ORIGINAL RESEARCH REPORT

No Child Left Alone: Moral Judgments about Parents Affect Estimates of Risk to Children

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In recent decades, Americans have adopted a parenting norm in which every child is expected to be under constant direct adult supervision. Parents who violate this norm by allowing their children to be alone, even for short periods of time, often face harsh criticism and even legal action. This is true despite the fact that children are much more likely to be hurt, for example, in car accidents. Why then do bystanders call 911 when they see children playing in parks, but not when they see children riding in cars? Here, we present results from six studies indicating that moral judgments play a role: The less morally acceptable a parent's reason for leaving a child alone, the more danger people think the child is in. This suggests that people's estimates of danger to unsupervised children are affected by an intuition that parents who leave their children alone have done something morally wrong.

On December 20, 2014, Rafi Meitiv, age 10, and his sister Dvora, age 6, were walking home from a park about a mile from their home in Silver Spring, Maryland. A bystander saw them walking and called 911 to report, quite literally, a sighting of unaccompanied children [1]. Police picked the children up and drove them home. When their father told police that Rafi and Dvora had permission to walk home from the park, the officer asked him, "Don't you realize how dangerous the world is? Don't you watch TV?" The police officer called in Child Protective Services, who threatened to remove the children from their home unless their father signed a 'safety plan' promising never to leave the children unsupervised [2].

By letting their children walk home from the park, the Meitivs violated a parenting norm specifying that every child must be under direct adult supervision at all times. As the officer's comments suggest, this norm seems to reflect a fear of horrific events such as children being kidnapped by strangers. But the actual risk of a teen or child being abducted by a stranger and killed or not returned is estimated at around 0.00007%, or one in 1.4 million annually—a risk so small that experts call it *de minimis*, meaning effectively zero [3]. Motor vehicle accidents, by contrast, are the most common cause of preventable death among children [4]. Thus, by driving the

Meitiv children home (ostensibly to protect them from the risk of kidnapping), police actually exposed them to the much greater risk of being killed in a car accident.

The idea that unsupervised children are in constant danger is relatively new. Just one generation ago, children had much more freedom to explore their surroundings. In the early 1970s, psychologist Roger Hart spent two years making maps of the places that children in a rural New England town were allowed to go by themselves. He found that 4- and 5-year-olds were allowed to travel throughout their neighborhoods alone, and 10-year-olds had free run of the town [5]. Forty years later, Hart returned to the same town and found that although the crime rate was exactly the same, most children were now forbidden from roaming past their own backyards [6]. Ironically, some of the very same people who were children in the earlier study grew up to become the parents in the later study. How have parenting norms changed so dramatically in a single generation?

This change is likely due in part to the availability heuristic. That is, the easier it is for people to call to mind examples of a phenomenon, the more frequently they think it happens [7]. For example, heavy media coverage of plane crashes causes many people to fear air travel far out of proportion to its actual risks. Similarly, programs like CNN's *Taken: Children Lost and Found* feature heartwrenching vignettes of abducted and murdered children along with tips on (for example) teaching three-year-olds what to do when a kidnapper locks them in the trunk of a car [8]. Such programs likely lead people to overestimate the risk of child abduction to the point where they believe that a child of any age, alone for any amount of

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time, is in grave danger. The same is true for intensive media coverage of rare, but tragic accidents such as children dying in house fires, or infants dying after being forgotten in cars.

But note one key difference: The fact that many people irrationally fear air travel does not result in air travel being criminalized. Parents are not arrested for bringing their children with them on airplanes. In contrast, parents are arrested and prosecuted for allowing their children to wait in cars, play in parks, or walk through their neighborhoods without an adult (e.g., [9, 10, 11, 12, 13, 14]). As legal scholar David Pimentel observes, "In previous generations, parents who 'let their kids run wild' were viewed with some disdain by neighbors, perhaps, but subjected to no greater sanction than head wagging or disapproving gossip in the community. Today, such situations are far more likely to result in a call to Child Protective Services, with subsequent legal intervention" [15]. A recent study in Britain found that fully *one in five* children in England born during the 2009-2010 fiscal year were the subject of a call to Child Protective Services before reaching the age of five [16].

The effective criminalization of parenting choices that objectively pose little risk to children suggests that additional factors may be at work. We hypothesize that one such factor is moral judgment. Specifically, we propose that people overestimate the dangers facing children in order to better rationalize their intuition that parents have done something *morally* wrong in allowing their children any unsupervised time.

Research in other domains has shown that moral judgments do affect people's estimates of harm. For example, intentional actions that result in harm are seen as more harmful than unintentional actions with the same outcomes [17, 18]. Moral intuitions also affect judgments about cause: A driver who gets into an accident while speeding home to hide his cocaine is said to have 'caused' the accident more than a driver who was speeding home to hide his parents' anniversary gift [19]. People have also been shown to seek what is called 'moral coherence': they modify their factual beliefs to match their moral intuitions. For example, after reading an argument that capital punishment is morally wrong no matter the consequences, people are less likely to believe that capital punishment deters crime [20].

We hypothesize that a similar process may be at work when people imagine the harm likely to befall unsupervised children. That is, people may overestimate the danger to unsupervised children in order to justify their moral condemnation of the parents who allow the children to be alone. Thus, exaggerated fears of harm and increasing moral prohibitions form a sort of self-reinforcing feedback loop. We will ultimately suggest that much of the recent hysteria concerning danger to unsupervised children is the product of this feedback loop, in which inflated estimates of risk lead to a new moral norm against leaving children alone, and then the need to justify moral condemnation of parents who violate this norm leads in turn to even more inflated estimates of risk, generating even stronger moral condemnation of parents who violate the norm, and so on.

This hypothesis is consistent with the literature on moral dumbfounding. According to Haidt's [21, 22] Social Intuitionist Model, people make moral judgments quickly and unconsciously, and then use facts and reasoning to rationalize those moral judgments. (This is in opposition to the common assumption that moral beliefs are based on reasoned fact.) In the present case, we hypothesize that when they are free to do so, people adopt and/or modify their factual beliefs (e.g., regarding the amount of danger posed to a child by a given situation) so as to better rationalize their intuitive moral judgments (e.g., that this mother did something morally wrong).

To test this hypothesis, we examined whether participants' judgments about danger to an unsupervised child vary according to the moral acceptability of the parent's reason for leaving the child alone. If our hypothesis is correct, then participants should judge that children are in more danger when parents deliberately allow them to be unsupervised, (as the Meitiv parents did) than when children are left unsupervised by accident. Similarly, when parents choose to leave children unsupervised, participants should judge that children are in more danger when a parent leaves for a morally unacceptable reason (e.g., to meet an illicit lover) than for a morally neutral or acceptable reason (e.g., to go to work).

General Method
Overview
In each of six experiments, we invited participants on Amazon Mechanical Turk to read brief vignettes in which a child spends a brief period of time unsupervised. The children's ages, locations and duration of time unsupervised in each vignette were kept constant across participants (see **Table 1**).

Child's name & age	Location	Minutes alone
Olivia, 10 months	Asleep in the car in a gym's cool underground parking garage	15
Cassidy, 2.5	Home, eating a snack, watching *Frozen*	20
Grace, 4	Playing on ipad in the car, in a shady spot in a library parking lot	30
Jenny, 6	A park about a mile from her house	25
Susie, 8	Starbucks, one block away from where her mother is	45

Table 1: Basic Five Vignette Types.
Note. Ages are in years unless otherwise noted.

The vignettes differed only in the reason for the parent's absence. In the 'Unintentional' version of each vignette ('Unintentional' condition), the parent was involuntarily separated from the child by an accident. In the other four versions, the parent intentionally left the child in order to work ('Work' condition), volunteer for charity ('Volunteer' condition), relax ('Relax' condition), or meet an illicit lover ('Affair' condition). After reading each vignette, participants were asked to estimate (on a scale of 1 to 10) how much danger the child was in during the parent's absence. (See **Table 2** for a summary of experimental designs; see Appendix A for the full texts of all vignettes).

Participants

Participants for all experiments were recruited through Amazon Mechanical Turk, and were paid $1.00 each to complete the survey. Participants were excluded if they met any of the following criteria: (a) They had already participated in a previous experiment in this series; (b) They failed to answer a question that checked whether they were reading the vignettes (i.e., "Cindy P. (23) is a stay at home mom and the mother of Dorothy, age 3. On Tuesday evenings, Cindy takes Dorothy to the fair to eat cotton candy. This is just a test question please answer '7'. Cindy leaves Dorothy alone for four hours.") (c) They spent less than five minutes taking the survey. See Appendix B for a full discussion of this exclusion and a separate analysis that includes the data from participants who took less than five minutes.

Procedure

Before reading the vignettes, participants answered a set of demographic questions asking about their gender, age, parental status (i.e., whether they had children), racial/ethnic identity, level of education and political outlook (i.e., "Do you consider yourself politically conservative or liberal?").

After answering the demographic questions each participant read five vignettes. The vignettes were randomly assigned, with the constraint that each participant read one vignette featuring a child of each age (10 months, 2.5 years, 4 years, 6 years and 8 years; see **Table 1**) and orthogonally, one vignette from each of the five moral conditions (Unintentional, Work, Relax, Volunteer and Affair). Vignettes were presented in a random order. As mentioned above, participants also read one fake vignette that instructed them to answer '7,' the purpose of which was to check whether they were paying attention. Responses to this fake vignette were not included in the data analysis, except to exclude participants who answered it wrong.

Data Analysis

For each experiment, we used R [23] and lme4 [24] to perform a linear mixed effects analysis of the relationship between moral condition (the reason why the parent left)

Experiment	Design
1 (N = 166)	*Basic Design.* Participants read 5 vignettes, in which mothers ages 26–33 left their children alone for brief periods. After each vignette participants were asked, "On a scale of 1 to 10, with 1 being SAFEST/LOWEST RISK, and 10 being MOST DANGEROUS/HIGHEST RISK, what is the risk of some harm coming to the child during the time that the parent is gone?"
2 (N = 158)	*Fathers.* The parents described in the vignettes were fathers instead of mothers. Otherwise identical to Experiment 1.
3 (N = 164)	*Younger mothers.* Mothers described in the vignettes were 10 years younger (ranging in age from 16–23) and held lower-paying jobs than in the standard vignettes (e.g., McDonalds cashier instead of accountant). Otherwise identical to Experiment 1.
4 (N = 247)	*Explicit Moral Judgments.* This experiment used the same vignettes as Experiment 1, but added an explicit moral question ("On a scale from 1 to 10, with 1 meaning the mother did NOTHING WRONG, and 10 meaning the mother did something HIGHLY UNETHICAL/IMMORAL, did the mother do something morally/ethically wrong by leaving her child alone?") in addition to the standard risk question used in all experiments (i.e., "On a scale of 1 to 10, with 1 being SAFEST/LOWEST RISK, and 10 being MOST DANGEROUS/HIGHEST RISK, what is the risk of some harm coming to the child during the time that the parent is gone?") The order of the two questions was counterbalanced across participants, so that half of the participants always answered the moral question first and the other half always answered the risk question first.
5 (N = 149)	*List the Dangers.* This experiment used the same vignettes as Experiment 1, but after the standard risk question ("On a scale of 1 to 10, with 1 being SAFEST/LOWEST RISK, and 10 being MOST DANGEROUS/HIGHEST RISK, what is the risk of some harm coming to the child during the time that the parent is gone?") participants were asked an explicit rationale question: "If there is risk to the child, please explain what the risk is. (That is, what harmful thing or things might happen to the child while the parent is gone?)"
6 (N = 611)	*Basic Design vs. Moral Judgment vs. List the Dangers.* The purpose of Experiment 6 was to directly compare the effects of asking an explicit moral question, an explicit rationale question, or neither. Participants in this experiment read the same vignettes as in Experiments 1, 4 and 5, but were randomly assigned to receive either the standard risk question alone (as in Experiment 1); the standard question and the explicit moral question (as in Experiment 4); or the standard question followed by the explicit rationale question (as in Experiment 5).

Table 2: Designs of Experiments 1–6.

and participants' estimates of danger to the child in each vignette. As fixed effects, we included participants' gender, age, education level, race, political beliefs, and parental status (i.e., whether they had children). As random effects, we included intercepts for participants and vignette type (see **Table 1**). Visual inspection of residual plots did not reveal any obvious deviations from homoscedasticity or normality. P-values were obtained using a likelihood ratio test of the full model, with and without the effect of moral condition [25]. To obtain F statistics and accompanying p-values, we used afex [26], which uses Kenward-Roger approximations for degrees of freedom. For all pairwise comparisons, we used lsmeans [27] with Tukey adjustments. To calculate effect sizes we used methods outlined by Nakagawa & Schielzeth [28], using the r.squaredGLMM function in the MumIn package in R [29]. We report the marginal R^2 (R^2_{GLMMm}), which represents the variance explained by fixed factors and the conditional R^2 (R^2_{GLMMc}), which represents the variance explained by both fixed and random factors. All of the data collected for this entire set of experiments (including two pilot studies) is publicly available via the Open Science Framework, https://osf.io/dr7hg/.

Experiment 1. Basic Design
Method
Participants. A total of 219 participants were recruited through Amazon Mechanical Turk for this experiment. Of those, 4 were excluded because they failed to answer the attention-check question, and 49 were excluded because they spent less than five minutes taking the survey (see Appendix B for an alternative analysis that includes data from these participants). The remaining 166 participants contributed data to the analysis. These participants ranged in age from 19 to 69 years (M = 34.07 SD = 10.07; 47.59% were female and 52.41% were male; 59.6% said they had children and 40.36% said they did not. In response to the question "What is your race?" he most common answer chosen was 'Caucasian' (79.1%); followed by 'Black/African American' (8.37%); 'Asian/Pacific Islander' (5.58%), 'Hispanic' (5.12%); 'Other' (0.93%); and 'Decline to Respond' (0.93%). In response to the question, "What is the highest level of education you have received?" the most common answer was 'Bachelor's Degree' (35.54%); followed by 'Some College' (30.12%); 'Associate's Degree' (16.87%); 'High School or GED' (8.96%); 'Graduate Degree' (6.63%); In response to the question, "Do you consider yourself politically conservative or liberal?" the most common answer was 'Liberal' (34.94%); followed by

'Moderate' (25.90%); 'Very Liberal' (18.67%); 'Conservative' (16.87%) and 'Very Conservative' (3.61%).

Design. This experiment followed the basic design for the series. Each participant first answered the demographic questions and then read five vignettes in random order. (See Appendix A for full text of vignettes.) After each vignette, the participant was asked, "On a scale of 1 to 10, with 1 being SAFEST/LOWEST RISK, and 10 being MOST DANGEROUS/HIGHEST RISK, what is the risk of some harm coming to the child during the time that the parent is gone?"

Results and Discussion
Estimates of risk were high overall. The mean estimate of risk across all situations (on a scale of 1-10) was 6.99 (*SD* = 2.63), and the modal estimate was 10. As predicted, respondents' estimates of risk to children differed according to why the parent left. A likelihood ratio test and an ANOVA both revealed a significant effect of moral condition on risk estimates: ($\chi^2(4) = 42.34$ p < .001), ($F(4,656) = 10.87$, p < .001). $R^2_{GLMMc} = 61.09\%$ and $R^2_{GLMMm} = 30.58\%$.

Specifically, a mother's unintentional absence was seen as safer for the child than a mother's intentional absence for any reason, and a mother's work-related absence was seen as more dangerous than an unintentional absence, but less dangerous than if the mother left to pursue an illicit sexual affair. Estimates of risk for each condition were: $M_{unintentional} = 6.22$; $M_{work} = 6.78$; $M_{volunteer} = 7.00$; $M_{relax} = 7.19$; $M_{affair} = 7.29$. See **Table 3** for pairwise comparisons.

Experiment 2: Fathers
Method
Participants. A total of 222 participants were recruited through Amazon Mechanical Turk for this experiment. Of those, 9 were excluded because they failed to answer the attention-check question, and 55 were excluded because they spent less than five minutes taking the survey (see Appendix B for an alternative analysis that includes data from these participants). The remaining 158 participants contributed data to the analysis. These participants ranged in age from 18 to 63 years (M = 33.51 SD = 10.37); 43.04% were female and 56.96% were male; 42.41% said they had children and 57.59% said they did not. In response to the question "What is your race?" the most common answer chosen was 'Caucasian' (83.54%), followed by 'Black/African American' (5.70%); 'Asian/Pacific Islander' (4.43%), 'Hispanic' (5.06%); 'Other' (1.27%) In response

	Affair	Relax	Volunteer	Work
Unintentional	$t(664) = 5.716^{***}$	$t(664) = 4.27^{***}$	$t(664) = 4.367^{***}$	$t(664) = 2.82, p = .0397^*$
Work	$t(664) = 2.895, p = .0319^*$	$t(664) = 2.581\ p = .0750$	$t(664) = 1.446\ p = .598$	
Volunteer	$t(664) = 1.448\ p = .59$	$t(664) = 1.1\ 3\ p = .78$		
Relax	$t(664) = .315\ p = .99$			

Table 3: Pairwise Comparisons for Experiment 1 (Basic Design). *Note.* *p < .05, **p < .01, ***p < .001.

to the question, "What is the highest level of education you have received?" the most common answer was 'Bachelor's Degree' (33.54%); followed by 'Some College' (30.38%); 'Associate's Degree' (8.23%); 'High School or GED' (9.49%); 'Graduate Degree' (13.29%); 'Some Graduate School' (3.19%); and 'Less than 12th Grade' (1.90%). In response to the question, "Do you consider yourself politically conservative or liberal?" the most common answer was 'Liberal' (36.54%); followed by 'Moderate' (23.08%); 'Very Liberal' (18.59%); 'Conservative' (19.87%) and 'Very Conservative' (1.92%).

Design. In this experiment, the parent described in the vignettes was a father instead of a mother. (See Appendix A for full text of vignettes.) Otherwise, the design was identical to Experiment 1.

Results and Discussion
The pattern of responses was similar to Experiment 1. The mean estimate of risk across all situations was 7.07 (SD = 2.46), and the modal estimate was 10. A likelihood ratio test revealed a significant effect of moral condition on risk assessment ($\chi^2(4)$ = 40.017 p < .001), as did an ANOVA ($F(4,616.5)$ = 10.26, p < .001). R^2_{GLMMc} = 59.53% and R^2_{GLMMm} = 33.31%.

Specifically, children were seen as less at risk when fathers left unintentionally than when fathers left to pursue an affair, volunteer for charity or relax. However, unlike in Experiment 1, fathers' work-related absences were not treated as significantly different from their unintentional absences. In fact, going to work was seen as safer (for one's child) than going somewhere to relax, and as in Experiment 1, going to work was also seen as safer (for one's child) than leaving to pursue an affair. Estimates of risk for each condition were as follows: $M_{unintentional}$ = 6.48; M_{work} = 6.82; $M_{volunteer}$ = 7.19; M_{relax} = 7.43; M_{affair} = 7.41. See **Table 4** for pairwise comparisons.

Experiment 3: Younger Mothers
Method
Participants. A total of 243 participants were recruited through Amazon Mechanical Turk for this experiment. Of those, 15 were excluded because they failed to answer the attention-check question, and 64 were excluded because they spent less than five minutes taking the survey (see Appendix B for an alternative analysis that includes data from these participants). The remaining 164 participants contributed data to the analysis. These participants ranged in age from 18 to 83 years (M = 33.71 SD = 11.78); 45.12% were female and 54.88% were male; 54.04% said they had

children and 45.96% said they did not. In response to the question "What is your race" the most common answer chosen was 'Caucasian' (82.93%); followed by 'Black/African American' (6.10%); 'Asian/Pacific Islander' (4.88%), 'Hispanic' (4.27%); 'Native American' (1.22%); and 'Decline to Respond' (0.61%). In response to the question, "What is the highest level of education you have received?" the most common answer was 'Some College' (34.76%);; followed by 'Bachelor's Degree' (31.71%); 'Associate's Degree' (12.80); 'High School or GED' (9.15%); 'Graduate Degree' (9.76%); 'Some Graduate School' (1.83%). In response to the question, "Do you consider yourself politically conservative or liberal?" the most common answer was 'Liberal' (39.63%); followed by 'Moderate' (22.36%); 'Very Liberal' (17.07%); 'Conservative' (17.68%) and 'Very Conservative' (3.05%).

Design. In this experiment, the ages of the mothers described in the vignettes was lower by 10 years, and the mothers held lower-paying jobs (e.g., McDonalds cashier instead of accountant; see Appendix A for full text of vignettes). Otherwise the design was identical to Experiment 1.

Results and Discussion
The pattern of responses was similar to Experiments 1 and 2. The mean estimate of risk across all situations was 7.18 (SD = 2.53) and the mode was 10. The likelihood ratio test revealed a significant effect of moral condition on risk assessment ($\chi^2(4)$ = 33.613 p < .001), as did an ANOVA ($F(4, 636.26)$ = 8.57, p < .001). R^2_{GLMMc} = 55.56% and R^2_{GLMMm} = 35.24%.

Specifically, children were seen as being in less danger when their mother left unintentionally (because of an accident) than when she left intentionally, no matter what the reason. In this experiment, there was no evidence that any particular reason for leaving was seen as riskier to children than any of the others. Estimates of risk for each condition were as follows: $M_{unintentional}$ = 6.55; M_{work} = 7.18; $M_{volunteer}$ = 7.25; M_{relax} = 7.57; M_{affair} = 7.35. See **Table 5** for pairwise comparisons.

Experiment 4: Explicit Moral Judgments
Method
Participants. A total of 354 participants were recruited through Amazon Mechanical Turk for this experiment. Of those, 47 were excluded because they failed to answer the attention-check question, and 60 were excluded because they spent less than five minutes taking the survey (see Appendix B for an alternative analysis that includes data

	Affair	Relax	Volunteer	Work
Unintentional	$t(624)$ = 5.156***	$t(624)$ = 4.904***	$t(624)$ = 4.582***	$t(624)$ = 1.89 p = .321
Work	$t(624)$ = 3.26 p = .010**	$t(624)$ = 3.01 p = .023*	$t(624)$ = 2.69 p = .057	
Volunteer	$t(624)$ = 0.574 p = .98	$t(624)$ = 0.322 p = .99		
Relax	$t(624)$ = .252, p = .99			

Table 4: Pairwise Comparisons for Experiment 2 (Fathers).
Note. *p < .05, **p < .01, ***p < .001.

	Affair	Relax	Volunteer	Work
Unintentional	$t(644) = 4.402$***	$t(644) = 5.47$***	$t(644) = 3.785, p = .002$**	$t(644) = 3.87, p = .001$**
Work	$t(644) = .556$	$t(644) = 1.601, p = .497$	$t(644) = .127, p = .99$	
Volunteer	$t(644) = .618, p = .972$	$t(644) = 1.678, p = .448$		
Relax	$t(644) = .541, p = .983$			

Table 5: Pairwise Comparisons for Experiment 3 (Younger Mothers).
Note. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

from these participants). The remaining 247 participants contributed data to the analysis. These participants ranged in age from 18 to 68 years (M = 33.41; SD = 10.80; 44.53% were female and 55.47% were male; 57.89% said they had children and 42.11% said they did not. In response to the question "What is your race?" the most common answer chosen was 'Caucasian' (77.73%); followed by 'Asian/Pacific Islander' (6.88%); 'Black/African American' (6.07%); 'Hispanic' (5.26%); 'Other' (3.24%); 'Native American' (.81%). In response to the question, "What is the highest level of education you have received?" the most common answer was 'Bachelor's Degree' (34.41%); followed by 'Some College' (32.39%); 'Associate's Degree' (9.49%); 'High School or GED' (10.93%); 'Graduate Degree' (8.91%); 'Some Graduate School' (2.43%); and 'Less than 12th Grade' (1.21%). In response to the question, "Do you consider yourself politically conservative or liberal?" the most common answer was 'Liberal' (32.93%); followed by 'Moderate' (29.27%); 'Very Liberal' (18.29%); 'Conservative' (16.26%) and 'Very Conservative' (3.25%).

Design. In this experiment we added a second question, asking about the morality of the mother's actions: "On a scale from 1 to 10, with 1 meaning the mother did NOTHING WRONG, and 10 meaning the mother did something HIGHLY UNETHICAL/IMMORAL, did the mother do something morally/ethically wrong by leaving her child alone?" Participants also answered the same risk question as in Experiments 1–3 (""On a scale of 1 to 10, with 1 being SAFEST/LOWEST RISK, and 10 being MOST DANGEROUS/HIGHEST RISK, what is the risk of some harm coming to the child during the time that the parent is gone?") The order of the questions was counterbalanced across participants, but kept constant for each participant across the vignettes.

We had two reasons for adding this moral question. One was as a manipulation check, to test whether people's moral intuitions followed the presumed pattern (e.g., that respondents viewed an extramarital affair as immoral). A second reason was to allow respondents to separate their moral judgments from their risk judgments. We reasoned that respondents might think something like "I realize that the child is not actually in more danger just because the parent left to have an affair, but I still feel morally offended and I want to express that." Adding a separate moral question would allow participants to express their moral judgment directly, and therefore also (at least in theory) to express a risk judgment that was actually an assessment of risk, separate from the morality of the situation.

Results and Discussion
Analysis of Responses To Moral Question (i.e., "Did the mother do something morally/ethically wrong by leaving her child alone?") Participants' moral judgments followed a very similar pattern to their risk judgments (see **Figure 1**). The mean moral judgment on a scale of 1–10 (with 1 meaning the mother did nothing wrong) was 6.89; the modal judgment was 10. As predicted, the likelihood ratio test revealed a significant effect of moral condition on moral judgment, $(\chi^2 (4) = 796.14$ p < .001) as did an ANOVA ($F(4,776.66) = 306.85$ p < .001). $R^2_{GLMMc} = 63.10\%$ and $R^2_{GLMMm} = 41.60\%$. These tests confirmed that the different moral conditions (e.g., 'Unintentional,' 'Affair,' etc.) successfully elicited different moral judgments from participants.

Interestingly, although the 'Unintentional' condition was rated as the most morally acceptable, respondents still judged that mothers in this condition had done something somewhat morally wrong (mean judgment of 3.05 out of 10) by leaving their children alone *even for a moment.* (In these 'Unintentional' conditions, the parents stepped away from their children for a moment to do something like return a library book or retrieve the mail.) Estimates of risk for each condition were as follows: $M_{unintentional} = 3.05$; $M_{work} = 7.27$; $M_{relax} = 7.48$; $M_{affair} = 8.86$; $M_{volunteer} = 7.32$.

Pairwise comparisons of moral judgments among the five different moral conditions showed a similar pattern to the risk estimates for those conditions. Participants rated the 'Unintentional' condition as more morally acceptable than the other four conditions: (Work $t(984.24) = 23.87$, p < .001; Volunteer $t(984.17) = 24.31$, p < .001; Relax $t(984.24) = 24.93$, p < .001; Lover $t(984.17) = 32.65$, p < .001). Participants also rated the 'Affair' condition as less morally acceptable than the 'Work', 'Relax' and 'Volunteer' conditions (Affair/Work $t(984.17) = 8.772$, p < .001; Affair/Relax $t(984.24) = 7.71$, p < .001; Affair/Volunteer $t(984.24) = 8.329$, p < .001) All other pairwise comparisons were non-significant, Work/Relax $t(984.17) = 1.06$, p = .8254; Work/Volunteer $t(984.24) = 0.44$, p = .99; Relax/Volunteer $t(984.17) = 0.622$, p = .971).

Analysis Of Responses To Risk Question. ("What is the risk of some harm coming to the child during the time that the parent is gone?") Although we thought that adding a moral question might free participants to lower their risk estimates, the opposite occurred. The effect of moral condition on risk estimates was actually larger in this experiment than in Experiments 1-3. It seems that when people are encouraged to make explicit moral
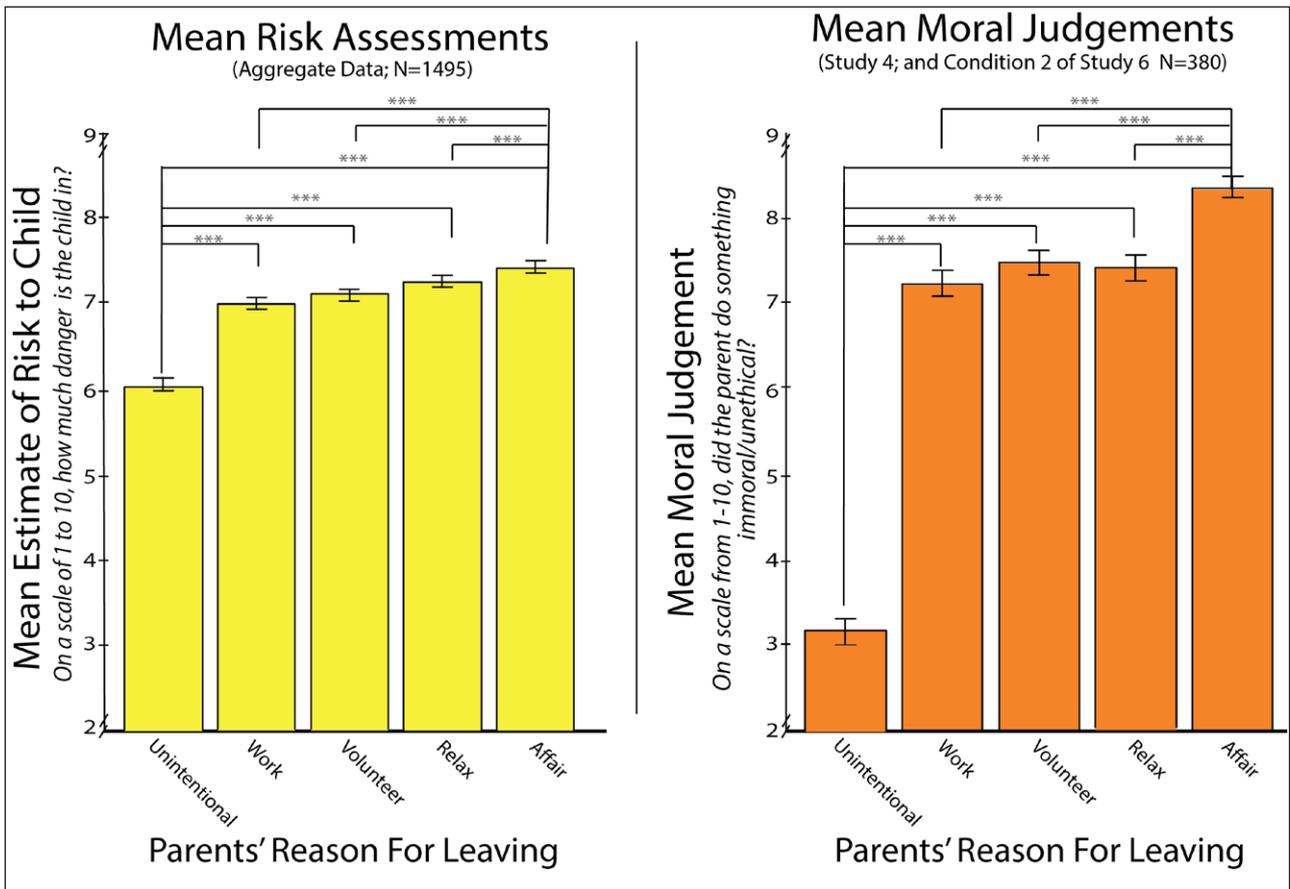
Figure 1: Participants' responses by moral condition. Left panel: Mean estimate of risk to child by moral condition. Right panel: Mean moral judgment by moral condition. Error bars indicate standard error. ***p < .001.

judgments, their risk estimates become more skewed by moral intuitions, not less so. The mean risk estimate in this experiment was 6.95 (SD = 2.66) and the mode was 10. The likelihood ratio test revealed a significant effect of moral condition on risk assessment ($\chi^2(4)$ = 155.42 p < .001), as did an ANOVA (F (4,976) = 42.09 p < .001) R^2_{GLMMc} = 56.87% and R^2_{GLMMm} = 28.7%. Specifically, the 'Unintentional' condition was seen as posing significantly less risk to children than any of the other conditions; and the 'Affair' condition was seen as posing significantly *more* risk to children than any of the others. Estimates of risk for each condition were as follows: $M_{unintentional}$ = 5.70; M_{work} = 7.18; M_{relax} = 7.17; M_{affair} = 7.66; $M_{volunteer}$ = 7.06. See **Table 6** for pairwise comparisons.

Correlation Between Risk and Moral Question. To investigate whether participants' risk judgments were correlated with their moral judgments, we ran a simple regression analysis. As predicted, participants' answers were significantly positively correlated. That is, the more immoral a mother's reason for leaving, the more danger participants thought her child was in while she was away (R = .656, p < .001).

Mediation Analysis. We also performed a mediation analysis to investigate whether people's moral judgments in Experiment 4 mediated their risk assessments. We used the lavaan package in R [30] for this analysis, and collapsed the moral conditions into two factors ('Unintentional' versus all other conditions). We found evidence of a full

mediation: The direct effects were not significantly different than zero (Estimate = −.096, std. err, z-value = .658, p = .510), and the indirect effects were significantly different than zero (Estimate = 1.666, std. err = .166, z-value = 10.054, p < .001) [31].

Comparing Experiment 1 and Experiment 4

The results of Experiment 4 suggested that when we asked respondents an explicit moral question, their risk estimates actually became more biased by moral judgment. To investigate this in a more formal way, we compared the impact that moral condition had on risk estimates in Experiment 1 to that in Experiment 4. To do this, we averaged each participant's risk estimates across all 'intentional' conditions (affair, relax, work and volunteer) and subtracted their risk estimate for the Unintentional condition. We controlled for vignette type in order to account for the fact that some items (e.g., those involving younger children) might be judged to have a different baseline level of risk. The mean difference score in Experiment 4 (M = 1.48) was significantly higher than the mean difference score in Experiment 1 (M = 0.89), ($\chi^2(4)$ = 8.94 p = .003), ANOVA (F(1, 516 = 8.99 p = .005). This result indicates that participants' risk estimates were more biased by moral context in Experiment 4 (where they were asked an explicit moral question alongside the risk question) than in Experiment 1 (where they were only asked about risk). This effect was explored more fully in Experiment 6 (see below).

	Affair	Relax	Volunteer	Work
Unintentional	$t(984) = 12.15$***	$t(984) = 9.01$***	$t(984) = 8.62$***	$t(984) = 9.20$***
Work	$t(984) = 2.95\ p = .03$*	$t(984) = .190\ p = 1.00$	$t(984) = .579\ p = .98$	
Volunteer	$t(984) = 3.53\ p = .004$**	$t(984) = .389\ p = .995$		
Relax	$t(984) = 3.214\ p = .015$*			

Table 6: Pairwise Comparisons of Risk Estimates for Experiment 4 (Explicit Moral Judgments).
Note. *$p < .05$, **$p < .01$, ***$p < .001$.

Experiment 5. List the Dangers
Method
Participants. A total of 159 participants were recruited through Amazon Mechanical Turk for this experiment. Of those, 4 were excluded because they failed to answer the attention-check question, and none were excluded because they spent less than five minutes taking the survey (see Appendix B for an alternative analysis that includes data from these participants). The remaining 155 participants contributed data to the analysis. These participants ranged in age from 18 to 67 years (M = 33.21 SD = 9.29); 41.29% were female and 58.71% were male; 45.16% said they had children and 54.84% said they did not. In response to the question "What is your race," the most common answer chosen was 'Caucasian'(80.00%); followed by 'Asian/Pacific Islander' (7.10%), 'Hispanic' (6.45%); 'Black/African American' (3.23%);; 'Other' (2.58%); 'Native American' (.65%). In response to the question, "What is the highest level of education you have received?" the most common answer was 'Bachelor's Degree' (39.35%); followed by 'Some College' (27.10%); 'Associate's Degree' (10.32%); 'High School or GED' (13.55%); 'Graduate Degree' (7.74%); 'Some Graduate School' (1.29%). In response to the question, "Do you consider yourself politically conservative or liberal?" the most common answer was 'Liberal' (35.48%); followed by 'Moderate' (26.45%); 'Very Liberal' (18.71%); 'Conservative' (16.77%) and 'Very Conservative' (2.58%).

Design. In this experiment after participants estimated the risk to the child in each vignette, we asked them for an explicit rationale for that judgment: "If there is risk to the child, please explain what the risk is. (That is, what harmful thing or things might happen to the child while the parent is gone?)" We added this instruction in order to check whether respondents imagined different dangers facing the children in the different conditions. For example, participants might think that children were in more danger in the 'Affair' condition because the mother's husband might discover the affair and react in some way that endangered the child. Our intention in writing the vignettes was to make the risks equal across moral conditions. But if participants thought that the different conditions actually posed different risks to children, then it would be rational for them to estimate the danger differently.

Results and Discussion
Analysis Of Responses To Risk Question. This was the standard question used in all experiments (i.e., "What is the risk of some harm coming to the child during the time

that the parent is gone?") Results were similar to those in Experiments 1–4, but the effect of moral condition on risk estimates was less pronounced. The mean response was 6.47 (SD = 2.82) and the modal response was 10. The likelihood ratio test revealed a significant effect of moral condition on risk assessment ($\chi^2(4) = 28.10\ p < .001$), as did an ANOVA ($F(4, 588) = 7.17\ p < .001$). $R^2_{GLMMc} = 54.68\%$ and $R^2_{GLMMm} = 30.8\%$. Specifically, as in Experiments 1-4, children whose mothers were unintentionally absent were seen as safer than those whose mothers chose to leave them alone. Estimates of risk for each condition were as follows: $M_{unintentional} = 5.89$; $M_{work} = 6.38$; $M_{relax} = 6.66$; $M_{affair} = 6.92$; $M_{volunteer} = 6.54$. See **Table 7** for pairwise comparisons.

Analysis of Responses to List-the-Dangers Question. ("What harmful thing or things might happen to the child while the parent is gone?"). We found no evidence that participants imagined different dangers to children in the different conditions. Participants listed the same dangers in all conditions, with the most common being that a stranger would harm the child (60.38% of responses) or that an accident would occur (55.51% of responses). Less than 1% of responses mentioned anything specific to the condition. This suggests that when respondents estimate different levels of risk to children based on what parents are doing elsewhere, those estimates do indeed reflect a moral judgment about the parents, rather than a perception that the children actually face different risks.

Experiment 6: Basic Design, Moral Judgment and List-the-Dangers Conditions
This experiment directly tested the hypothesis that answering the moral question increased the effect of moral condition on risk assessment. We also were interested in whether participants would make lower risk estimates when they were asked to list the dangers to children. In this experiment participants were randomly assigned to one of three conditions. In Condition 6A, (as in Experiment 1) participants were asked only to judge the risk to the child. In Condition 6B (as in Experiment 4) participants were asked how dangerous the situation was and whether the mother did something morally/ethically wrong. In Condition 6C (as in Experiment 5) participants were asked to rate the risk, and to list the dangers that might occur.

Participants. A total of 701 participants were recruited through Amazon Mechanical Turk for this experiment. Of those, 23 were excluded because they failed to answer the attention-check question, and 74 were excluded

	Affair	Relax	Volunteer	Work
Unintentional	$t(620) = 5.18$***	$t(620) = 3.91, p = .001$**	$t(620) = 3.38\ p = .007$**	$t(620) = 2.62\ p = .067$
Work	$t(620) = 2.53\ p = .079$	$t(620) = 1.08\ p = .82$	$t(620) = .762\ p = .94$	
Volunteer	$t(620) = 1.80\ p = .37$	$t(620) = .522\ p = .98$		
Relax	$t(620) = 1.28\ p = .703$			

Table 7: Pairwise Comparisons of Risk Estimates for Experiment 5 (List the Dangers).
Note. *$p < .05$, **$p < .01$, ***$p = or < .001$.

	Affair	Relax	Volunteer	Work
Unintentional	6A: $t(2452) = 7.63$*** 6B: $t(2452) = 11.48$*** 6C: $t(2452) = 8.01$***	6A: $t(2452) = 5.39$*** 6B: $t(2452) = 9.63$*** 6C: $t(2452) = 6.08$***	6A: $t(2452) = 4.88$*** 6B: $t(2452) = 9.61$*** 6C: $t(2452) = 5.75$***	6A: $t(2452) = 6.00$*** 6B: $t(2452) = 8.72$*** 6C: $t(2452) = 6.0$***
Volunteer	6A: $t(2452) = 2.73\ p = .284$ 6B: $t(2452) = 1.87\ p = .867$ 6C: $t(2452) = 2.27\ p = .62$	6A: $t(2452) = .503\ p = 1.00$ 6B: $t(2452) = .26\ p = 1.00$ 6C: $t(2452) = 1.41\ p = .97$		6A: $t(2452) = 1.17\ p = 1.00$ 6B: $t(2452) = .90\ p = 1.00$ 6C: $t(2452) = .25\ p = 1.00$
Work	6A:$t(2452) = 1.61\ p = .96$ 6B: $t(2452) = 2.76\ p = .27$ 6C: $t(2452) = 2.02\ p = .79$	6A: $t(2452) = .614\ p = 1.00$ 6B: $t(2452) = .632\ p = 1.00$ 6C: $t(2452) = 1.16\ p = 1.00$		
Relax	6A: $t(2452) = 2.23\ p = .642$ 6B: $t(2452) = 2.13\ p = .716$ 6C: $t(2452) = .86\ p = 1.00$			

Table 8: Pairwise Comparisons of Risk Estimates for Experiment 6A, 6B, 6C.
Note. *$p < .05$, **$p < .01$, ***$p = or < .001$.

because they spent less than five minutes taking the survey (see Appendix B for an alternative analysis that includes data from these participants). The remaining 611 participants contributed data to the analysis. These participants ranged in age from 18 to 75 years (M = 36.21 SD = 11.56); 51.55% were female and 48.45% were male; 62.03% said they had children and 37.97% said they did not. In response to the question "What is your race," the most common answer chosen was 'Caucasian'(79.21%); followed by 'Black/African American' (6.22%); 'Asian/Pacific Islander' (7.20%), 'Hispanic' (4.58%); 'Other' (1.96%); 'Native American' (0.49%); 'Declined to Respond' (0.33%). In response to the question, "What is the highest level of education you have received?" the most common answer was 'Bachelor's Degree' (35.19%); followed by 'Some College' (29.13%); 'Associate's Degree' (10.47%); 'Graduate High School or Equivalent' (9.33%); 'Graduate Degree' (11.78%); 'Some Graduate School' (3.60%), 'Less than 12th grade' (0.49%). In response to the question, "Do you consider yourself politically conservative or liberal?" the most common answer was 'Liberal' (33.06%); followed by 'Moderate' (23.57%); 'Very Liberal' (18.00%); 'Conservative' (19.80%) and 'Very Conservative' (5.56%).

Results and Discussion
The likelihood ratio test revealed a significant effect of moral condition on risk assessment ($\chi^2(4) = 270.15$ $p < .001$), as did an ANOVA ($F(4, 2428.10 = 73.08\ p < .001)$. $R^2_{GLMMc} = 57.68\%$ and $R^2_{GLMMm} = 13.62\%$. We also found an interaction between moral condition and 'Experiment Condition' (i.e. whether they were assigned to Condition A,B, or C) $\chi^2(8) = 19.821\ p = .011$, $F(8, 1800.18) = 2.47$ $p = .01$. This interaction confirms our hypothesis that answering the moral question increased the effect of moral condition on risk assessment.

The overall pattern of responses in each condition matched those from Studies 1–5 (see **Table 8**). Means for Condition 6A were: $M_{A\ unintentional} = 6.09$; $M_{A\ work} = 7.31$ $M_{A\ volunteer} = 6.70$; $M_{A\ relax} = 6.93$; $M_{A\ affair} = 7.51$. Means for Condition 6B were: $M_{B\ unintentional} = 5.70$; $M_{B\ work} = 7.49$ $M_{B\ volunteer} = 7.89$; $M_{B\ relax} = 7.62$; $M_{B\ affair} = 8.00$. Means for Condition 6C were: $M_{C\ unintentional} = 6.42$; $M_{C\ work} = 6.92$; $M_{C\ volunteer} = 7.16$; $M_{C\ relax} = 7.46$; $M_{C\ affair} = 7.52$.

Difference Scores
The purpose of this experiment was to find out whether the effect of moral condition on risk estimates could either be increased by asking respondents an explicit moral question, or decreased by asking them to list the actual dangers that children face. To investigate this, we averaged each participant's risk estimates across all 'intentional' conditions (affair, relax, work and volunteer) and subtracted their risk estimate for the Unintentional condition. We controlled for vignette type in order to account for the fact that some items (e.g. those involving younger children) might be judged to have a different baseline level of risk. We found a significant effect of experimental condition on these difference scores: ($\chi^2(3) = 10.75$ $p = .005$), ANOVA ($F(2, 604.2 = 5.26\ p = .005)$. Pairwise comparisons revealed significant differences between 6A

and 6B (t(608.47) = 3.05 p = .007) and between 6B and 6C (t(608.47) = 3.56 p = .03); but not between 6A and 6C (t(608.47) = .53 p = .86)). These results indicate that asking people to answer an explicit moral question does increase the moral bias in their risk estimates, and that asking people to list the dangers facing children does not decrease this bias.

Summary of Experiments 1-6
Method
Summary of Participants. A total of 1898 participants were recruited through Amazon Mechanical Turk across all six experiments. 89 were excluded because they failed to answer the question that checked whether they were reading the vignettes; and 375 were excluded because they spent less than five minutes taking the survey. (See Appendix B for a separate analysis that includes these participants' data.) The remaining 1328 participants contributed data to this analysis. Of these, 52% were female and 48% were male, 56.43% of the participants indicated they had children, 43.57% did not. Participants ranged in age from 18 to 75 years (M = 34.55, SD = 11.10).

In response to a question about their racial/ethnic identity, the most common answer chosen was 'Caucasian' (80.32%); followed by 'Black/African American' (6.11%); 'Asian/Pacific Islander' (5.88%), 'Hispanic' (5.20%); 'Other' (1.58%); 'Native American' (0.57%); and 'Decline to Respond' (0.34%). In response to the question, "What is the highest level of education you have received?", the most common answer was 'Bachelor's Degree' (34.62%); followed by 'Some College' (31.22%); 'Associate's Degree' (11.43%); 'High School or GED' (10.86%); 'Graduate Degree' (9.28%); 'Some Graduate School' (1.81%); and 'Less than 12th Grade' (0.79%). In response to the question, "Do you consider yourself politically conservative or liberal?" the most common answer was 'Liberal' (35.64%); followed by 'Moderate' (25.88%); 'Very Liberal' (18.39%); 'Conservative' (17.14%) and 'Very Conservative' (2.95%). See **Table 9** for a summary of the pairwise comparisons that were significant across the six experiments.

The pattern of moral judgments that participants gave for the explicit moral question in Experiments 4 and 6B was qualitatively similar to the pattern of risk estimates seen across studies: For example, the 'Unintentional' condition was seen as both most moral and safest. As might be expected, moral judgments differed more across conditions than risk estimates. For example, the 'Unintentional' condition was seen as much more moral than the 'Affair' condition, but only somewhat safer for the child.

Effect of participants' gender and parental status. Although all groups of respondents showed the patterns described above, there were small but significant differences in the absolute estimates of risk made by different groups in some studies. Most notably, women tended to rate situations as more dangerous than men, and parents tended to rate situations as more dangerous than non-parents. The result of these tendencies was that the highest overall estimates of risk were made by mothers; followed by fathers, childless women, and finally (with the lowest estimates), childless men. There was no evidence that other demographic factors had a noticeable effect on responses. For all demographic analyses, see Appendix C.

General Discussion
In the present studies, we examined how moral intuitions affect risk estimates. We found that when people make a negative moral judgment about a parent who leaves her child alone, their estimate of the danger facing that child is higher than for a situation that objectively poses equal risk to the child, but does not elicit the same moral disapproval. Specifically, participants judged that children whose parents left them alone on purpose were in greater danger than those whose parents left them by accident, despite identical descriptions of the circumstances in which children were alone (i.e., asleep in a car, parked in the cool underground parking garage of a gym, for 15 minutes). This finding is consistent with earlier studies showing that intentional violations of a norm are judged as morally worse than unintentional violations (e.g. [32, 33, 34, 35]).

The general reasoning behind our experimental design was that whatever might be going on elsewhere, as long as the immediate circumstances surrounding the child

	Affair	Relax	Volunteer	Work
Unintentional	All experiments: p's < .001***	All experiments: p's < or = .001***	Experiments 1, 2, 4, 6: p's < .001***. Experiment 2: p = .002** Experiment 5: p = .011*	Experiment 1: p < .05* Experiments 3, 4, 6: p's < or = .001***
Work	Experiments 1 and 4: p's < .05* Experiment 2: p = .010 **	Experiment 2: p = .023*		
Relax	Experiment 4: p = .015*			
Volunteer	Experiment 4: p = .004**			

Table 9: Significant Pairwise Comparisons Among Risk Estimates for Different Experiments.
Note. Table lists the experiments in which each pairwise comparison was statistically significant.
*p < .05, **p < .01, ***p < .001.

were the same (same child, same location, same duration of time), any differences in the estimates of risk to the child in that situation must reflect bias on the part of participants. However, we did consider the possibility that respondents might see parents' moral shortcomings as posing a general, rather than specific risk to their children. For example, participants might reason that a parent who would intentionally leave her child alone for 30 minutes would probably make a lot of other 'risky' parenting decisions as well, which could cumulatively place the child in danger. Although we cannot rule out this possibility completely, we did try to address it in the piloting phase by modifying the test question from its original wording in the pilot studies ("On a scale of 1 to 10, with 1 being SAFEST/LOWEST RISK, and 10 being MOST DANGEROUS/HIGHEST RISK, what is the risk of some harm coming to the child?") to the wording used in Experiments 1-6, ("On a scale of 1 to 10, with 1 being SAFEST/LOWEST RISK, and 10 being MOST DANGEROUS/HIGHEST RISK, what is the risk of some harm coming to the child *during the time that the parent is gone*?").

In reality of course, children who are left alone in circumstances approved by their parents are likely to be safer than children who find themselves alone by accident, because parents can take steps to ensure their child's well-being in their absence (e.g., making sure the baby is securely buckled into a car seat; that the car is parked in a shady spot; that an older child has a cell phone, knows when to expect the parent back, etc.) The fact that participants considered children left alone by accident safer than those left alone on purpose strongly suggests that participants' moral condemnation of parents skewed their risk estimates.

Experiments 2–6 represent extensions and variations on the original design. In Experiment 2, the vignettes described fathers. The only noticeable difference between risk estimates in this experiment and the others (which featured mothers) was in how participants treated the 'Work' condition. In six out of seven experimental conditions featuring vignettes with mothers (i.e., Experiments 1, 3, 4, 6A, 6B and 6C), a mother's choosing to leave for work was considered significantly more dangerous to her child than if she left by accident. However, in Experiment 2 (featuring fathers), work-related absences and unintentional absences were treated similarly, presumably reflecting a more positive moral evaluation of fathers who work than of mothers who do so. We hesitate to conclude too much from the results of one experiment, but it does suggest an interesting direction for future research, namely the question of how moral judgments and thus risk estimates differ for fathers vs. mothers.

Interestingly, the difference between the Unintentional and Work conditions also was not significant in Experiment 5, where participants had to list the dangers facing children. We wondered if asking people to list the dangers might have suppressed the moral bias in much the same way that asking them a moral question increased it. However, Experiment 6 failed to provide confirmation for this hypothesis.

In Experiment 3, we lowered the ages of the mothers by 10 years and gave them lower-paying jobs (e.g., McDonald's cashier instead of accountant). The pattern of responses was the same as in Experiment 1, suggesting that mothers' age and occupation did not make a big difference to responses. However, it is worth noting that the data in all of these experiments showed some evidence of ceiling effects (e.g., the modal risk estimate in every experiment was 10). So if participants had been *less* judgmental of younger mothers, that difference could have shown up in the form of *lower* risk estimates. But if participants were *more* judgmental of younger mothers, it might be hard to detect that difference, because many participants were already making the highest possible estimation of risk. This suggests another direction for future research: If researchers can identify a set of vignettes that elicit more moderate estimates of risk, it might be worth revisiting the question of whether participants make different moral judgments about mothers who differ in age, occupation or other attributes.

In Experiment 4, we asked participants to make explicit moral judgments about the behavior of the mothers in the vignettes. This served as a manipulation check, confirming that subjects did consider leaving a child alone on purpose to be less morally acceptable than leaving a child alone by accident. Leaving to meet one's lover was also considered less acceptable than leaving to work or relax. A second reason for including the moral question was to allow participants to make separate evaluations of the risk to the child and the morality of the mother's actions. We thought that by giving participants a way to express their moral disapproval separately from their estimates of risk, they might produce less biased estimates of risk. In fact, the opposite turned out to be true: Risk estimates in Experiment 4 were *more* affected by moral judgments than in Experiments 1–3. It seems that the explicit moral question simply primed respondents to pay more attention to morality, producing even more exaggerated estimates of risk. The effect was particularly noticeable in the ratings for the 'Affair' condition. In every experiment, the 'Affair' condition was rated more dangerous to children than the 'Unintentional' condition. But in Experiment 4, the 'Affair' condition was also rated as significantly riskier than any of the other three intentional conditions ('Work,' 'Volunteer' or 'Relax'). Similar findings were seen in Studies 1 and 2, where a parent's affair-related absence was seen as more dangerous to the child than the same parent's work-related absence; but the effect in Experiment 4 was more pronounced than in the other experiments.

In Experiment 5, we asked respondents to provide a rationale for their risk estimates by listing the risks that children actually face when left alone. The practical reason for doing this was to check whether respondents actually imagined different risks to children whose parents left for different reasons. For example, if respondents thought that a mother meeting her lover was placing her child in danger of harm from a jealous husband, then estimates of risk might reasonably be higher for the 'Affair' condition than for other conditions. But in fact we found no evidence of such reasoning. The most common risks listed

by respondents were stranger abduction and accidents, and this did not differ across moral conditions.

Experiment 6 was designed to test whether the moral bias in risk estimates could be manipulated either by asking participants to make an explicit moral judgment (as in Experiment 4), or by asking them to think about the actual dangers facing children (as in Experiment 5). Based on the results of Experiment 4, we hypothesized that asking participants to make an explicit moral judgment would increase the bias. Based somewhat on the results of Experiment 5 (specifically on the relative similarity of risk estimates for the Unintentional and Work conditions) and perhaps on our own wistful hopes for human rationality, we hypothesized that asking people to list the dangers might suppress the moral bias, by encouraging them to realize that the dangers were (a) actually low-probability events, and (b) in no way dependent on what the parent was doing elsewhere.

Participants in Experiment 6 were randomly assigned to one of three conditions. Those assigned to Condition 6A were given Experiment 1: They read the vignettes and estimated how much danger each child was in. Those assigned to Condition 6B were given Experiment 4: They read the same vignettes, and provided both a risk estimate (of how much danger the child was in) and an explicit moral judgment (of how wrong the mother's actions were), in counterbalanced order. Those assigned to Condition 6C were given Experiment 5: They read the vignettes, estimated how much danger the child was in, and then listed what harmful things might happen to the child in the parent's absence. Risk estimates in Condition 6B were higher than in 6A and 6C, confirming that the effect of moral condition on risk estimates was indeed increased when participants were invited to make explicit moral judgments. Risk estimates in Conditions 6A and 6C were similar, indicating that when participants are asked to list the dangers to children, the moral bias affecting their risk estimates does not change. Another way of interpreting this finding might be that participants were already thinking about the dangers to children, and so asking them to list the dangers had no effect. An interesting direction for future research might be to explore what manipulations, if any, decrease this moral bias. For example, if participants were told that twenty times as many children die in car accidents than in parked cars every year, would their estimates of the risk to children in parked cars be lower?

The most important conclusion we draw from this set of experiments is the following: People don't only think that leaving children alone is dangerous and therefore immoral. *They also think it is immoral and therefore dangerous.* That is, people overestimate the actual danger to children who are left alone by their parents, in order to better support or justify their moral condemnation of parents who do so.

This brings us back to our opening question: How can we explain the recent hysteria about unsupervised children, often wildly out of proportion to the actual risks posed by the situation? Our findings suggest that once a moralized norm of 'No child left alone' was generated, people began to feel morally outraged by parents who violated that norm. The need (or opportunity) to better support or justify this outrage then elevated people's estimates of the actual dangers faced by children. These elevated risk estimates, in turn, may have led to even stronger moral condemnation of parents and so on, in a self-reinforcing feedback loop.

Some readers may wonder whether subjects in these experiments simply confounded the notion of 'putting a child in danger' with that of 'irresponsible parenting', in effect answering a different question than the one we asked. Of course, this hypothesis is only a competitor to our own if subjects' judgments of increased parental irresponsibility are not *themselves* a consequence of increased judgments of risk to the child. That is, if subjects judge parents to be increasingly irresponsible *because* they judge the children to be at greater risk, this is not an alternative to our hypothesis but an elaboration of it.

Moreover, even if subjects' increasing judgments of parental responsibility are *not* consequences of similarly increasing judgments of risk, the larger point we hope to make still stands. That is, even if we assume that onlookers, police officers, district attorneys, social workers and judges are answering an implicit question about parental irresponsibility when they are asked an explicit question about risk, *these are still the answers they give when asked to make judgments about risk.* Indeed, if people are 'really' judging parental responsibility when they are asked about risk, then the effect is even more extreme than we have described here: People's estimates of dangers are not merely *influenced* but instead simply *replaced* by normative evaluations of the acceptability or propriety of the parent's conduct.

Either way, this particular case can be seen as an instance of a more general phenomenon we might call the *moralized reinforcement of factual beliefs* (here, the belief that children left alone are in grave danger). This is a process whereby one forms or revises one's factual beliefs about the world so that they better support one's moral convictions. This general phenomenon is consistent with other models of moral cognition, including the idea of moral coherence [20] and the Social Intuitionist Model [22]. This phenomenon provides a ready explanation for the moralized hysteria currently seen in the criminalization of parents who leave their children alone, even in objectively low-risk situations. Further experiments could explore whether this phenomenon extends to risk estimates in other domains.

Although it was not the focus of our studies, looking at these data it is hard not to be struck by how exaggerated participants' estimates of risk were overall. We asked participants to rate the danger to children on a scale of 1 to 10, and in every single experiment, the most common answer given was 10. We tried to address this problem in the piloting stage: In the first version of the survey we piloted, children in the vignettes were left alone for 45 minutes to 2 hours. With those times, the modal response was 10 and the mean response was 7.52. We shortened the times (down to 10 minutes for a baby and 45 minutes for an 8-year-old), hoping to get more estimates near the middle of the scale. But even with the shorter times, the modal response was still 10 and the mean barely dropped

(to 7.32). An obvious direction for future studies would be to design vignettes describing even less risky situations in order to eliminate ceiling effects. However, it may well be that the moral panic about this issue has reached the point where people believe that any child not under an adult's direct gaze is in imminent, grave danger. By the same token, researchers may find it difficult to concoct any fictional situation in which a child is somehow alone, but participants hold the child's mother morally blameless.

As a practical matter, these findings have important implications for public policy. Currently, intuitive estimates of the risk to children left alone—estimates made by onlookers, police officers, social workers, judges, and so on—serve as the rationale for prosecuting parents who allow their children to play in parks, walk to school, wait in cars, etc., without an adult present. For example, mothers are now frequently arrested, charged with abuse or neglect and even jailed for allowing their children to wait in a car for just a few minutes (e.g., [9, 10, 36]). As Pimentel [15] observed, "If criminal child neglect standards are sufficiently vague, applied in the discretion of prosecutors and in the judgment of juries steeped in the media's fearmongering, parents will have little choice but to . . . buy into the Intensive Parenting culture." Our findings suggest that those estimates of risk are consistently and systematically biased by people's moral disapproval of parents who violate a recently-imposed (and empirically unsupported) norm against ever leaving children unsupervised. These findings should caution those who make and enforce the law to distinguish factually-based, rational assessments of risk to children from intuitive moral judgments about parents, and to avoid investing the latter with the force of law.

Supplementary Files
The supplementary files for this article can be found as follows:
- **Supplementary File 1:** http://dx.doi.org/10.1525/collabra.33.s1 **Appendix A.**
- **Supplementary File 2:** http://dx.doi.org/10.1525/collabra.33.s2 **Appendix B.**
- **Supplementary File 3:** http://dx.doi.org/10.1525/collabra.33.s3 **Appendix C.**
- **Supplementary File 4:** http://dx.doi.org/10.1525/collabra.33.s4 **Appendix D.**

Competing Interests
The authors declare that they have no competing interests.

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