Social Psychology

Does Caring Breed Contempt? Examining the Hypothesis That Activation of a "Parental" Mindset Causes Harsher Moral Judgments

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Prior research (most of which is correlational) has suggested that activation of the parental care motivational system may lead people to make harsher moral judgments of social norm violators. We tested this hypothesis in 8 studies (total N = 1790). Seven of the studies were true experiments in which participants made moral judgments after being randomly assigned to either conditions designed to temporarily activate the parental care system or to a control condition. In one of these experiments, participants viewed photographs of either cute animals or furniture and in 6 additional experiments, participants engaged in an autobiographical writing task in which they recalled and wrote about a time they either cared for a child or—in the control conditions that varied across these experiments—had a different experience. In the final non-experimental study, women were recruited in public places and made moral judgments, the harshness of these judgments was compared between those accompanied by a young child versus not accompanied by a young child. The effects (and non-effects) of these procedures on moral judgments were inconsistent across the 8 studies and an internal meta-analysis of the 7 true experiments provided no compelling evidence that the experimental manipulations influenced moral judgments. We hope that these results offer some guidance to future researchers on what methods might—and might not—be effective in activating the parental care system and can support future work on the influence of parental care on moral cognition.

Humans are endowed with a parental care motivational system that is triggered in response to children (or child-like stimuli) and can be activated among parents and non-parents alike (Bos, 2017; Rilling, 2013; Schaller, 2018). This system produces tender emotions and caring responses to children (Alley, 1983; Glocker et al., 2009) and may be a basis for altruism more generally (Preston, 2013). Activation of this system also produces a variety of other responses that are less clearly prosocial. Because caring for children—especially those who are younger and more vulnerable—requires the provision of protection against potential threats, activation of the parental care-giving system facilitates negative responses toward activities, objects, and people that are perceived to be potentially dangerous. These responses can manifest in risk-aversion, interpersonal aggression, and intergroup prejudice (Eibach & Mock, 2011; Gilead & Liberman, 2014; Hahn-Holbrook et al., 2011).

Many social norms provide buffers against threats. Consequently, when people perceive themselves to be more vulnerable to threats, they make harsher moral judgments about others who violate social norms (Murray et al., 2019; Murray & Schaller, 2012). Analogous effects might be expected when people feel "parental"—and therefore feel tacitly obliged to provide protection to children. Some evidence supports this hypothesis. Compared to non-parents, parents judge norm violations to be more morally wrong (Kerry & Murray, 2018). And, among both parents and non-parents, harsher moral judgments are made by individuals who score higher on a measure assessing dispositional inclinations toward parental caregiving (Buckels et al., 2015; Hofer et al., 2018; Kerry & Murray, 2018). These effects were found across a wide range of norm violations, including violations that are transparently harmful as well those that are relatively harmless.

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These correlations are consistent with the hypothesis that a parental mindset is associated with harsher judgments of norm violators. Does a parental mindset actually *cause* individuals to make those harsher moral judgments? A confident causal inference requires supportive evidence obtained from rigorous experimental methods.

Currently, such evidence is limited to a single finding from a single experiment conducted on a small sample of participants (Eibach et al., 2009). This experiment employed a clever procedure designed to temporarily amplify a parental mindset among parents: Participants (34 parents as well as 19 non-parents) were randomly assigned to report demographic information either before or after making moral judgments about norm violations. The demographic questions included an item asking, "Are you a parent?"—tacitly reminding parents of their parenthood and thus potentially activating a more strongly parental mindset. Results showed that (compared to parents who had not yet responded to demographic questions), parents who had just received this reminder made harsher judgments of seemingly harmless norm violations (e.g., "A woman undergoes plastic surgery to permanently affix animalistic horns to her skull"). Why might such an effect be found on norm violations that pose no apparent threat to children? One answer is that even ostensibly victimless violations of social norms may be construed as undermining existing social structures, and thus pose some indirect threat to vulnerable members of society such as children (Bryant, 1977). This may explain why people with more conservative socio-political attitudes are more likely to report that ostensibly harmless norm violations are morally wrong (Schein & Gray, 2015), and why people who have a greater dispositional inclination toward parental caregiving endorse more conservative socio-political attitudes (Kerry & Murray, 2018, 2020).

Although those results provide some experimental evidence that temporary activation of a parental mindset may cause individuals to make those harsher moral judgments, other results do not. The experimental study described above (Eibach et al., 2009) that used demographic questions to remind parents of their parenthood observed no effect of the experimental manipulation on an item assessing moral judgments about shoplifting—a norm violation that also undermines social structures and arguably poses greater potential harm. Additionally, another study (Kerry & Murray, 2018; study 3) deployed the same experimental manipulation on a larger sample of parents (N = 350) and found no effect on a multi-item measure assessing judgments of norm violations in three moral domains (loyalty, authority, and purity) that are relevant to the maintenance of social structures. Methodological limitations (pertaining to sample size, reliability of measurement, and the subtlety of the experimental manipulation) might plausibly account for one or both non-effects. Regardless, experimental evidence bearing on the hypothesis is limited and inconsistent, making it difficult to draw a confident inference about whether the temporary activation of a parental mindset does, or does not, lead to harsher moral judgments. Additional research is required.

Overview of Current Research

In this article, we report results from 8 studies (7 of which were true experiments) that used conceptually complementary methods to test the hypothesis that activation of a parental mindset leads to harsher moral judgments. Rather than using the experimental manipulation described above—which is applicable only to parents—the 7 experiments employed experimental procedures that have been previously used to activate a parental mindset among both parents and non-parents. These procedures included exposing participants to images of cute baby animals (Beall & Schaller, 2019; Sherman et al., 2009), and asking participants to reminisce about a time from their own life when they were in a caregiving role (Gilead & Liberman, 2014; Kerry & Murray, 2020). The non-experimental study used an additional method that has been used previously (Gilead & Liberman, 2014): Participants made moral judgments in a naturalistic setting in which they either were, or were not, in the presence of a child. The moral judgment task was a multi-item measure designed to assess participants' responses to norm violations. Participants judged norm violations that were potentially harmful to others. Additionally, in 7 of the 8 studies, participants judged norm violations that were ostensibly harmless to others.

The studies presented here vary in sample size (from samples of 72 to 489) as well as participant populations and methodological details (see Table 1 for an overview). Results from our 7 true experiments are presented in the framework of a meta-analysis. This technique has been the topic of debate (i.e., concerns often involve the fact that meta-analyses must meet the following two assumptions to be valid: studies must be free of p-hacking and all relevant studies must be included; Cumming, 2018; Vosgerau et al., 2019). To the best of our knowledge these assumptions are met in the current set of studies; these studies represent all studies our research group has run on this topic, and while we recognize that some forms of p-hacking can be unintentional, we have done our best to present these results in an unbiased manner. Therefore, we decided to utilize meta-analytic techniques allowing us to harness the additional power available when combining across our experimental studies. This approach provides a quantitative synthesis of the full set of results, while also allowing differences across samples to be transparent for readers. The patterns of results varied across studies, and most studies did *not* produce statistically significant results. For efficiency of presentation, we have presented the methods and results in a combined fashion due to the similarities across studies.

Methods

Overview

The central hypothesis was tested by 7 true experiments (which used different procedures to manipulate whether or not participants were in a parental mindset) and 1 additional study that used a non-experimental procedure to operationalize parental mindset. Methods were similar across studies (all studies were between-subjects, and the key de-

Table 1. Characteristics of the sample obtained in each study.

Study	N	Mean Age (SD)	% Women	% Parents	Control Variables	Sample Type
1	72	19.96 (1.73)	77.78	0.00	Age, PCAT, Gender	Undergraduates
2	199	20.32 (2.90)	75.88	0.01	Age, PCAT, Gender	Undergraduates
3	142	20.95 (3.91)	78.87	0.00	Age, PCAT, Gender	Undergraduates
4	489	20.41 (2.28)	80.37	0.01	Age, PCAT, Gender	Undergraduates
5	125	20.62 (3.19)	80.80	0.01	Age, PCAT, Gender	Undergraduates
6	115	20.43 (1.73)	83.48	0.01	Age, PCAT, Gender	Undergraduates
7	390	35.14 (12.07)	48.97	38.46	Age, PCAT, Gender, Parental Status	MTurk workers
8	258	35.69 (3.93)	100	58.14	Age, PCAT, Parental Status	Community

Note. PCAT = Parental Care and Tenderness Scale. We did not control for gender in Study 8 and parenthood status in Studies 1-6 due to the lack of variability (only women participated in Study 8, virtually no parents participated in Studies 1-6).

pendent variable was measured identically). Participants were excluded if they did not complete the moral judgement outcome measure or any of four control variables. All participants provided written consent and all studies were approved by the Human Research Ethics Board at the University of Victoria.

Participants and Operationalization of Parental Mindset

Study 1. Participants were 72 Canadian undergraduate students (56 women, 16 men; all non-parents; mean age = 19.96 years, *SD* = 1.73). Participants were randomly assigned to one of two experimental conditions. This study used an experimental parental mindset manipulation that has been used successfully in a previous study to lower interest in short term mating opportunities (Beall & Schaller, 2019). Participants spent 90 seconds viewing 10 photographs, each of which was accompanied by a short caption. In the experimental condition (*n* = 36)—which was designed to temporarily induce a parental mindset—the photographs depicted cute kittens and puppies, and the captions indicated that these animals needed care (e.g., "Found abandoned"; "Brown dog needs a home"). In the control condition (*n* = 36), the photographs depicted pieces of furniture, accompanied by captions that were identical (e.g., "Found abandoned") or analogous (e.g., "Brown couch needs a home").

Study 2. Participants were 207 Canadian undergraduate students. Eight participants failed to complete procedures, resulting in a final sample of 199 participants (151 women, 48 men; 1 parent; mean age = 20.32 years, SD = 2.90). Participants were randomly assigned to experimental conditions. A procedure to experimentally manipulate parental mindset was adapted from a manipulation used successfully in previous research (Gilead & Lieberman, 2014). Participants wrote paragraphs on three topics. The first two topics were identical across conditions ("The last trip you went on" and "The last program you saw on television"), but the third topic differed across experimental conditions. To activate a parental mindset, some participants were randomly assigned to write a paragraph describing "a time you took

care of a baby or young child" (*n* = 101). As a control, other participants were randomly assigned to write a paragraph describing "a happy moment in your childhood" (*n* = 98).

This study also included a second experimental manipulation. Participants were randomly assigned to read one of three short articles. One article described protective benefits of social norms (e.g., hand-washing buffers against disease transmission). Another article described problems posed by social norms (e.g., constraints on personal choice). The third article emphasized neither benefits nor problems of social norms, and instead simply described the evolution of language norms over time. This manipulation had no statistically significant effects on any of the moral judgment indices (all *p*'s > .7) and was not included in any additional studies. For the statistical analyses described below, we combined data across these 3 conditions.

Study 3. Participants were 144 Canadian undergraduate students, 2 participants failed to complete procedures, resulting in a final sample of 142 (112 women, 30 men; all non-parents; mean age = 20.95 years, *SD* = 3.91). Participants were randomly assigned to one of three experimental conditions. The experimental procedure was identical to the procedure used to manipulate parental mindset in Study 2, except for the addition of a second control condition. To activate a parental mindset, participants wrote a paragraph describing "a time you took care of a baby or young child" (*n* = 49). In one control condition, participants wrote a paragraph describing "a happy moment in your childhood" (*n* = 46). In the additional control condition, participants described "a time you worked with others on a class project" (*n* = 47). For the meta-analysis, data in the two control conditions were combined into a single comparison condition.

Study 4. Participants were 500 Canadian undergraduate students. Eleven participants failed to complete procedures, resulting in a final sample of 489 participants (393 women, 96 men; 3 parents; mean age = 20.41 years, *SD* = 2.28). Participants were randomly assigned to one of two experimental conditions. The experimental manipulation was identical to that of Study 2 except for a wording change on the control condition writing prompt (i.e., replacing the word "happy" with "memorable"). To activate a parental

mindset, participants wrote a paragraph describing "a time you took care of a baby or young child" (*n* = 252). In the control condition, participants wrote a paragraph describing "a memorable moment in your childhood" (*n* = 237).

Study 5. Participants were 127 undergraduate students. Two participants failed to complete procedures, resulting a final sample of 125 participants (101 women, 24 men; 1 parent; mean age = 20.62 years, *SD* = 3.19). Participants were randomly assigned to one of two experimental conditions. The experimental procedure expanded upon the procedure used in Studies 2 – 4 with the intention of creating a more psychologically impactful manipulation. Participants wrote about specific autobiographical topics and subsequently talked about their autobiographical recollections for 3 minutes with the experimenter. (The experimenter initiated the conversation by asking "Can you tell me a bit about what you wrote?" and ensured that participants spoke about an experience related to the requested topic for 3 minutes. The experimenter prompted the participant, when necessary, with scripted follow-up questions such as "What sort of emotions did you experience?"). To create a parental mindset, participants wrote and talked about "a time you took care of a baby or young child" (*n* = 64). Control participants wrote and talked about "a time you worked with others on a class project" (*n* = 61).

Study 6. Participants were 121 Canadian undergraduate students. Six participants failed to complete the procedures, resulting in a final sample of 115 participants (96 women, 19 men; 1 parent; mean age = 20.43 years, *SD* = 1.73). Participants were randomly assigned to one of two experimental conditions. The experimental procedure was identical to the procedure used in Study 5 (in which participants both wrote and talked about autobiographical topics), except for the use of a different control condition. To create a parental mindset, participants wrote and talked about "a time you took care of a baby or young child" (*n* = 60). Control participants wrote and talked about "a time you took care of a chore or task with a family member" (*n* = 55). [1]

Study 7. Participants were United States residents recruited on Amazon's Mechanical Turk website in exchange for monetary compensation ($0.50 USD). Three hundred ninety-six people participated, 6 of whom failed to complete procedures, resulting in a final sample of 390 participants (191 women, 199 men; 150 parents, 240 non-parents; mean age = 35.14 years, *SD* = 12.07). Participants were randomly assigned to one of three experimental conditions. The experimental procedure was identical to the that of Studies 2 and 3, except for the use of two different control conditions. To activate a parental mindset, participants wrote a paragraph describing "a time you took care of a baby or young child" (*n* = 131). In one control condition, participants wrote a paragraph describing "a time when you completed chores with a family member (e.g., cooked,

cleaned, shopped)" (*n* = 135). In the other control condition, participants wrote a paragraph describing "a time in your childhood when you interacted with one or more other people" (*n* = 124). For the meta-analysis, data in the two control conditions were combined into a single comparison condition.

Study 8. Participants were 270 women who were approached in public places in Vancouver, Canada and agreed to a request to participate in a short scientific study. Eleven participants were removed as they failed to complete procedures, and one was removed because we did not record what condition she was in, leaving a final sample of 258. A non-experimental procedure (Gilead & Liberman, 2014) was used to operationalize parental mindset. Participation was limited to women between the ages of 30 and 45, in accordance with pre-registered inclusion criteria (https://osf.io/mktr2/). We recruited women to match procedures used by Gilead & Liberman (2014), and the age range (typical for the mother of a young child) was specified to ensure that similar ages were present across conditions. The parental mindset condition was comprised by women who were accompanied by a child under 10 years old (*n* = 143; 128 parents; mean age = 36.46 years, *SD* = 3.81). A control condition was comprised by women who met equivalent inclusion criteria but who were *not* accompanied by a child (*n* = 115; 22 parents; mean age = 34.73 years, *SD* = 3.89). Data were also collected from 382 additional people who failed to meet pre-registered inclusion criteria. Some of these excluded people were men who volunteered without being asked (voluntary requests were never denied, even if the volunteer failed to meet inclusion criteria). Others were women accompanied by a child over the age of 10, or who were themselves either older than 45 or younger than 30. (Women younger than 30 comprised the largest number of exclusions [*n* = 233, of which >85% were not accompanied by a child], and reflects the challenges experienced by undergraduate research assistants in attempting to judge a person's age based on superficial appearances).

Moral Judgments

Participants in all studies were presented with a questionnaire containing brief descriptions of social norm violations, and they used a rating scale to rate how morally wrong they perceived each violation to be (1 = *not at all morally wrong*, 9 = *very morally wrong*). Participants rated 9 items describing norm violations that put others at risk (items from Murray & Schaller, 2012; example item: "A chef at a restaurant fails to wash his hands after using the bathroom"). Mean responses across these 9 items comprised an index assessing judgments of *potentially harmful* norm violations (Cronbach's α = .85). Additionally, participants from 7 studies (all but Study 1) rated 3 items de-

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[1] The control condition used here, and again in Study 7 (regarding completing a chore with a family member), may involve nurturing family members which could trigger emotions similar to those associated with the parental mindset. Thus, in the supplemental online materials, we report results of additional analyses removing Study 6 and removing this control condition from Study 7. These results lead to the same inferential implications as the ones reported in this manuscript.

scribing violations that, while clearly deviating from social norms, posed no apparent potential for direct harm to other people (items from Eibach et al., 2009; example item: "A man who watches videos of animal copulation to become sexually aroused"). Mean responses across these 3 items formed a composite index assessing judgments of seemingly *harmless* norm violations (Cronbach's α = .67). There was a small correlation between indices assessing moral judgment about harmful and harmless norm violations, *r* = .22; *p* = <.001. Supplemental Online Materials report results of additional analyses justifying the creation of two composite indices.

Other Measures

Parental Care and Tenderness. At the end of each study, participants completed a questionnaire assessing chronic individual differences in Parental Care and Tenderness (PCAT; example items: "When I see infants, I want to hold them"; "I would hurt anyone who was a threat to a child"; on a five-point scale from "strongly disagree" to "strongly agree"). Participants in Studies 1 – 7 completed the original 25-item PCAT measure (Buckels et al., 2015); participants in Study 8 completed a shorter 10-item PCAT measure (Hofer et al., 2018). For the sake of consistency across studies, regardless of which version participants completed, only their responses on the 10 items comprising the short version were used to compute an overall PCAT score (Cronbach's α = .80).

Demographics. Participants also responded to several questions assessing demographic variables, including whether or not they were a parent, their age, and their gender. No definition of "gender" was given, and participants were free to skip questions they preferred not to answer.

Statistical Analysis. Analyses were conducted using the program R (version 4.1.0; R Core Team, 2020). Data cleaning was completed using "psych" (version 2.1.9; Revelle, 2021), "dplyr" (version 1.0.7; Wickham et al., 2021) and "tidyverse" (version 1.3.1; Wickham et al., 2019) packages. Correlation matrices was computed with the "Hmisc" (version 4.6; Harrell, 2021) package. Hedge's *g* effect sizes were calculated within the "esc" (version 0.5.1; Lüdecke, 2019) package which required inputting unstandardized regression coefficients, *SD* of the outcome variable, and sample sizes. Results and figures for the meta-analysis were calculated using the "meta" (version 5.1.1; Balduzzi et al., 2019) package. Prediction intervals are also reported as suggested by Guddat and colleagues (2012) (The data, code, and codebook are available at https://osf.io/mktr2/; the "html" documents allow non-R users to see results).

Results

Preliminary Analytic Considerations

Where possible, all analyses control for age, parenthood status, and gender. Outliers were not removed in the analyses reported here, but results excluding outliers are available in the Supplemental Online Materials (age was the only variable with outliers, defined as 3 *SD* above or below the mean; removing the 24 age outliers resulted in similar results with identical inferential implications to those presented below). The threshold of statistical significance throughout this paper is set at *p* < .05.

Correlations Between Variables

Pearson's correlations were run on all variables of interest (available in Table 2). Data for each variable was used aggregated across all studies that had reasonable variability on the measure (e.g., correlations with parental status were only computed with data from Studies 7 and 8). Significant correlations emerged between PCAT and both types of moral judgments; and, replicating previous work (Buckels et al., 2015), PCAT correlated most strongly with judgments of potentially harmful norm violations.

Effect of Parental Mindset on Moral Judgments

Two linear regressions were run on each study predicting (1) moral judgements of harmless norm violations, and (2) moral judgements of potentially harmful norm violations. Predictors were parental mindset manipulation (control = 0; experimental = 1), and, where possible, gender (woman = 0; man = 1), parenthood status (not a parent = 0; parent = 1), age (mean centered), and PCAT (mean centered).[2] Results for the effect of the parental mindset condition on moral judgments is depicted in Figure 1 (predicting harmless norm violations) and Figure 2 (predicting potentially harmful norm violations).

We first report results combining across the 7 true experiments (for the sake of focusing on whether a causal influence exists), followed by an analysis of our final non-experimental study.

Analyses of True Experiments

We conducted a meta-analysis examining whether being in the parental mindset condition influenced participant's moral judgements of potentially harmful social norm violations. A random effects model, across the first 7 studies, indicated that the parental mindset condition did not significantly impact moral judgements (*hedges' g* = .06, *SE* = 0.05, *95%CI* = [-0.04, 0.17], *p* = .21). Individuals in the parental mindset condition trended towards making harsher judgments of potentially harmful norm violations, however the

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2 We conducted additional analyses in which we removed all control variables (PCAT, gender, age, and parenthood status). These analyses resulted in similarly sized effects to the ones reported here, with identical inferential implications. For details see Supplemental Online Materials.

Table 2. Correlations between independent, dependant, and control variables across all datasets. P-values are indicated in parentheses.

	Parental Mindset Condition *n=1790*	Potentially Harmful Violations *n=1790*	Harmless Violations Studies 2-8 *n=1718*	Gender Studies 1-7 *n=1532*	Age *n=1790*	Parental Status Studies 7-8 *n=648*	PCAT *n=1790*
Parental Mindset Condition	-	**0.06** *(.016)*	0.00 *(.085)*	-0.04 *(.157)*	-0.04 *(.067)*	**0.43** *(<.001)*	0.03 *(.165)*
Potentially Harmful Violations		-	**0.22** *(<.001)*	**-0.21** *(<.001)*	**-0.06** *(.013)*	0.00 *(.946)*	**0.26** *(<.001)*
Harmless Violations			-	**-0.05** *(.047)*	**-0.05** *(.023)*	0.04 *(.299)*	**0.08** *(.002)*
Gender				-	**0.20** *(<.001)*	**0.30** *(<.001)*	**-0.22** *(<.001)*
Age					-	-0.04 *(.349)*	**0.11** *(<.001)*
Parental Status						-	0.05 *(.164)*
PCAT							-

Note. Statistically significant correlations are bold. The sample size of each correlation equals the smaller sample of the two variables correlated (except for the correlation between Gender and Parental Status: *N*=390; and Gender and Harmless Violations: *N*=1460.). Gender is coded woman = 0; man = 1; parenthood status is coded: not a parent = 0; parent = 1. The correlation between parental status and the parental mindset condition was most pronounced in our non-experimental study (Study 8; *r* = .71, *p* < .001), however this correlation was still significant in the experimental study (Study 7; *r* = .12, *p* = .018), suggesting a failure of random assignment for parenthood in Study 7.
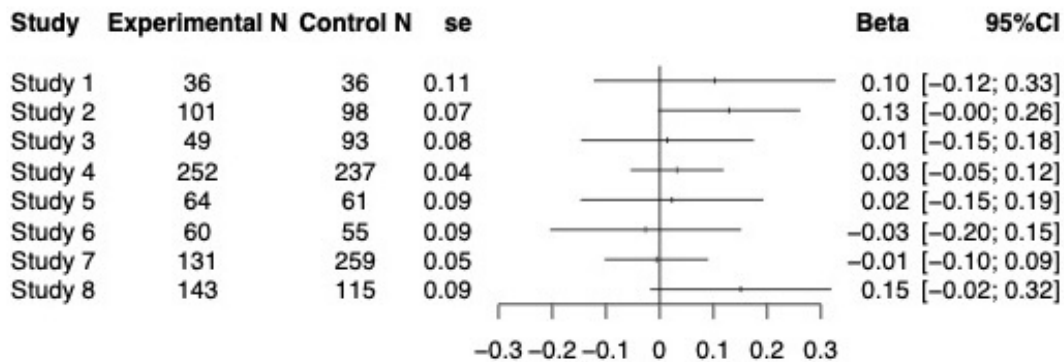

Figure 1. Beta value and plot for each study of the parental care condition predicting moral judgements of potentially harmful norm violations controlling (when possible) for age, parental status, gender, and PCAT.
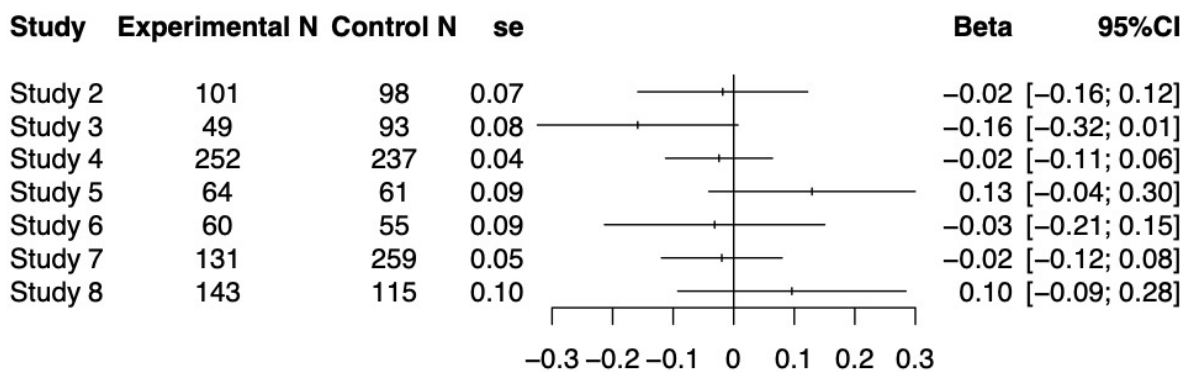

Figure 2. Beta value and plot for each study of the parental care condition predicting moral judgements of harmless norm violations controlling (when possible) for age, parental status, gender, and PCAT. Study 1 is not included because judgments of harmless norm violations were not collected.

difference was not statistically significant. Hedge's *g* is interpreted in the same way as Cohen's *d*, and the effect size found here (*hedges' g* = .06) indicates that the two groups differ by less than one-tenth of a standard deviation—a small effect by any interpretation.

We also examined whether being in the parental mindset condition influenced participant's moral judgements of harmless social norm violations. Results of a random effects model, including studies 2-7, revealed no significant effect of the parental mindset condition on harmless social norm violations (*hedges' g* = -.04, *SE* = 0.05, *95%CI* = [-0.15, 0.06], *p* = .40).

Although the main effect of the parental mindset was not significant, it is possible that the effect may only emerge in certain people or during certain situations. Thus, we examined four potential moderators, gender, age, parental status, and PCAT[3].

Gender. We examined if the impact the parental mindset condition may have had on moral judgements was moderated by gender. We computed the interaction of gender and parental mindset for each study controlling (where possible) for age, PCAT, and parenthood. We then computed a random effects meta-analysis on this interaction. Results revealed no significant interaction when predicting either potentially harmful norm violations (*hedges' g* = .18, SE = 0.23, 95%CI = [-0.27, 0.63], p = .43) or harmless norm violations (*hedges' g* = .01*, SE = 0.23, *95%CI* = [-0.44, 0.46], *p* = .98), providing no evidence for a moderating effect of gender.

Age. We examined if the impact the parental mindset condition may have had on moral judgements was moderated by age. We computed the interaction of age and parental mindset for each study controlling for gender, PCAT, and parenthood. Then we computed a random effects meta-analysis on this interaction. Results revealed no significant interaction when predicting either potentially harmful norm violations (*hedges' g* = .00, *SE* = 0.05, *95%CI* = [-0.10, 0.10], *p* = .97) or harmless norm violations (*hedges' g* = -.03, *SE* = 0.05, *95%CI* = [-0.14, 0.07], *p* = .54).

Parental Status. For the one study (Study 7) that included more than a handful of parents, we examined if the impact the parental mindset condition may have had on moral judgements was moderated by parenthood status. We computed the interaction of parental status and parental mindset controlling for gender, age, and PCAT. Results revealed no significant effect when predicting either potentially harmful norm violations (*b* = 0.20, *SE* = 0.34, *95%CI* = [-0.48, 0.88], *p* = .56) or harmless norm violations (*b* = -0.02, *SE* = 0.52, *95%CI* = [-1.03, 1.00], *p* = .97).

PCAT. We examined if the impact the parental mindset condition may have had on moral judgements was moderated by trait levels of parental care. We computed the interaction of PCAT and parental mindset for each study

controlling for gender, age, and parenthood. Then we computed a random effects meta-analysis on this interaction. Results revealed no significant interaction when predicting either potentially harmful norm violations (*hedges' g* = -.17, *SE* = 0.11, *95%CI* = [-0.38, 0.04], *p* = .12) or harmless norm violations (*hedges' g* = -.06, *SE* = 0.05, *95%CI* = [-0.16, 0.05], *p* = .29), providing no evidence for a moderating effect of PCAT.

Analyses of Non-Experimental Study

To examine study 8, we conducted a linear regression predicting whether the parental mindset condition influenced participant's moral judgements of potentially harmful social norm violations controlling for age, parental status and PCAT. Results indicated that the effect was not statistically significant (*β* = 0.15, SE = 0.09, *95%CI* = [-0.02, 0.32]; *b* = .37, *SE* = 0.21, *95%CI* = [-0.05, 0.78], *p* = .08).

We also examined whether the parental care condition influenced participant's moral judgements of harmless social norm violations. Again, results revealed no significant effect of the parental care condition on harmless social norm violations (*β* = 0.10, SE = 0.09, *95%CI* = [-0.08, 0.27]; *b* = .48, *SE* = 0.44, *95%CI* = [-0.40, 1.35], *p* = .28).

We examined three potential moderators of these effects in Study 8 (age, parental status, and PCAT). Gender was not examined because only females participated in this study.

Age. We computed the interaction of age and parental mindset controlling for parental status, and PCAT. Results revealed no significant effect when predicting either potentially harmful norm violations (*b* = 0.02, *SE* = 0.04, 95%CI = [-0.06, 0.10], *p* = .63) or harmless norm violations (*b* = 0.14, *SE* = 0.08, 95%CI = [-0.02, 0.29], *p* = .10).

Parental Status. We computed the interaction of parental status and parental mindset controlling for age, and PCAT. Results revealed no significant effect predicting potentially harmful norm violations (*b* = 0.13, *SE* = 0.43, 95%CI = [-0.72, 0.98], *p* = .76) or for harmless norm violations (*b* = 0.91, *SE* = 0.92, 95%CI = [0.52, 0.60], *p* = .32).

PCAT. We computed the interaction of PCAT and parental mindset controlling for age, and parental status. Results revealed no significant effect when predicting either potentially harmful norm violations (*b* = 0.04, *SE* = 0.28, 95%CI = [-0.52, 0.59], *p* = .90) or harmless norm violations (*b* = -0.63, *SE* = 0.59, 95%CI = [-1.80, 0.53], *p* = .29).

Discussion

Across 8 studies—with a combined sample of 1790 people—we tested the hypothesis that the temporary adoption of a parental mindset enhances moral disapproval of norm violations. Contrary to the results of an experiment that had previously shown such an effect for harmless norm violations (Eibach et al., 2009), data from these 8 studies

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3 An additional fifth potential moderator—emotional engagement—was examined on data from study 2 (results available in the supplemental materials). No evidence for moderation emerged.

did not uncover compelling evidence of a difference between parental mindset conditions and control conditions on judgments of potentially harmful or harmless norm violations.

Additional considerations suggest reasons to be cautious about interpreting these results. One consideration pertains to the fact that, in all 8 studies, participants made moral judgments about *adults*. Results may be different when judging children. Previous research shows that, compared to identical actions perpetrated by adults, children's norm violations are generally viewed as less harmful, less wrong, less worthy of punishment, and less indicative of enduring immoral dispositions (White et al., 2020, 2022; White & Schaller, 2018). Additionally, there is some evidence showing that whereas PCAT is positively correlated with moral condemnation of violations perpetrated by adults, it is negatively correlated with moral condemnation of identical violations perpetrated by young children (Hofer et al., 2018). In short, whatever inferences one might draw from the effects (and non-effects) reported here, those inferences cannot be assumed to generalize to contexts in which people make moral judgments about children, rather than adults.

Future research may also reveal cultural factors that shape susceptibility to a parental mindset. For example, some cultural groups have "tighter" social norms, with greater expectations to follow norms and punish norm violations (Gelfand et al., 2017). Several lines of research have revealed that social norms tend to be tighter among working class (vs. middle- and upper-class) people, due to reduced access to resources and associated constraints/threats (Carey & Markus, 2017; Cohen & Varnum, 2016). Parents from working-class backgrounds are also more likely to use strict parenting styles and to encourage greater conformity and obedience to authority (rather than fostering independence and self-direction; Weininger & Lareau, 2009). This suggests that participants from lower socioeconomic backgrounds (or other cultures with tighter social norms) may be more likely to condemn norm violations when parental care motives are activated. This is a possibility that we could not test in the current data.

Why Did the Correlational Results Differ from the Experimental Results?

The failure of the parental mindset manipulations to produce compelling effects on moral judgments is notable when compared to evidence indicating that trait-like individual differences in parental inclinations do predict moral judgments. Substantiating previous findings (Buckels et al., 2015; Hofer et al., 2018), our meta-analytic results suggest that there is a small but real and reliable correlation between parental care and tenderness (PCAT) and moral condemnation for adults' norm violations. In contrast, our experimental manipulations—designed to create temporary psychological states that mimic the enduring individual differences assessed by the PCAT questionnaire—had minimal effects on moral judgment. Why might this be? At least three possibilities merit some consideration.

One possibility is that an enduring trait-like parental mindset exerts a causal influence on moral judgments, whereas the temporary adoption of a parental mindset does not. Traits and states can be conceptually analogous in some ways, but they are—by definition—conceptually different in others (Steyer et al., 2015). Just as trait anxiety and state anxiety can have different psychological effects (e.g., Ursache & Raver, 2014), it is plausible that chronically "parental" people—individuals who habitually respond in a protective and nurturant manner to children—judge adults' norm violations more harshly, whereas people who only fleetingly adopt that sort of parental mindset do not.

A second possibility is that there is no causal effect of a parental mindset on moral judgment, and that the correlations with PCAT are attributable to shared variance with other (unmeasured) individual difference variables that do exert some effect on moral judgments. Although past research has shown that PCAT uniquely predicts harsher judgments even when controlling for several other individual difference variables that correlate with PCAT and/or moral judgments (Buckels et al., 2015; Hofer et al., 2018), empirical attention to such variables cannot be considered exhaustive. Consequently, we cannot fully rule out the possibility that the PCAT results do not reflect the consequences of a parental disposition specifically, but instead reflect the consequences of its correlates.

A third possibility is that a parental mindset—even if just temporarily adopted—does have consequences for harsher moral judgments (perhaps especially judgments of potentially harmful norm violations), and that the failure of our experiments to document this relationship is attributable to a failure of our experimental manipulations to consistently create the intended psychological state. A parental mindset is characterized not just by an awareness that young children require care but also by a motivational inclination to provide that care (indicated, for instance, by an increased likelihood of experiencing the emotion—tenderness—that is associated with the parental caregiving motivational system; Beall & Tracy, 2017; Kalawski, 2010; Schaller, 2018). It is no small challenge to temporarily instantiate this kind of motivational state in an experimental setting (and it is perhaps especially challenging to do so among participants who are not actually parents). The manipulations that we employed in our studies differed from that used in the one previous experiment that produced an effect of a temporarily enhanced parental mindset—among parents specifically—on moral judgments (Eibach et al., 2009). Although our manipulations were adapted from prior methods that were developed for the purpose of instantiating a parental mindset even among non-parents (e.g., Beall & Schaller, 2019; Gilead & Liberman, 2014), it is difficult to ascertain the extent to which these manipulations truly succeeded in doing so. Given the potential problems associated with intrusive manipulation check measures (e.g., attenuation of the psychological states that they are intended to measure; Hauser et al., 2018), we chose not to include any such measures in our studies. Therefore, as an after-the-fact means of assessing the success of the essay-writing methods used in Studies 2 – 7, we coded

the contents of the essays written by participants in the first of these studies (Study 2). Results showed that, in the parental mindset condition (compared to the control condition), participants' essays focused more explicitly on the topic of caregiving, described more actual caregiving behaviors, and were more likely to express the emotion of tenderness (p's < .001; however, interrater reliability for expression of tenderness was relatively low, limiting interpretability. For additional details on coding methods and results, see Supplemental Online Materials). These results indicate that our manipulation had at least some of its intended psychological impact; but it remains unknown whether this impact manifested in a psychological state that is truly analogous to naturally-occurring trait-like differences in parental caregiving motivation (assessed by the PCAT questionnaire), or—even if so—if this transient state lingered long enough to have any realistic potential to influence subsequent judgments.

The results from several other experiments also highlight the challenge of using experimental methods to manipulate a parental mindset. Following up on previous research documenting a correlation between PCAT and conservative socio-political attitudes, Kerry and Murray (2020) employed an essay-writing task (similar to the manipulations used here in Experiments 2 – 7) to experimentally manipulate a parental mindset and found that it produced inconsistent effects across studies. Moreover, in one study (Kerry & Murray, 2020; Study 1), this experimental manipulation affected conservative attitudes only among parents, but not among non-parents. Additional analyses showed that the effect of the manipulation on conservative attitudes occurred only among individuals who were highly emotionally engaged with the essay-writing task (Kerry et al., 2022). The emerging implication is that, compared to other motivational states (e.g., disease-avoidance, mate-seeking) that appear to be reliably created in laboratory settings with simple text- or image-based experimental methods (e.g., Beall & Schaller, 2019; Perone et al., 2021), the parental care motivational system may be less amenable to easy experimental manipulation. And even when attempts to manipulate it are successful, those methods may be highly context-dependent—effective in some circumstances or for some subsets of participants, but not others. As of yet, only a few DVs pertaining to moral harshness and political outlook have been examined, and studies often had restricted populations (e.g. university or online samples) so it remains unclear if parental care manipulations may be impactful when predicting a broader range of DVs on a broader range of people. However, researchers would be wise to be aware of the possibility that the parental care system is not easily induced using simple laboratory-based manipulations. Even seemingly straightforward experimental manipulations can have different psychological effects on different participants (e.g., Cesario et al., 2006), or may lose their effectiveness when seemingly unimportant features of the immediate context are changed (e.g., Noah et al., 2018). If indeed parental mindset manipulations of the kind we employed here—and which other researchers have previously used with some success—are fragile and context-

dependent, then the downstream effects of these manipulations may be especially vulnerable to non-replication.

In order to more conclusively test the hypothesis tested here, it may be necessary for researchers to design and validate new and more ingenious manipulations of the parental care system. (This assessment is in line with Kerry and Murray's [2020, p. 290] observation that "researchers interested in ephemeral psychological effects of parenthood reminders may benefit from experimenting with more heavy-handed primes.") Psychologically immersive methods might be especially useful, such as procedures that provide participants with opportunities to interact with actual infants. There may also be inferential utility in non-experimental methods that artfully employ within-person repeated-measures designs (e.g., one might assess childcare workers' moral judgments at times when they are with children, and at times that they are not), and longitudinal research on the transition to parenthood could be especially useful. If any event might reliably produce an increase in a person's parental mindset, becoming a parent is surely such an event (Buckels et al. [2015] reported that parents' PCAT scores were a standard deviation higher that non-parents' PCAT scores). If a parental mindset does exert a causal influence on moral judgments, then people would be expected to judge adults' norm violations more harshly after (compared to before) becoming a parent.

Conclusion

The motivational system that promotes parental caregiving—and kin-care more generally—is considered important by people all around the world and appears to have a wide range of psychological implications (Buckels et al., 2015; Ko et al., 2020; Schaller, 2018). To rigorously test hypotheses about these implications—including, but not limited to, hypothesized consequences for moral judgment—it is useful to employ experimental methods that reliably put people in a parental mindset. This can be a challenge. The methods reported here represent one attempt to meet this challenge, and, for the reasons discussed above, the results might best be characterized as inconclusive. We hope that the methods and results reported in this paper (and the associated open access data) will help inspire future researchers also to rise to the challenge and, ideally, to produce results that more conclusively reveal the extent to which parental care-giving motives do, or do not, influence moral cognition.

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Contributions

Contributed to conception and design: MKH & MS
Contributed to acquisition of data: MKH & MS
Contributed to analysis and interpretation of data: MKH, AL & MS
Drafted and/or revised the article: MKH, CJMW & MS
Approved the submitted version for publication: MKH, AL, CJMW & MS

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Competing Interests

The authors declare no potential conflicts of interest.

Data Accessibility Statement

All data, analysis scripts, and codebook can be found on this paper's Open Science Framework project page: https://osf.io/mktr2/

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