltered or otherwise unable or unwilling to maintain internet access or complete a survey on a web-based platform.

Nonetheless, we believe the items fielded here capture a valid and reliable way to measure the parent-child relationship among different racial/ethnic groups in the United States and may lead to useful longitudinal measures at aggregated scales. There is much discussion about trends in youth and young-adult mental health, but no discussion about how these trends may or may not correspond to changes in parenting, since the latter construct is entirely unmeasured over time. The results of this study show several ways in which such measures could be constructed and fielded in a nationally representative survey and tracked for years to come.

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