




# Attitudes toward children: Distinguishing affection and stress

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## Abstract

**Background:** Adults' views and behaviors toward children can vary from being supportive to shockingly abusive, and there are significant unanswered questions about the psychological factors underpinning this variability.

**Objective:** The present research examined the content of adults' attitudes toward children to address these questions.

**Method:** Ten studies ( $N = 4702$ ) identified the factor structure of adults' descriptions of babies, toddlers, and school-age children and examined how the resulting factors related to a range of external variables.

**Results:** Two factors emerged—affection toward children and stress elicited by them—and this factor structure was invariant across the United Kingdom, the United States, and South Africa. Affection uniquely captures emotional approach tendencies, concern for others, and broad positivity in evaluations, experiences, motivations, and donation behavior. Stress relates to emotional instability, emotional avoidance, and concern about disruptions to a self-oriented, structured life. The factors also predict distinct experiences in a challenging situation—homeparenting during COVID-19 lockdown—with affection explaining greater enjoyment and stress explaining greater perceived difficulty. Affection further predicts mentally visualizing children as pleasant and confident, whereas stress predicts mentally visualizing children as less innocent.

**Conclusions:** These findings offer fundamental new insights about social cognitive processes in adults that impact adult-child relationships and children's well-being.

## KEYWORDS

attitudes, children, individual differences, intergroup processes, prejudice

## 1 | INTRODUCTION

Adult cognition and action toward children as a social category is immensely variable. On the one hand, research has found that adults' perceptions of children are robustly positive. For instance, stronger neonatal facial features (e.g., large eyes, full cheeks; Hildebrandt & Fitzgerald, 1979) tend to be judged as more honest, kind, and cute (e.g., Glocker, Langleben, Ruparel, Loughhead, Gur, et al., 2009), and activate the nucleus accumbens—a key neural area in the processing of approach motivation and rewards (Glocker, Langleben, Ruparel, Loughhead, Valdez, et al., 2009), which may trigger caretaking, empathy, and protective responses (e.g., Alley, 1983; Lishner et al., 2008). Conversely, other research has found that adults' spontaneous trait impressions of child faces frequently include terms such as troublemaker, tough, bully, stubborn, bratty, and mean (Collova et al., 2019), while implicit measures of prejudice and threat perception show racial biases even for very young targets (Todd et al., 2020; Wolf et al., 2017). Children are also sometimes seen as acting with hostile intent when their behavior is ambiguous but appropriate for their age (Milner, 2000; Milner et al., 2017). Indeed, according to a YouGov poll (YouGov, 2008), approximately 50% of British adults see children as “beginning to behave like animals” and disagree with the statement that “children who get into trouble are often misunderstood and in need of professional help.”

Together, this evidence suggests that the content of adults' attitudes toward children subsumes a range of beliefs (e.g., kind, difficult), emotions (e.g., empathy, threat), and behaviors (e.g., caretaking, avoidance) that differ markedly in valence and putatively interact along a certain number of key dimensions. However, past work has failed to distinguish between relevant dimensions of attitude content for several reasons. First, the vast majority of research in this area has focused on parental perceptions and motivations regarding their own children (e.g., Buckels et al., 2015; Hahn et al., 2015; Holden & Buck, 2002; Holden & Edwards, 1989), which can be expected to differ in substantive ways from more wide-ranging (and less intimate) attitudes toward children as a general social category. Second, to the best of our knowledge, the Barnett Liking of Children Scale (BLOCS; Barnett & Sinisi, 1990) is the only existing measure that assesses attitudes toward children in general, and it. However, the BLOCS identifies only a single attitude dimension (overall like vs. dislike), and its items were generated by the researchers in a top-down manner, based on preconceived notions of what constitutes liking of children. In contrast, many published scales of attitudes toward diverse social categories use a bottom-up process, in which potential items are derived from an initial sample of the respondents' own salient associations with the target category (e.g., Lin et al., 2005;

Pittinsky et al., 2011). The bottom-up approach builds upon people's freely expressed views of the target category, potentially uncovering novel dimensions not captured by researchers' prior expectations. In other words, a bottom-up approach more comprehensively captures the relevant psychological content in attitudes.

The apparent lack of research attention on adults' attitudes toward children stands in contrast to longstanding scientific interest in understanding attitudes toward other low-power social categories defined by advanced age (i.e., elderly), race (i.e., ethnic minorities), gender, sexual orientation, religion, and other characteristics (e.g., weight, accent). Given the fundamental role of children in human society and the fact that adults *directly control* many aspects of children's lives, this omission is surprising. This neglect is also surprising because children are unique as a temporal social category for adults—all adults were once children. Thus, the processes underlying attitudes toward children could be very different from those regarding other social categories.

Attitudes toward children are also important to study because relevant evidence and theory points to their potentially severe implications for the treatment of children, although this evidence has only focused on parenting and abuse. Specifically, parents who have more negative mental associations with their children attribute more hostile intent to them and tend to be more abusive of them (McCarthy et al., 2017; Milner, 2000), whereas improving these associations reduces maltreatment of children (Milner et al., 2017). Moving beyond parent-child relationships, the potential for impact of adults' attitudes toward children is magnified by an intergroup dynamic in which the powerful, higher status group (adults) evaluates the weaker, lower status group (children). As articulated in social dominance theory, which alludes to adults' attitudes toward children as an example (Sidanius et al., 2004), high status groups tend to evaluate their ingroup more positively than the outgroup (Bettencourt et al., 2001). Importantly, adults can easily act on these attitudes toward children because children lack a voice for themselves in political, legal, and other decision-making (Webb, 2004). By analyzing these attitudes, we can identify widespread, socially unchallenged biases that influence adults' treatment of children and impact children's well-being.

The present research has three interrelated aims. First, we seek to identify meaningful child-age categories and assess adults' attitude content toward these age categories. Second, we aim to understand the nature of attitude content toward children through its connections with a range of diverse variables, including variables that provide insight into adults' underlying motivations (e.g., human values, personality traits, needs) and variables that are relevant for adult-child relationships and children's

well-being (e.g., participation in a fundraising event benefiting children, parental experiences during COVID-19 lockdown). Third, we test whether attitudes toward children underpin distinct mental visualizations of them, using a reverse-correlation image classification paradigm that can uncover biases in adults' perceptions of children (Dotsch & Todorov, 2012). In addressing these aims, the research also develops new scales that comprehensively assess attitude content toward babies, toddlers, and children, enabling further research on the topic.

## 2 | AIM 1: IDENTIFYING MEANINGFUL CHILD-AGE CATEGORIES AND ATTITUDE DIMENSIONS

Six studies using adult, non-student samples addressed our first aim of identifying meaningful child-age categories and adults' attitude content toward children (see [supplement](#) for a detailed consideration of study methods). Our first step was to identify the broadest set of child-age categories that adults intuitively distinguish. In Study 1, 32 participants indicated in open-ended responses that the most common age categories were babies ( $M$  age range = birth to 1½ years), toddlers ( $M$  age range = 1½ to 3½ years), primary/elementary school-age children ( $M$  age range = 4 to 11 years), and teenagers ( $M$  age range = 12 to 18 years).<sup>1</sup> We used these categories as a starting point for exploring the content of attitudes toward these age groups. Next, to begin identifying attitude content toward these age groups, Study 2 asked 119 participants to describe in open-ended responses the beliefs, emotions, and behaviors that they associated with the four age categories. Two independent raters thematically analyzed the responses to produce a list of unique items concerning babies, toddlers, school-age children, and teenagers.

Study 3 asked 717 participants to rate their agreement with these items. After removing items with extreme endorsements, low variability, low factor loadings, or high cross-loadings, there remained 45 items for babies, 34 items for toddlers, 39 items for school-age children, and 31 items for teenagers. Exploratory factor analyses (EFAs) revealed clear two-factor structures for babies, toddlers, and school-age children, with one factor consistently capturing *affection* toward these child groups (e.g., “Children make me happy”) and another factor capturing *stress* elicited by them (e.g., “Children make me feel frustrated”; see [supplement](#) for more information on the EFAs). In contrast, responses to teenagers strongly favored a qualitatively different three-factor solution: openness behaviors (e.g., “I try to engage with teenagers”), negative beliefs (e.g., “Teenagers are selfish”), and positive emotions (e.g.,

“Teenagers make me feel optimistic”). Due to this substantive difference in the factor structure between teenagers and younger child-age groups, we restrict the focus of the current paper to evaluations of babies, toddlers, and school-age children.

We next tested whether the previously obtained two-factor structure replicated in a new sample, and we aimed to develop brief, precise measures of affection and stress regarding babies, toddlers, and school-age children. In Study 4, 205 participants responded to all items for the three target groups. EFAs replicated the two-factor solutions of affection and stress for all three groups. Next, we used graded response models (GRMs; Samejima, 1996) from item response theory (IRT). IRT complements factor analysis by providing more specific information about the items, allowing us to develop shorter scales of high quality (Fan, 1998). Using this analysis, we selected the four best items per factor and age group (see Study 4 in [Supplement](#) for more detail on the analysis method). Finally, confirmatory factor analyses (CFAs) were conducted on these selected items to assess the global fit of each scale. As shown in [Table S1](#), while fit indices confirmed the proposed factor structure (Hu & Bentler, 1999), the RMSEA values were slightly higher than the suggested cutoff of 0.08 (Browne & Cudeck, 1993).

Study 5 revisited these issues of measurement fit. For each factor of each scale, we added two similarly phrased items (e.g., “Babies make me feel compassionate”; “Babies make me feel stressed”) that were conceptually as close as possible to existing items. In addition, we introduced four reverse-phrased items, two using direct negation (e.g., “Babies *don't* make me feel love”), and two using antonyms (e.g., “I am uninterested in babies”) of existing items (see [Table S2](#)). We sought to retain only the strongest items while ensuring a balanced mix of positively and reverse-phrased items, allowing us to control for acquiescence by partialling out shared variance among items due to common response tendencies (Welkenhuysen-Gybels et al., 2003). In Study 5, 479 participants answered all items. For each child-age group, CFAs tested whether the items replicated the proposed factor structure. The final scales showed good to excellent global fit, with all items loading significantly on their respective latent factors ( $\beta_s \geq 0.49$ ,  $p < 0.001$ ; see [Table 1](#)). Importantly, the scales include a mix of positive- and reverse-phrased items, giving confidence that the affection and stress dimensions are distinct and not simply positive and negative ends of the same dimension. We henceforth refer to these scales as the *Attitudes towards Children (ATC)* scales, with the ATC babies, ATC toddlers, and ATC scales assessing attitudes toward the respective child groups.

As described further below, Study 5 additionally included a first test of the ATC scales' associations with

**TABLE 1** CFA factor loadings and reliabilities of final ATC scales.

Scale and items	$\alpha$	Standardized factor loadings
ATC babies $\chi^2(33)=63.96, p=0.001$ ; CFI=0.981, RMSEA=0.063 (90% CI [0.039, 0.86]); SRMR=0.040		
Affection (5 items)	0.92	
Babies make me feel affectionate		0.93
Babies make me feel love		0.85
I am enthusiastic toward babies		0.90
<i>I feel distant toward babies</i>		-0.85
<i>Babies do not make me feel awe</i>		-0.64
Stress (5 items)	0.88	
Babies make me feel anxious		0.83
Babies make me feel frustrated		0.73
I am exhausted by babies		0.70
Babies make me feel stressed		0.88
<i>Babies do not make me feel anxious</i>		-0.68
ATC toddlers $\chi^2(33)=67.49, p<0.001$ , CFI=0.976, RMSEA=0.066 (90% CI [0.043, 0.088]); SRMR=0.051		
Affection (6 items)	0.93	
Toddlers make me feel happy		0.90
Toddlers make me feel caring		0.81
Toddlers make me feel connected		0.78
<i>I am uninterested in toddlers</i>		-0.79
<i>I am distant toward toddlers</i>		-0.76
<i>Toddlers do not make me feel happy</i>		-0.85
Stress (4 items)	0.84	
Toddlers make me feel worried		0.81
Toddlers make me feel scared		0.70
Toddlers make me feel stressed		0.75
<i>Toddlers do not make me feel worried</i>		-0.73
ATC-children $\chi^2(33)=39.46, p=0.204$ , CFI=0.996, RMSEA=0.028 (90% CI [0.000, 0.058]); SRMR=0.030		
Affection (6 items)	0.94	
I am caring toward children		0.79
Children make me feel happy		0.92
Children are fun		0.80
Children make me feel loving		0.82
<i>Children make me feel uninterested</i>		-0.87
<i>Children do not make me feel happy</i>		-0.84
Stress (4 items)	0.81	
Children make me feel anxious		0.75
Children make me feel on edge		0.78
Children make me feel agitated		0.82
<i>Children do not make me feel scared</i>		-0.49

Note: Results from Study 5. Italicized items are reverse-coded.

external variables, which showed that these associations differ across the child-age categories. Given this complexity, we decided to focus all of the following studies solely on attitudes toward school-age children, so we could test a wider range of psychological questions and gain a better understanding of the nature of the affection and stress dimension toward this age group, as opposed to exploring the commonalities and differences among age groups across a smaller number of variables. We expected this focus to be more relevant to future research, which might benefit from using our approach as an example for testing the other child-age categories.

Following this approach, Study 6 examined the cross-cultural validity of the affection and stress factors regarding school-age children by asking 396 UK participants, 392 U.S. participants, and 393 South African participants to complete the ATC scale. We tested whether the scale showed configural, metric, and scalar invariance across the countries (Widaman & Reise, 1997). Invariance was tested through nested-model comparisons with increasing constraints, where the fit of each model was compared to the previous model. To establish configural invariance, the two-factor structure needs to be equivalent across the countries. To test metric invariance, factor loadings were constrained to be equal. For scalar invariance, intercepts were constrained to be equal across countries. The ATC scale met the criteria for all three indicators, suggesting that the items contribute to each factor in similar ways across countries (see details in Table S3). In sum, the factor structure of the ATC scale showed strong evidence of cross-cultural validity in the United Kingdom, United States, and South Africa.

### 3 | AIM 2: UNDERSTANDING AFFECTION AND STRESS IN ATTITUDES TOWARD CHILDREN

Four studies (Studies 5, 7–9) addressed our second aim: understanding the nature of affection and stress in adults' attitudes toward children by examining how these core dimensions relate to diverse variables. We sought to include (1) variables that would provide comprehensive insights into the motivational underpinnings of the identified dimensions (e.g., Big Five, personal values, needs) and (2) child-relevant evaluations, experiences, and behaviors that would tell us more about the real-world implications for adult-child relationships and children's well-being (see supplement for detail on study methods). The studies within Aim 2 were guided by the research question: Do the affection and stress dimensions predict distinct outcomes?

To understand the real-life implications of the affection and stress dimensions, the four studies considered a range of child-relevant evaluations, motivations, experiences, and

behaviors. Study 5 examined stereotype dimensions, focusing on warmth, competence, and innocence regarding babies, toddlers, and school-age children (using adults as a comparison group).<sup>2</sup> Studies 7–9 then focused on school-age children. Study 7 ( $N=202$ ) examined support for and participation in a real-world event: the British Broadcasting Corporation's (BBC) Children in Need (CiN) fundraiser, a telethon that raises funds for charities directed toward helping children. Study 8 ( $N=529$ ) examined participants' evaluations of child-related videos, stories, and images, and we tested more spontaneous evaluations of children using an implicit measure, the Affect Misattribution Procedure (AMP; Payne et al., 2005). Study 8 also measured participants' parenting motivations. Study 9 ( $N=400$ ) examined parents' experiences during the COVID-19 pandemic. We collected data for this study during the UK lockdown in April 2021, when schools were reopening after approximately five months of closure and adults had been urged to work from home where possible. The lockdown meant that parents spent more time than usual caring for their children while meeting other daily obligations. We examined the role of parents' attitude content toward children in their experiences during the lockdown.

The four studies also included a range of individual difference variables to provide insight into the motivations underpinning the affection and stress dimensions. Studies 8 and 9 measured personal values, defined as life-guiding principles that transcend specific situations. To assess values, we drew on the well-established circumplex model of values (Schwartz, 1992). The model organizes values along two dimensions. Self-transcendence values, which promote the welfare of others (e.g., helpfulness), are contrasted with self-enhancement values, which promote the self (e.g., wealth). Openness values, which promote intellectual and emotional interests (e.g., freedom), are contrasted with conservation values, which promote the status quo (e.g., security). In addition, we assessed adults' need for affect (NFA; motivation to approach or avoid emotion-inducing experiences; Maio & Esses, 2001), need for cognition (NFC; tendency to engage in and enjoy thinking; Cacioppo & Petty, 1982), personal need for structure (PNS; tendency to seek structure in the world in unambiguous ways; Neuberg & Newsom, 1993), and generativity (i.e., responsibility for children and future generations; Erikson, 1963). Moreover, we assessed the big five personality dimensions (McCrae & Costa, 1997), empathic concern and personal distress (Davis, 1983), resilience (Smith et al., 2008), intolerance of uncertainty (Carleton et al., 2007), positive and negative affect (PANAS; Watson et al., 1988), affect intensity (AIM; Larsen & Diener, 1987), and ambivalence over emotional expressiveness (King & Emmons, 1990).

Given the nature of affection items such as “Children are fun” or “I am caring towards children,” we expected that the affection dimension in attitude content toward children would predominantly capture broad positivity (in evaluations, experiences, motivations, and behaviors toward children), emotional approach tendencies (i.e., NFA approach), and greater motivations to care for and protect others (e.g., self-transcendence and conservation values; agreeableness; empathic concern; generativity). In contrast, the stress dimension includes items that suggest emotional instability (e.g., “Children make me feel on edge”) which may be linked with avoidance of the emotional experience associated with children. Moreover, adults who have a greater motivation to see the world as orderly or to pursue personal interests may be particularly likely to perceive children as stressful because children may be seen as disruptive to a structured or self-oriented life. We therefore expected the stress factor to relate to variables that reflect difficulty with emotional self-regulation (e.g., neuroticism; personal distress), emotional avoidance tendencies (i.e., NFA-avoid; ambivalence over emotional expressiveness), and desires to have a structured or self-oriented life (e.g., personal need for structure; uncertainty intolerance; self-enhancement values). Finally, to demonstrate discriminant validity, we predicted that both affection and stress would be unrelated to evaluations of adults and to need for cognition, based on prior suggestions that, while individuals low or high in NFC may use different (heuristic vs deliberative) means to form their attitudes, their attitude content does not differ systematically (Cacioppo et al., 1996).

### 3.1 | Results

All results are shown in Tables 2–5. Study 5 provided evidence for the need to distinguish among children of different age groups. Although the ATC scales overlap between child groups, as they should, the overlap for stress (40%–46%) is lower than for affection (48%–71%). In line with this lower overlap, the stress factor in particular showed associations that differed across child-age groups (see Table 3; see supplement for a more detailed discussion of the results per study).

#### 3.1.1 | Demographic characteristics

As shown in Table 2, women generally report higher affection toward children than men do, consistent with the broader literature (e.g., Charles et al., 2013; Lehmann et al., 2013). Parents also indicate higher affection than non-parents, whereas age is only weakly associated with

TABLE 2 Associations between demographic variables and ATC scales in all studies.

	Gender		<i>p</i>	Being a parent		<i>p</i>	Age		Affection ~ Stress	
	<i>M</i> <sub>women</sub> ( <i>SD</i> )	<i>M</i> <sub>men</sub> ( <i>SD</i> )		<i>M</i> <sub>yes</sub> ( <i>SD</i> )	<i>M</i> <sub>no</sub> ( <i>SD</i> )		<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
<b>Study 5</b>										
ATC-babies										
<i>N</i>	184	52		–	–			234		
Affection	5.67 (1.34)	4.70 (1.68)	<0.001	–	–	–	–0.02	0.759	–0.474	<0.001
Stress	3.20 (1.40)	3.36 (1.50)	0.458	–	–	–	–0.16	0.013		
<b>Study 6—UK sample</b>										
ATC-toddlers										
<i>N</i>	184	57		–	–			240		
Affection	5.63 (1.28)	5.11 (1.24)	0.007	–	–	–	0.04	0.520	–0.276	<0.001
Stress	3.23 (1.41)	3.12 (1.23)	0.569	–	–	–	–0.22	<0.001		
<b>Study 6—US sample</b>										
ATC-children										
<i>N</i>	181	59		–	–			240		
Affection	5.77 (1.27)	5.53 (1.03)	0.176	–	–	–	0.13	0.038	–0.596	<0.001
Stress	3.19 (1.34)	2.91 (1.17)	0.151	–	–	–	–0.26	<0.001		
<b>Study 6—South Africa sample</b>										
ATC-children										
<i>N</i>	193	201		211	180			396		
Affection	5.54 (1.42)	5.19 (1.41)	0.013	6.04 (0.90)	4.54 (1.52)	<0.001	0.17	0.001	–0.640	<0.001
Stress	3.26 (1.48)	3.22 (1.34)	0.778	2.80 (1.27)	3.78 (1.37)	<0.001	–0.26	<0.001		
<b>Study 7</b>										
ATC-children										
<i>N</i>	138	62		–	–			202		
Affection	6.18 (1.01)	5.66 (1.29)	0.010	–	–	–	0.05	0.529	–0.624	<0.001
Stress	2.58 (1.33)	3.28 (1.34)	0.001	–	–	–	–0.18	0.010		
<b>Study 8</b>										
ATC-children										
<i>N</i>	385	140		297	232			529		
Affection	5.18 (0.83)	4.85 (0.87)	<0.001	5.35 (0.66)	4.74 (0.96)	<0.001	–0.02	0.607	–0.551	<0.001

TABLE 2 (Continued)

	Gender			Being a parent			Age		Affection ~ Stress	
	$M_{\text{women}}$ (SD)	$M_{\text{men}}$ (SD)	$p$	$M_{\text{yes}}$ (SD)	$M_{\text{no}}$ (SD)	$p$	$r$	$p$	$r$	$p$
Stress	2.88 (1.37)	3.07 (1.33)	0.170	2.65 (1.33)	3.31 (1.31)	<0.001	-0.12	0.007		
<b>Study 9</b>										
ATC-children										
$N$	277	120		220	179			400		
Affection	5.63 (1.30)	5.22 (1.32)	0.004	6.00 (1.05)	4.89 (1.36)	<0.001	0.05	0.308	-0.628	<0.001
Stress	2.92 (1.43)	2.90 (1.28)	0.906	2.62 (1.27)	3.27 (1.44)	<0.001	-0.16	0.002		
<b>Study 10</b>										
ATC-children										
$N$	494	313		321	485			807		
Affection	5.58 (1.32)	5.16 (1.31)	<0.001	5.43 (0.55)	4.90 (1.38)	<0.001	0.12	<0.001	-0.591	<0.001
Stress	3.18 (1.46)	3.27 (1.33)	0.378	2.66 (1.25)	3.60 (1.40)	<0.001	-0.20	<0.001		
<b>Analysis across all studies</b>										
ATC-children										
$N$	2066	1265		1352	1559			3362		
Affection	5.45 (1.22)	5.12 (1.21)	<0.001	5.77 (0.90)	4.84 (1.24)	<0.001	0.08	<0.001	-0.582	<0.001
Stress	3.06 (1.42)	3.16 (1.31)	0.035	2.69 (1.29)	3.51 (1.41)	<0.001	-0.19	<0.001		

higher affection. Stress shows a different pattern: Parents and older individuals report lower stress elicited by children, whereas gender and stress were only weakly associated. The associations for the stress factor suggest that life experience is a unique determinant of stress elicited by children, distinct from affection.

### 3.2 | Associations with the affection dimension

As expected, the affection and stress dimensions were (negatively) correlated, and therefore, to better understand the distinct nature of each dimension, the constructs' associations with each dimension were examined while controlling for the other dimension in regression analyses. Tables 3–5 summarize these analyses, with the regression results reported alongside zero-order correlations. Affection toward school-age children predicts more positive perceptions of children's—but not adults'—warmth, competence, innocence, and overall favorability, and it predicts higher generativity (see Table 3). Affection also predicts more positive evaluations of child-relevant stimuli, more positive associations with children on a spontaneous level (AMP), stronger motivations to be a parent, parents' greater enjoyment of spending time with

children during the COVID-19 lockdown, and stronger support for and participation in the BBC CiN fundraiser (see Table 4). Furthermore, affection relates to higher self-transcendence and conservation values, a more agreeable personality, more empathic concern, a stronger motivation to approach emotions (NFA approach), and more positive and intense emotions (see Table 5). The affection dimension was unrelated to variables that should be independent of attitude content toward children (e.g., need for cognition) and variables that are relevant to the stress dimension.

### 3.3 | Associations with the stress dimension

The stress dimension of attitude content toward school-age children relates to higher self-enhancement values, higher neuroticism and lower conscientiousness, greater personal distress about the plight of others, lower resilience, tendencies to avoid emotions and emotional expression, less positive emotions and more negative emotions, a higher need for structure, and a greater intolerance of uncertainty (see Table 5). Among parents, stress also predicts greater perceived difficulty of looking after children during the COVID-19 lockdown (see Table 4). The stress dimension

TABLE 3 Affection and stress for each ATC scale predicting outcomes in Study 5.

	ATC babies			ATC toddlers			ATC children					
	R	p	$\beta$ [95% CI]	p	r	p	$\beta$ [95% CI]	p	r	p	$\beta$ [95% CI]	p
Favorability = target category												
Affection	0.81	<0.001	0.73 [0.65, 0.82]	<0.001	0.82	<0.001	0.80 [0.73, 0.88]	<0.001	0.85	<0.001	0.82 [0.74, 0.90]	<0.001
Stress	-0.51	<0.001	-0.16 [-0.24, -0.07]	<0.001	-0.31	<0.001	-0.08 [-0.16, -0.01]	0.027	-0.54	<0.001	-0.05 [-0.13, 0.03]	0.245
Model R <sup>2</sup>			0.67	<0.001			0.68	<0.001			0.72	<0.001
Innocence = target category												
Affection	0.65	<0.001	0.59 [0.48, 0.70]	<0.001	0.61	<0.001	0.61 [0.50, 0.71]	<0.001	0.57	<0.001	0.55 [0.42, 0.68]	<0.001
Stress	-0.41	<0.001	-0.13 [-0.24, -0.02]	0.022	-0.19	<0.001	-0.02 [-0.12, 0.09]	0.741	-0.36	<0.001	-0.03 [-0.16, 0.10]	0.631
Model R <sup>2</sup>			0.43	<0.001			0.37	<0.001			0.32	<0.001
Warmth = target category												
Affection	0.54	<0.001	0.43 [0.31, 0.54]	<0.001	0.51	<0.001	0.49 [0.38, 0.61]	<0.001	0.52	<0.001	0.44 [0.30, 0.57]	<0.001
Stress	-0.45	<0.001	-0.25 [-0.37, -0.13]	<0.001	-0.22	0.001	-0.09 [-0.20, 0.03]	0.142	-0.40	<0.001	-0.14 [-0.27, 0.00]	0.044
Model R <sup>2</sup>			0.34	<0.001			0.27	<0.001			0.28	<0.001
Competence = target category												
Affection	0.28	<0.001	0.29 [0.15, 0.43]	<0.001	0.35	<0.001	0.35 [0.23, 0.48]	<0.001	0.41	<0.001	0.40 [0.25, 0.54]	<0.001
Stress	-0.13	0.045	0.01 [-0.14, 0.15]	0.949	-0.09	0.158	0.01 [-0.13, 0.12]	0.955	-0.26	<0.001	-0.03 [-0.17, 0.12]	0.696
Model R <sup>2</sup>			0.08	<0.001			0.12	<0.001			0.17	<0.001
Generativity												
Affection	0.28	<0.001	0.35 [0.21, 0.49]	<0.001	0.23	<0.001	0.24 [0.11, 0.37]	<0.001	0.42	<0.001	0.41 [0.27, 0.57]	<0.001
Stress	-0.02	0.805	0.15 [0.01, 0.29]	0.036	-0.02	0.749	0.04 [-0.09, 0.16]	0.571	0.25	<0.001	-0.01 [-0.16, 0.14]	0.908
Model R <sup>2</sup>			0.10	<0.001			0.06	0.001			0.17	<0.001
NFA approach												
Affection	0.39	<0.001	0.36 [0.23, 0.50]	<0.001	0.49	<0.001	0.52 [0.38, 0.59]	<0.001	0.46	<0.001	0.54 [0.41, 0.69]	<0.001
Stress	-0.23	0.002	-0.06 [-0.19, 0.08]	0.396	-0.18	0.004	0.13 [0.02, 0.23]	0.023	-0.17	0.009	0.14 [0.00, 0.29]	0.046
Model R <sup>2</sup>			0.15	<0.001			0.25	<0.001			0.22	<0.001
NFA-avoid												
Affection	-0.20	0.002	-0.02 [-0.16, 0.12]	0.811	-0.18	0.004	-0.14 [-0.23, -0.01]	0.034	-0.18	0.005	-0.05 [-0.20, 0.10]	0.546
Stress	0.40	<0.001	0.39 [0.27, 0.55]	<0.001	0.20	0.002	0.16 [0.03, 0.28]	0.015	0.23	<0.001	0.20 [0.05, 0.35]	0.010
Model R <sup>2</sup>			0.16	<0.001			0.06	0.001			0.06	0.001



TABLE 3 (Continued)

	ATC babies			ATC toddlers			ATC children					
	R	p	$\beta$ [95% CI]	p	r	p	$\beta$ [95% CI]	r	p	$\beta$ [95% CI]	p	
NFC												
Affection	0.00	0.978	-0.05 [-0.19, 0.09]	0.488	0.06	0.373	0.04 [-0.09, 0.16]	0.600	0.12	0.061	0.08 [-0.08, 0.25]	0.310
Stress	-0.09	0.177	-0.11 [-0.25, 0.03]	0.130	-0.02	0.160	-0.08 [-0.20, 0.05]	0.228	-0.12	0.075	-0.07 [-0.23, 0.09]	0.408
Model R <sup>2</sup>			0.01	0.317			0.01	0.325			0.02	0.123
PNS												
Affection	0.01	0.864	0.09 [-0.06, 0.23]	0.247	-0.06	0.346	-0.01 [-0.14, 0.12]	0.905	-0.04	0.568	0.03 [-0.13, 0.19]	0.671
Stress	0.12	0.075	0.16 [0.01, 0.30]	0.035	0.20	0.002	0.19 [0.06, 0.32]	0.005	0.10	0.126	0.12 [-0.04, 0.28]	0.139
Model R <sup>2</sup>			0.02	0.105			0.04	0.010			0.01	0.284

Note: Affection and stress were simultaneously entered as predictors in all regressions.  
Abbreviations: NFA, need for affect; NFC, need for cognition; PNS, personal need for structure.

was consistently unrelated to the need for cognition and to variables that are relevant to the affection factor.

### 3.4 | Summary

The findings under Aim 2 are summarized in Figure 1, showing that the affection and stress dimensions are generally linked with distinct sets of outcomes. As expected, the affection dimension predicted more positive evaluations, experiences, motivations, and behaviors regarding children, higher emotional approach tendencies, and stronger motivations to care for and protect others. Also, consistent with the hypotheses, the stress dimension predicted more emotional instability, higher emotional avoidance tendencies, and stronger motivations to have a structured or self-oriented life.

## 4 | AIM 3: ATTITUDE CONTENT AND MENTAL IMAGES OF CHILDREN

Our third aim was to investigate attitudes toward children in a more fundamental, perceptual domain: We examined whether differences in affection and stress underpin distinct mental images that adults have of a typical child. In Study 10A, we used the reverse-correlation image classification task (Dotsch & Todorov, 2012), where 137 participants generated their own mental image of a typical child (see supplement for detail on study methods). We then combined these individual images to create four distinct images of a typical child. These four images represent a typical child as derived from (a) the 20 participants scoring highest in affection, (b) the 20 participants scoring lowest in affection, (c) the 20 participants scoring highest in stress, and (d) the 20 participants scoring lowest in stress (see Figure S5). Subsequently, a new sample of raters, who were unaware of how these four images were generated, evaluated the images along dimensions of niceness (e.g., innocent vs. tough) and shyness (e.g., quiet vs. confident)—dimensions identified by Collova et al. (2019) as relevant to adults' perception of children's faces. The images were also rated in terms of their pleasantness and the extent to which they expressed emotions (e.g., angry). Images were presented in pairs (i.e., high vs low affection; high vs low stress) and shown twice, in counterbalanced order. Using a 6-point scale, participants rated which of the two faces (i.e., image A vs image B) the attribute applied to more strongly: -3 (*definitely A*), -2 (*probably A*), -1 (*possibly A*), +1 (*possibly B*), +2 (*probably B*), +3 (*definitely B*).

Study 10B was conducted to expand on Study 10A, taking several steps to ensure that our findings are

TABLE 4 ATC children predicting evaluations, motivation, behavior, and experiences in Studies 6, 7, and 8.

	$r/M_{\text{dif}}$	$p$	$\beta/\text{OR}$ [95% CI]	$p$
<i>Study 7</i>				
Attitudes toward CiN				
Affection	0.38	<0.001	0.38 [0.22, 0.56]	<0.001
Stress	-0.22	0.001	0.01 [-0.15, 0.18]	0.879
Model $R^2$			0.14	<0.001
Previous participation in CiN				
Affection	0.40	<0.001	0.42 [0.26, 0.59]	<0.001
Stress	-0.23	0.001	0.03 [-0.14, 0.19]	0.739
Model $R^2$			0.16	<0.001
Willingness to contribute to CiN				
Affection	0.36	<0.001	0.39 [0.23, 0.61]	<0.001
Stress	-0.18	0.009	0.05 [-0.13, 0.23]	0.582
Model $R^2$			0.13	<0.001
Watched CiN <sup>a</sup>				
Affection	0.56	0.002	1.52 [1.06, 2.19]	0.024
Stress	-0.36	0.111	1.07 [0.74, 1.36]	0.966
Model $R^2$			0.05	
Donated to CiN <sup>a</sup>				
Affection	0.72	<0.001	1.79 [1.25, 2.56]	0.001
Stress	-0.39	0.067	1.07 [0.80, 1.44]	0.639
Model $R^2$			0.09	
Participated in CiN <sup>a</sup>				
Affection	0.74	<0.001	2.06 [1.27, 3.33]	0.003
Stress	-0.33	0.202	1.15 [0.82, 1.61]	0.435
Model $R^2$			0.07	
<i>Study 8</i>				
Child-AMP scores				
Affection	0.14	0.009	0.16 [0.03, 0.30]	0.020
Stress	-0.07	0.225	0.02 [-0.11, 0.15]	0.756
Model $R^2$			0.02	0.032
Parenting motivation				
Affection	0.59	<0.001	0.55 [0.45, 0.67]	<0.001
Stress	-0.38	<0.001	-0.07 [-0.17, 0.04]	0.231
Model $R^2$			0.35	<0.001
Child-related stimuli, positivity				
Affection	0.21	<0.001	0.21 [0.11, 0.31]	<0.001
Stress	-0.12	0.007	0.00 [-0.10, 0.10]	0.996
Model $R^2$			0.05	<0.001
Child-related stimuli, interest				
Affection	0.23	<0.001	0.22 [0.12, 0.32]	<0.001
Stress	-0.14	0.001	-0.02 [-0.12, 0.08]	0.667
Model $R^2$			0.05	<0.001
<i>Study 9</i>				
Lockdown enjoy				
Affection	0.39	<0.001	0.34 [0.05, 0.25]	0.003
Stress	-0.28	<0.001	-0.09 [-0.18, 0.03]	0.332
Model $R^2$			0.16	<0.001
Lockdown difficulty				
Affection	-0.06	0.438	0.08 [-0.26, -0.05]	0.384
Stress	0.21	0.008	0.26 [-0.13, 0.07]	0.008
Model $R^2$			0.05	0.021

Note: Higher child-AMP scores reflect greater spontaneous positivity toward children. Regressions simultaneously entered affection and stress as predictors of each regression outcome.

Abbreviation: CiN, Children in Need event.

<sup>a</sup>Mean difference ( $M_{\text{dif}}$ ) and odds ratio (OR) are reported; the model  $R^2$  reported is Cox & Snell  $R^2$ .

TABLE 5 ATC children predicting individual differences in Studies 6, 7, and 8.

	<i>r</i>	<i>p</i>	$\beta$ [95% CI]	<i>p</i>
<i>Study 7</i>				
Self-transcendence versus self-enhancement values				
Affection	0.17	0.008	0.05 [−0.12, 0.23]	0.541
Stress	−0.22	0.001	−0.19 [−0.36, −0.01]	0.037
Model <i>R</i> <sup>2</sup>			0.05	0.006
Openness versus conservation values				
Affection	−0.19	0.003	−0.17 [−0.35, 0.01]	0.059
Stress	0.15	0.019	0.04 [−0.14, 0.22]	0.650
Model <i>R</i> <sup>2</sup>			0.04	0.020
<i>Study 8</i>				
Self-transcendence versus self-enhancement values				
Affection	0.19	<0.001	0.15 [0.05, 0.25]	0.003
Stress	−0.16	<0.001	−0.08 [−0.18, 0.03]	0.144
Model <i>R</i> <sup>2</sup>			0.04	<0.001
Openness versus conservation values				
Affection	−0.14	0.002	−0.15 [−0.26, −0.05]	0.003
Stress	0.05	0.212	−0.03 [−0.13, 0.07]	0.563
Model <i>R</i> <sup>2</sup>			0.02	0.006
<i>Across Studies 7 and 8</i>				
Self-transcendence versus self-enhancement values				
Affection	0.18	<0.001	0.12 [0.04, 0.21]	0.006
Stress	−0.18	<0.001	−0.11 [−0.19, −0.02]	0.015
Model <i>R</i> <sup>2</sup>			0.04	<0.001
Openness versus conservation values				
Affection	−0.17	<0.001	−0.18 [−0.27, −0.10]	<0.001
Stress	0.08	0.024	−0.02 [−0.11, 0.07]	0.653
Model <i>R</i> <sup>2</sup>			0.03	<0.001
<i>Study 9</i>				
Openness				
Affection	0.07	0.178	0.04 [0.03, 0.30]	0.587
Stress	−0.07	0.141	−0.05 [−0.11, 0.15]	0.422
Model <i>R</i> <sup>2</sup>			0.01	0.293
Conscientiousness				
Affection	0.20	<0.001	0.08 [0.45, 0.67]	0.207
Stress	−0.24	<0.001	−0.19 [−0.17, 0.04]	0.003
Model <i>R</i> <sup>2</sup>			0.06	<0.001
Extraversion				
Affection	0.17	0.001	0.12 [0.11, 0.31]	0.054
Stress	−0.15	0.002	−0.08 [−0.10, 0.10]	0.238
Model <i>R</i> <sup>2</sup>			0.03	0.001
Agreeableness				

(Continues)

TABLE 5 (Continued)

	<i>r</i>	<i>p</i>	$\beta$ [95% CI]	<i>p</i>
Affection	0.28	<0.001	0.20 [0.12, 0.32]	0.001
Stress	-0.25	<0.001	-0.12 [-0.12, 0.08]	0.045
Model <i>R</i> <sup>2</sup>			0.09	<0.001
Neuroticism				
Affection	-0.13	0.010	0.10 [0.05, 0.25]	0.113
Stress	0.30	<0.001	0.36 [-0.18, 0.03]	<0.001
Model <i>R</i> <sup>2</sup>			0.04	<0.001
Empathic concern				
Affection	0.45	<0.001	0.44 [0.05, 0.25]	<0.001
Stress	-0.29	<0.001	-0.01 [-0.18, 0.03]	0.823
Model <i>R</i> <sup>2</sup>			0.20	<0.001
Personal distress				
Affection	-0.13	0.008	0.10 [0.05, 0.25]	0.114
Stress	0.31	<0.001	0.37 [-0.18, 0.03]	<0.001
Model <i>R</i> <sup>2</sup>			0.10	<0.001
Uncertainty intolerance				
Affection	-0.19	<0.001	0.03 [0.05, 0.25]	0.595
Stress	0.34	<0.001	0.36 [-0.18, 0.03]	<0.001
Model <i>R</i> <sup>2</sup>			0.11	<0.001
Positive affect				
Affection	0.28	<0.001	0.14 [0.05, 0.25]	0.022
Stress	-0.30	<0.001	-0.21 [-0.18, 0.03]	0.001
Model <i>R</i> <sup>2</sup>			0.10	<0.001
Negative affect				
Affection	-0.14	0.005	0.04 [0.05, 0.25]	0.525
Stress	0.26	<0.001	0.29 [-0.18, 0.03]	<0.001
Model <i>R</i> <sup>2</sup>			0.07	<0.001
Affect intensity				
Affection	0.15	0.003	0.15 [0.05, 0.25]	0.023
Stress	0.01	0.909	-0.01 [-0.18, 0.03]	0.865
Model <i>R</i> <sup>2</sup>			0.02	0.009
Aversion to express emotions				
Affection	-0.01	0.808	0.15 [0.05, 0.25]	0.017
Stress	0.17	0.001	0.26 [-0.18, 0.03]	<0.001
Model <i>R</i> <sup>2</sup>			0.04	<0.001
Resilience				
Affection	0.17	0.001	-0.05 [0.05, 0.25]	0.448
Stress	-0.32	<0.001	-0.35 [-0.18, 0.03]	<0.001
Model <i>R</i> <sup>2</sup>			0.10	<0.001
NFA approach				
Affection	0.39	<0.001	0.42 [0.05, 0.25]	<0.001
Stress	-0.22	<0.001	0.05 [-0.18, 0.03]	0.435
Model <i>R</i> <sup>2</sup>			0.15	<0.001
NFA-avoid				

TABLE 5 (Continued)

	<i>r</i>	<i>p</i>	$\beta$ [95% CI]	<i>p</i>
Affection	−0.27	<0.001	−0.10 [0.05, 0.25]	0.104
Stress	0.34	<0.001	0.28 [−0.18, 0.03]	<0.001
Model <i>R</i> <sup>2</sup>			0.12	<0.001
PNS				
Affection	−0.17	0.001	−0.01 [0.05, 0.25]	0.828
Stress	0.26	<0.001	0.25 [−0.18, 0.03]	<0.001
Model <i>R</i> <sup>2</sup>			0.07	<0.001
<i>Across Studies 5 and 9</i>				
PNS				
Affection	−0.14	<0.001	−0.06 [−0.16, 0.03]	0.196
Stress	−0.17	<0.001	0.13 [0.03, 0.23]	0.009
Model <i>R</i> <sup>2</sup>			0.03	<0.001
NFA approach				
Affection	0.42	<0.001	0.47 [0.38, 0.56]	<0.001
Stress	−0.20	<0.001	0.09 [0.00, 0.18]	0.042
Model <i>R</i> <sup>2</sup>			0.18	<0.001
NFA-avoid				
Affection	−0.23	<0.001	−0.08 [−0.17, 0.01]	0.092
Stress	0.30	<0.001	0.25 [0.15, 0.33]	<0.001
Model <i>R</i> <sup>2</sup>			0.09	<0.001

Note: Affection and stress were simultaneously entered as predictors of each regression outcome. Higher value scores reflect higher self-transcendence (lower self-enhancement) and higher conservation (lower openness), respectively.

Abbreviations: NFA, need for affection; PNS, personal need for structure.

robust to Type 1 error (see Cone et al., 2020). First, in Study 10B we increased the total sample size to 326 generators, and second, we included only those images in the rating part that were derived based on a relatively low chance of random responding (i.e., InfoVal > 1.5; Brinkman et al., 2020; Cone et al., 2020). Third, we used four mental images per category (rather than one as in Study 10A), with each mental image derived from ten randomly selected participants. Finally, raters in Study 10B saw all four mental images per category four times (i.e., 16 ratings per category), yielding a more reliable estimate of participants' impressions. In Study 10B, participants rated the mental images on six items: the two highest-loading items for the niceness (innocent, tough) and shyness (quiet, confident) dimensions, as well as “pleasant” and “angry.”

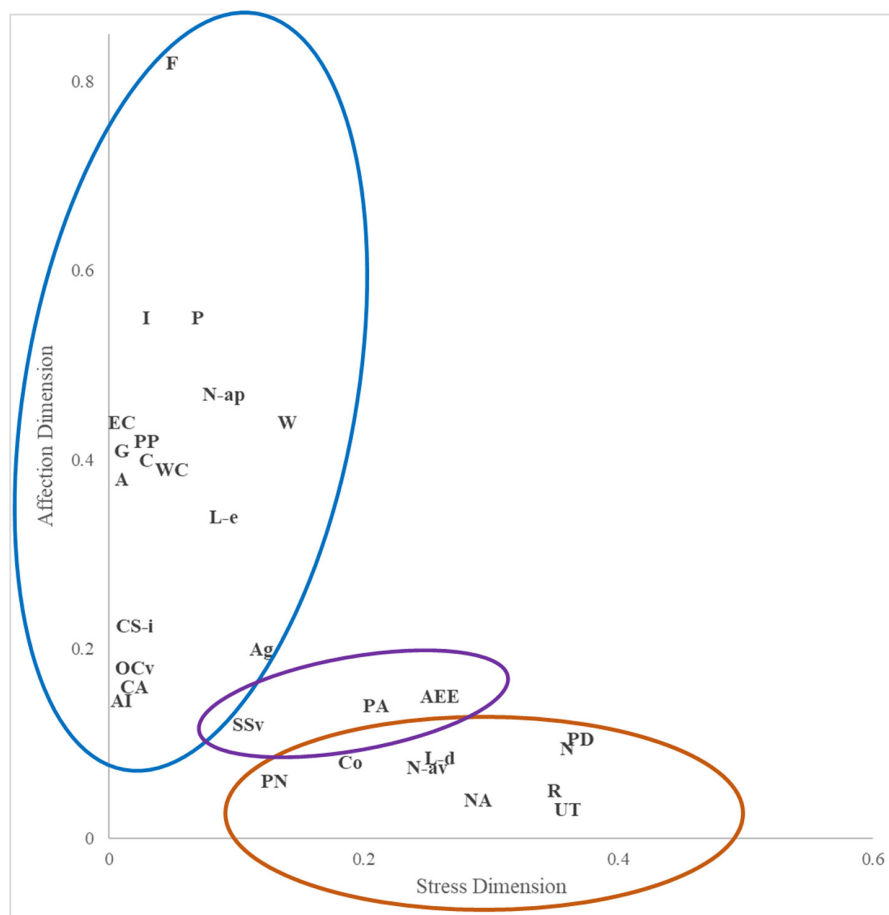
Based on our prior findings that affection captures positivity and emotional approach tendencies, we expected that mental images of children generated by individuals higher (vs. lower) in affection would be rated as more pleasant, less shy (i.e., more emotionally stimulating), and as displaying more positive emotions. In contrast, we expected that mental images of children generated by individuals higher (vs. lower) in stress would be rated as

less nice, less pleasant, and as displaying more negative emotions, because adults higher in stress see children as disruptive and as eliciting negative affect.

## 4.1 | Results

One-sample *t*-tests were conducted to test whether the evaluations of images were significantly different from zero. Because Study 10B took several steps beyond Study 10A to address questions about the type 1 error rate in reverse-correlation designs (see Cone et al., 2020), we focus on the findings from Study 10B. Nevertheless, and as can be seen in Tables S17 and S18, the results for Study 10A point in a similar direction, generally with stronger effect sizes.

As shown in Figure 2, a typical child generated by participants high (vs. low) in affection was evaluated as more pleasant, less angry, and less shy (i.e., more confident and less quiet), whereas a typical child generated by participants high (vs. low) in stress was evaluated as less nice (i.e., tougher and less innocent) and less confident. These results are in line with our prior evidence that higher affection predicts more positive responses and greater openness for emotionally stimulating experiences (e.g., from a confident



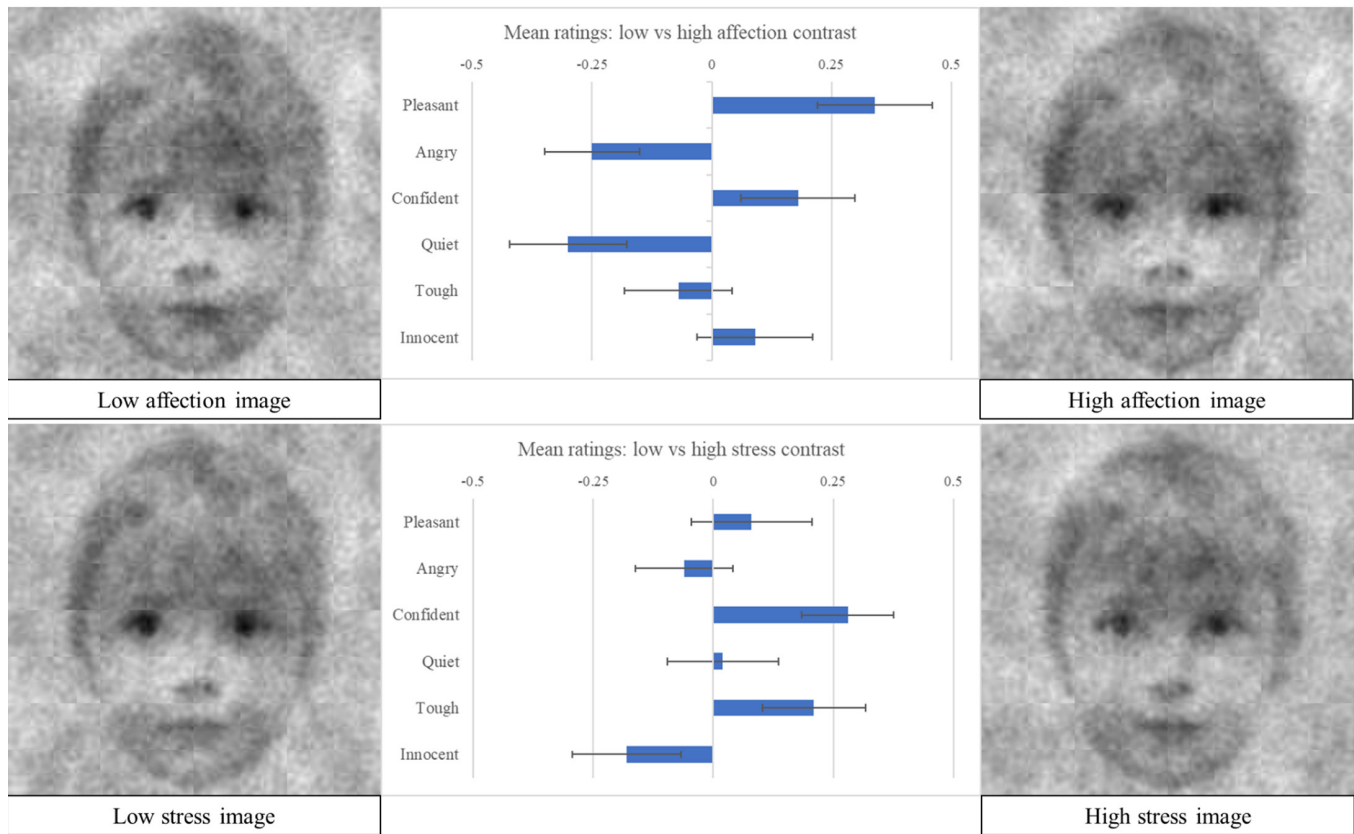
**FIGURE 1** Plot summarizing the simple regression results under Aim 2. Depicted are the absolute beta values for each outcome that are significantly predicted by the affection dimension (y-axis) and/or the stress dimension (x-axis). Outcomes within a blue (red) outline were primarily or uniquely predicted by affection (stress). Outcomes within a purple outline were predicted by both affection and stress. Key: F, favorability; I, innocence; P, parenting motivation; N-ap, NFA approach; W, warmth; EC, empathic concern; PP, previous participation in CiN; G, generativity; C, Competence; WC, willingness to contribute to CiN; A, attitudes toward CiN; L-e, lockdown enjoy; CS-i, child stimuli interest; CS-i, child stimuli positivity; Ag, agreeableness; OCv, OP-CO values; CA, child-AMP; AI, affect intensity; SSv, ST-SE values; PD, personal distress; N, neuroticism; UT, uncertainty tolerance; R, resilience; NA, negative affect; L-d, lockdown difficulty; AEE, aversion to express emotions; N-av, NFA-avoid; PA, positive affect; Co, conscientiousness; PN, PNS.

and less quiet child), whereas higher stress relates to emotional avoidance and viewing children as bringing disruption and unpredictability (e.g., a tough child).

## 5 | DISCUSSION

Children are of fundamental importance in society and adults' lives, and adults directly control many aspects of children's lives. Yet, there is substantial variability in adult cognition and behavior regarding children, which makes it vitally important to examine and understand the attitudinal underpinnings of this variability. Addressing this gap, the present research identified meaningful child-age groups (i.e., babies, toddlers, school-age children), and obtained robust, cross-cultural evidence that the beliefs, emotions, and behaviors that adults spontaneously associate

with these age groups are split along two dimensions: affection and stress. A broad set of findings attests to the distinct importance of these dimensions. Affection captures broad positivity in evaluations, experiences, motivations, and behaviors specific to children, higher positive affectivity, emotional approach tendencies, and a concern for others, consistent with literature showing that children are seen positively (e.g., Glocker, Langleben, Ruparel, Loughhead, Gur, et al., 2009) and trigger caretaking responses (e.g., Lishner et al., 2008). The findings also suggest that affection involves a concern for security and protection (e.g., conservation values), in line with previous evidence that children trigger protective responses (e.g., Alley, 1983), and that parents prefer risk aversion and conservation values (e.g., Eibach & Mock, 2011; Lönnqvist et al., 2018). The affection dimension was not related to variables that should be independent of attitude content toward children (e.g.,



**FIGURE 2** Averaged mental representations of a typical child among participants lowest (top left) or highest (top right) in affection toward children, or participants lowest (bottom left) or highest (bottom right) in stress elicited by children, with mean ratings and 95% confidence interval from Study 10B shown in the center. Positive (vs. negative) scores indicate that the attribute was rated as more applicable to the high (vs. low) affection or stress image than to the low (vs. high) affection or stress image.

need for cognition) and variables relevant to the stress dimension. The associations with the stress dimension provide novel insights: This dimension distinctly captures emotional instability, emotional avoidance, and aversion to the disruptiveness that children can bring to a structured and self-oriented life. Moreover, as expected, the stress dimension was not linked to the need for cognition and to variables relevant to the affection factor.

The distinction between affection and stress was also evident at a basic perceptual level, as seen through adults' mental images of typical children. We found that individuals higher in affection toward children mentally visualize children as more pleasant, less angry, and less shy (or more confident). This mental image of pleasant and confident children may support an expectation of positive adult-child interactions among those adults high in affection. Conversely, individuals higher in stress toward children were more likely to mentally visualize children as less nice (i.e., tougher, less innocent) and less confident. These mental images of children as tough may reveal negative expectations (e.g., perceiving malicious intent in ambiguous child behaviors) that would normally be hidden

in more direct assessments. In light of work showing that children are sometimes assumed to act with hostile intent, with harmful ramifications for treatment of children (e.g., Milner, 2000; Milner et al., 2017), future research may consider how affection and stress underpin attributional patterns and behaviors that adversely impact children in everyday interactions.

Overall, the present research provides robust evidence regarding the importance of distinguishing between affection and stress in attitudes regarding (school-age) children. Of importance, the dimensions of affection and stress emerged from individuals' spontaneous characterizations of children in a bottom-up process, rather than being imposed by the researchers. Our analyses showed that stress is not reducible to low affection toward different child groups and that it independently predicts stress-relevant variables. The simultaneous examination of affection and stress therefore provides a vital, broader picture of adults' attitudes toward children, integrating a seemingly conflicting literature around perceptions of children (e.g., Glocker, Langleben, Ruparel, Loughhead, Gur, et al., 2009; Milner

et al., 2017), while providing a new measure capable of quick and easy use in future research.

Two other aspects of the findings are particularly noteworthy. First, it is important to note that social desirability concerns are unlikely as an alternative explanation of the results, because the affection and stress dimensions meaningfully predicted responses on two implicit assessments, the affect misattribution paradigm and the reverse-correlation image classification task. Second, despite the item generation phase producing a balanced mix of feelings, beliefs, and behaviors regarding children, most of the items in the final ATC scales were feelings-based (e.g., “Children make me feel happy”), with fewer belief and behavior items (e.g., “Children are fun,” “I am caring towards children”). Thus, the most reliable indicators of the ATC dimensions were affective in nature. This affective dominance within attitudes toward children is reflected in the labels of the two dimensions, affection, and stress, and in the fact that the strongest relationships emerge for affect-related variables, including empathic concern, personal distress, and neuroticism.

The present research focused on school-age children, after showing that it is important to distinguish among babies, toddlers, and school-age children when examining attitudes toward children. While we expect that the stress dimension shows some similarities across the child-age groups, each group may be challenging in somewhat distinct ways. Babies may elicit stress because they require a sense of care in the face of ambiguous signals that may be overwhelming for inexperienced adults. Toddlers may elicit stress because their immature verbal and reasoning skills, emotional instability, greater desire for control, and increased mobility require constant vigilance and patience. School-age children may be perceived as stressful because they still require adults to take responsibility and communicate patiently with them, despite growing reasoning capabilities. We hope future research can shed more light on the commonalities and differences in attitude content between child-age groups to provide a more nuanced understanding of attitudes toward children and their vital role in human societies.

The present research was based on large, heterogeneous samples across age groups (i.e., ages ranged from 18 to 85 years), gender, and parenthood. We found that these demographics did not systematically moderate the findings in the present studies, suggesting that the dimensions we obtained and their associations with other variables reflect basic psychological processes that are broadly generalizable across age, gender, and parenthood. This finding is particularly interesting because it suggests that the content of adults' attitudes toward children does not *structurally* change with age or parenthood, even though age and parenting may lead people to endorse this attitude content

to a stronger or weaker extent. This finding also suggests that the affection and stress dimensions are of relevance beyond more close-knitted parenting contexts and can be applied to adult-child relations more widely. We further found that the affection and stress dimensions replicated across the United Kingdom, the United States, and South Africa. Because perspectives on children and child-rearing vary across cultures (e.g., Frewen et al., 2015), we hope that future research will further expand this cross-nation analysis by adapting our approach to examine attitudes toward children in other languages, and within other nations.

Future research may also benefit from situating the ATC scales in relation to measures assessing parents' perceptions and motivations regarding their own children. For instance, we would expect that the affection dimension is closely related to parental motivations of protection and nurturance, as captured by the parental care and tenderness scale (Buckels et al., 2015; Hofer et al., 2018) or the maternal tendencies questionnaire (Hahn et al., 2015). Affection might also be expected to be linked with more authoritative parenting styles (Baumrind, 1978). In contrast, while stress is a novel dimension, it might be linked with some existing measures in the parenting literature, including parental efficacy (Morawska et al., 2014), parent distress tolerance, parent coping with child emotions (Birk et al., 2022), and authoritarian parenting styles. That is, those higher in stress might be expected to feel less efficacious in their parenting, have lower distress tolerance, and use less adaptive coping styles and more authoritarian parenting styles. While it is beneficial to establish the usefulness of the ATC scales in a parenting context, it is important to keep in mind that the ATC scales have wider relevance in predicting parents' and non-parents' attitudes toward children in general.

Another fruitful avenue for future research may be to study sub-groups of children in society, including boys and girls, or children with a mental health condition or a physical disability. For instance, researchers could adapt the items of the ATC scales to directly measure adults' attitudes toward one of these groups (e.g., changing an item to “I am caring towards boys”). The findings might show that the dimensions of affection and stress remain intact, but for instance, girls elicit more affection than boys. Similarly adapted scales could assess attitudes toward children with a specific mental health condition, such as autism, and research could compare them to existing scales (e.g., Olley et al., 1981). Children with certain physical disabilities or mental health conditions may be especially dependent on adults as providers of care, meaning that it is particularly vital to understand how adults evaluate these sub-groups of children. The reverse-correlation image classification task may offer other ways to test perceptions of these groups by asking participants



to generate images of typical boys or girls. Alternatively, it may be interesting to use the mental images of children obtained in the present research, and test whether new participants are more likely to guess that, for instance, the high affection face is a girl rather than a boy, in line with prevailing gender stereotypes.

Finally, the present research studied attitudes, which are typically regarded as relatively malleable compared to individual differences in personality traits or human values. The malleability of attitudes toward children remains an open empirical question. Future research may benefit from testing the conditions which elicit higher or lower levels of affection and stress. For instance, seeing images of cute children or reminiscing about a recent encounter with a happy child might elevate adults' affection toward children. Conversely, seeing images of difficult children, having to take responsibility for children in the presence of other life stressors (e.g., work), or being presented with unexpected events involving children (e.g., being asked to babysit a friend's children at the last minute) may all increase adults' stress response to children. Research may also wish to examine how affection and stress levels change over the course of pregnancy and the early years of parenthood.

Prior to this research, there has been ample documentation of substantial variability in adult cognition and behavior toward children, but scarce evidence to help model and understand this variability. By examining adult attitudes toward children for the first time in a bottom-up manner, we were able to show that this variability is consistent with affection and stress within these attitudes. Furthermore, these dimensions predict evaluations and behaviors specific to children, are linked with a range of distinct personality dimensions and social-emotional orientations, and they predict differences in self-generated mental images of children. Together, these findings illustrate the importance of these attitudinal dimensions, while beginning to draw attention to the neglected role of adult attitudes toward children in human social behavior and societies. Because children are inextricably dependent on adults as providers of care, and maltreatment can have serious mental and physical health consequences (e.g., Gershoff et al., 2010), it is crucial to continue to build a better understanding of adults' attitudes toward children in order to understand and address their previously neglected impacts.

#### AUTHOR CONTRIBUTIONS

**Conceptualization:** LW, GM, GH, JK, CF. **Study design:** all authors. **Data analysis:** LW, MI, VC, ST, AN. **Visualization:** LW. **Writing—original draft:** LW. **Writing—review and editing:** LW, GM, GH. All authors approved the final version of the paper.

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#### CONFLICT OF INTEREST STATEMENT

The authors declare no competing interest.

#### DATA AVAILABILITY STATEMENT

The data (including explanations and syntax) and study materials will be made openly available upon publication.

#### ETHICS STATEMENT

All studies were granted ethical approval by the psychology research ethics committee where the research was conducted. No studies were pre-registered.

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#### ENDNOTES

<sup>1</sup> We refer to babies and teenagers rather than terms that are more common in the literature (i.e., infants and adolescents) to stay close to participants' generated age categories.

<sup>2</sup> Study 6, as described above, showed cross-cultural validity.

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