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Toni Spring
CUNY Queens College

Herbert D. Saltzstein
CUNY Graduate Center

Bianca Vidal
CUNY City College

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Toni Spring, Herbert D. Saltzstein, and Bianca Vidal

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Plain English Abstract

These studies are based on the assumption that when adults, adolescents or children identify someone as the "guilty" one, i.e., the person who committed the act, they are not only making an identification based on memory and thinking, but also a moral decision. This is because, by the act of identifying or not identifying someone, the eyewitness runs the risk of either convicting an innocent person , i.e., making false positive error or letting a guilty person go free, i.e., a false negative error. Our interest is less in the overall accuracy of their identifications and more in the balance of false positive and false negative errors. We have found in these and past studies that the balance of these two kinds of errors changes with age, and that this pattern may also depend on (a) the child's general understanding of the purpose of the task, which appears to be 'lost' on 7-9 year olds, the youngest group studied, and (b) for older children and adolescents, how the act is described, e.g., intended or not. In this way, we can understand that the act of identifying the perpetrator as a moral decision and not simply an act of perception and memory.

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Scientific Abstract

In study 1 eyewitness identification of the perpetrator of a 'crime' (fire), framed as either intended or unintended, was studied in 138 children, ages 7 to 18. Analysis using Signal Detection reveals an interaction of age and condition on decisional bias. Like in past studies, the framing of the act had no effect on the 7-9 year olds, but did have an effect on decisional bias for the other age groups. Decisional bias was more lax (indicting more *false alarms*) in the intended condition for 10-12 and 14-15 year olds but was more stringent (fewer *false alarms*) for the 16-18 year olds. This pattern of age and condition differs from the pattern of explicit judgments (how bad the act was, how much punishment it deserved, and how bad it is to commit a *false alarm* or a *miss*). Study 2 was conducted to confirm the unexpected findings for the 10-12 year olds. Forty-two children, ages 10-12 viewed the same film, which was framed as unintended, but, resulting either in (a) major or (b) minor damage (fire), approximately half randomly assigned to condition (a) and half to (b). Parallel results were obtained with an earlier study, with lower bias scores (more false alarms) in the major than minor damage conditions. Thus, from both studies, we may conclude that decisional bias is more lenient (resulting in more false alarms) for 10-12 year olds when *either* intent *or* damage is bad.

Children's eyewitness identification has been extensively studied from the point of view of memory, cognition and suggestibility (e.g., Brewer, Weber, Semmler, 2005; Cultice, Somerville, Wellman, 1983; Meissner, Tredoux, Parker, & MacLin, 2005). Research has shown that younger children tend not only to commit more errors than older children or adults, they especially do so (1) more when they are asked to choose from among alternatives (as opposed to free recall) (e.g., Pozzulo & Lindsay, 1999; Roebers, Moga, & Schneider, 2001; Wells & Loftus, 2003); (2) in particular, younger children make more false positive errors or *false alarms* with great confidence (e.g., Pozzulo & Lindsay, 1999; Sporer, Penrod, Read, & Cutler, 1995; Wells & Loftus, 2003; see Keast, Brewer, & Wells, 2007 for mixed results) , and (3) when they are even subtly pressured to positively identify a suspect by anyone in authority, including an interviewer (e.g., Ceci & Bruck, 1993, 1995; Cutler & Penrod, 1995; Muensterburg, 1908).

However, despite the voluminous research literature, very little research has been done within a moral development framework, and yet a moment's reflections makes clear that identifying someone accused of a crime not only involves perception, memory and cognition, but also a *moral decision*. For example, identifying whether someone was at a party you attended does not in-and-of-itself involve moral decision-making whereas identifying whether a person committed a crime (e.g., intentionally set a fire) does, in that a false identification (*false alarm*) risks punishing an innocent person whereas a failure to identify a perpetrator (a false negative or *miss)* involves letting a guilty person go free and perhaps commit another criminal act. [We should note that although most research on eyewitness identification does not frame the study as involving moral decisions, Malpass and colleagues (e.g., Malpass & Lindsay, 1999) have noted that the severity of the

transgression may lead to more false positives, which implies that eyewitness identification may yield to the cry to "justice" as in the form of punishment of the guilty (see discussion.]

Our research strategy focuses on how children's moral orientation might influence their decisional process when identifying a perpetrator. In doing so, we rely both on (1) past research on children's moral development, especially on the shift in moral judgment from early focus on the outcome of the act to later attention to intentions behind the act, in law the *mens rea* (e.g., Piaget, 1932/1965) and (2) signal detection methodology (e.g., Gescheider, 1985; Green & Swets, 1966; Macmillan, N. A., & Creelman, C. D., 2005) to analyze decisional bias. The research reported here thus involves a combination of moral development theory, experimental method, and signal detection measurement.

Our overarching hypothesis is that the moral framing of the event interacting with the developmental status of the eyewitness will affect the eyewitness identification process, in particular the decisional criterion used to make identifications. Our previous research (Spring, Saltzstein & Peach, 2012) has shown that whether the same act is framed as involving moral issues or not affects performance bias, particularly the commission of *false alarms*, but that the effect of the framing interacts with the age of the participant. The findings were that: the ten-twelve year olds had a significantly lower bias score, indicating *more false alarms*, when the outcome (a fire) was very bad although unintended than when the bad outcome was minor although intended; whereas the youngest children, seven-to-nine, committed more *false alarms* regardless of condition, and 13-15 year olds made fewer *false alarms* than both groups of children in both conditions.

The unexpected lack of condition effect on the youngest age group, was disambiguated when their judgments of *false alarms* and *misses* as to which was the worst kind of error to make was assessed (see Methods). The ten-to-twelve year olds responded as expected; they thought misses were worse because, for example, 'if you let the man go free, he might do it again'. In contrast, the older participants generally thought that *false alarms* were worse because 'you could send an innocent man to jail'. However, the youngest children (7-9) responded in ways that showed no attention to the moral consequences of identifying the perpetrator. Judging from the reasons they offered, they did not treat the eyewitness task as a moral decision at all. Rather, they appeared to think of the task as a test of achievement, much as one might think of an academic test or sports performance, i.e., having no moral implications. Why should there be this shift in judgments of which is worse from false negatives (in Signal Detection terms, *misses*) to false positives (*false alarms*)? To provide an answer we need to turn first to earlier research on younger children's moral judgments.

Jean Piaget (1932\1965) provided evidence that younger children give great emphasis to the outcome of the act, especially if that outcome is material, appearing to ignore or give little weight to the intentions behind the act (*mens rea*) and more weight to the outcome of the act when morally judging the act. Although there has been much controversy about this finding (e.g., Karniol, 1978; Keasey, 1978), the preponderance of evidence shows that at least under some conditions intent is either ignored or given less weight by younger children (e.g., Boehm, 1962; Costanzo et al. 1973; Grinder, 1964; Whiteman & Kosier, 1964). Also according to Piaget (1932), younger children also appear to believe that harsher punishment, even if arbitrary, is fairer and more effective

as a deterrent than a more lenient punishment. (Unfortunately, the studies of shifts in moral judgment from outcome to intention have lost favor with researchers in psychology although, of course, intentionality remains a central concern in forensic psychology, especially in the centrality of the *mens rea.*)

From this research literature, given our conceptualization of eyewitness identification as a type of moral decision and decisional bias as a type of implicit decision, we would expect (a) younger children to 'over-guess', i.e., commit more *false alarms,* (b) especially when the outcome of the act is bad.

In the research reported here, the primary measure of moral decision is not the explicit judgment used by Piaget and those that followed him, but rather a more covert or implicit measure revealed in these younger eyewitnesses' face identifications. This distinction between explicit and implicit decisions/behaviors, of course, is well established in the research literature; indeed, it has become pervasive in our understanding of all kinds of decision-making including forensic (e.g., Greenwald & Krieger, 2006,). We now turn to *Signal Detection Theory* as a means of identifying this particular index of implicit decision-making.

Signal detection analysis statistically separates *the general error rate,* measured by *sensitivity (d'),* and *decisional bias (C), the specific tendency to commit false alarms* (i.e., identifying an innocent person as the perpetrator) over and above what one would expect by chance. It is the decisional bias on which we focus in this research since we believe that the decisional criterion is more reflective of the eyewitness's moral orientation while general accuracy or in Signal Detection terminology, *sensitivity* is more reflective of memory and cognitive capacities and limitations. It should be noted that

positive bias indices indicate a prevalence of false negatives or *misses* whereas negative bias indices indicate a prevalence of false positives or *false alarms*, both relative to chance. The usefulness of *decisional bias* as a measure of implicit processes is revealed in the different age X condition patterns that result when this measure is contrasted with what are clearly more explicit measures (past research and below)

In summary, our research suggests that: (1) a moral development framework is useful for examining developmental changes in eyewitness identification, as measured by signal detection analysis; (2) children's understanding of the task changes with age, as reflected in their implicit decisional strategy and their explicit answers to why *false alarms* and *misses* are bad; and, (3) their decisional strategy is evidenced in their performance specifically, decisional *bias.*

Study 1

The question to be addressed in this first study is when outcome or damage is specified, *as it typically is in cases before the court*, the intentions behind the act also influence decisional criteria, or are ignored. Therefore, it is the intentions of the actor (perpetrator) that was experimentally varied holding outcome constant, at a bad (major damage) level in the first study. The questions posed were: (1) would intentions (malevolent vs. unintended) influence eyewitness identification performance, specifically *decisional bias,* which is reflected in the *false alarm* rate differently at different ages? And, (2) whether this variation would affect beliefs about which kind of error is worse, as distinguished from eyewitness performance, differently at different ages?

Method

Participants. One hundred and thirty-eight participants recruited from a private elementary (Jewish after school) and a private (Roman Catholic) high school in New York State participated in a study of eyewitness identification.[1] The participants consisted of 25 7-9's (12 male, 13 female, M = 7.9); 24 10-12's (14 male, 10 female, M = 10.9); 57 14-15's (29 male, 28 female, M= 15.7) and 32 16-17's (12 male, 20 female**,** M = 17.2).

Materials and Procedures. The same filmed act of setting a fire was framed in two different ways: (a) as involving an unintended act, which resulted in a fire that ruined the restaurant (unintended fire); and, (b) as an intended act of trying to set a fire that ruined the restaurant (intended fire) by means of different voice-overs. One stressed the unintended nature of the act and the other the bad intentions motivating the act, both resulting in the same bad outcome. Thus, the format of this study is 2 conditions (framing of film as intentional or unintentional) by 4 age groups.

The participant's task was to choose the perpetrator, who started a fire. Each participant received instructions prior to viewing the sequentially presented 'lineup'. The instructions were: "Now we would like you to pick the man who started the fire. He may or may not be in the photos." Each individual participant was then sequentially shown a series of photos by computer.

The film was professionally shot at a restaurant in lower Manhattan. All the actors were male, Caucasian, 5' 11" to 6'1" in height, ages 22-24, dressed in jeans and crew neck sweaters. There was no audible dialogue among the actors in either film version. The film lasted 127 seconds, with the perpetrator visible for the entire time. He was filmed from various angles, with his face available from right profile for 90 seconds,

left profile for 10 seconds and full profile for 27 seconds. The two 'framed' versions employed in the study are presented below.

Both versions begin with: "Look, there are four men at that table with a lit birthday cake! It must be someone's birthday. Uh oh, there is an announcement that the restaurant is closing. They must leave quickly. They have no time to enjoy their cake!" (They blow out the candles and one man throws the cake in the garbage. The candles are smoking.) "That guy is throwing the cake away so that they can get out of the restaurant quickly." Then the text proceeds differently in the two conditions:

A. Voice over for Film Version 1 (*Neutral Intentions with Bad Outcome*): "Uh, oh! He doesn't see that the candles are still burning and smoking when he throws out the cake."

B. Voice over for Film Version 2 (*Bad Intentions with Bad Outcome*): (same stem) "Hey, that one guy is really angry that they can't eat the cake. So, he throws the cake with the candles still burning and smoking into the garbage can. He really hopes that the restaurant catches on fire.

In both the Intended and Unintended versions, the narrator adds "Oh, look, the garbage can catches fire and the restaurant gets ruined!" (Show smoke in the garbage can. Fade to black. Sirens heard.)

Procedures.

To check on moral judgments of the event, after viewing the film, the participants were first asked three questions in counter-balanced order; "How bad was the man in the

film?", "How bad was what the man did in the film?", and "How bad was what happened to the restaurant?" In addition, each participant was asked what kind of punishment, if any, would he/she recommend: No punishment, Community Service, a $5,000 fine, or 1-5 years in jail. The nature of "community service" and the idea of this being a *scale of severity of punishment* was carefully explained to the participants, especially the younger ones, until the experimenter (T.S.) was convinced that they understood the task.

Following the punishment scale, the participants were given the eyewitness identification task. The task was to choose the perpetrator, who either intentionally or unintentionally started a fire. Each participant received the following instructions prior to viewing the lineup. "Now we would like you to find the man who started the fire. He may or may not be in the photos." Each participant was then sequentially shown a series of photos (by computer), which included (a) the perpetrator, (b) each of the three other men at the restaurant, (c) the waiter (bystander), and (d) a man, who was not in the film at all.

The Signal Detection procedure was used by presenting the six individuals each presented frontally and in right and left profile. The series again consisted of three series of trials of the 18 photos (6 individuals by 3 angles); yielding 54 judgments in all, randomly ordered, with the constraint that photos of the same person were never presented twice in a row. All photos were head and shoulder shots with left/right and frontal profiles. Lineup targets were dressed in identical dark blue t-shirts and were filmed against the same background. All participants were familiarized with the procedure so that they were proficient in its use before the actual judgments began. This required a short training procedure for the youngest participants in which they were asked about something that they were certain was true and something they were certain was

untrue and shown how to represent each option. *It should be noted that in Signal Detection analysis, a higher bias score indicates fewer false alarms.*

At the end of photo-identifications, each participant was asked how bad it would be to say someone did it when he didn't (a *false alarm*) and how bad would it be to say someone did not do it when he did (a *miss*), and why it would be bad? These were scored in two ways: (1) dichotomously between those who gave a morally relevant reason, whether focusing on not accusing an innocent person or letting a guilty person to go free, versus those that gave a non-morally relevant reason, usually one that focused on the achievement aspect of performance without any consideration of the consequences for the accused or for the larger society, and (2) where -1 indicated a moral reason which focused on the dangers and undesirability of committing a miss, i.e., letting a guilty person go free, 0, a non-moral, mixed or confused reason, and +1 a moral reason focusing on the dangers and undesirability of sending an innocent person to jail.

Results

Eyewitness Performance: There was a small but significant effect of condition on sensitivity, F (1, 130) = 4.131, p <.05, η_p^2 =.03, with sensitivity being higher in the Unintended fire condition, and a non-significant trend for an interaction effect of age and condition on *sensitivity* (*d*') *F* (1, 130) = 2.24, *p* <.09, η_p^2 =.05. Of greater interest were significant effects on bias when " very sure it is the man" was contrasted with the other three alternatives (C3) for condition, *F*(1, 137) = 4.448, *p* < .037, η_p^2=.033 and for age, *F*(1, 137) = 5.329, *p* < .5.329, p < .002, η_p^2 = .110, which were superseded by a significant interaction between age and condition, *F*(1, 137) = 4.49, *p* <.005, η_p^2 = .094, as depicted in Figure 1. Bias scores were significantly lower, indicating *more false*

alarms, in the Intended than in the Unintended condition at ages 10-12 and 14-15, by planned t-tests, whereas bias scores were significantly higher for the 16-18 year olds indicating fewer *false alarms*. As in the earlier study there was no significant effect of framing condition for the 7-9 year olds.

----------Insert Figure 1 about here----------

Moral Judgments of the perpetrator ("how bad was the man (actor)". When the participants were asked to explicitly judge the perpetrator as described in the two conditions, the results are still different. Contrary to expectations, participants at all ages explicitly judged the bad intended perpetrator as worse than the non-intended (negligent) one, F (1, 137) =62.68, p<.0001, η_p^2 =.325. See Figure 2.

----------Insert Figure 2 about here----------

Recommended Punishment. However, in sharp contrast, when asked what punishment would be most appropriate, the youngest (7-9 year old) children did *not* differentiate between the intended and unintended acts at all whereas the ten-to-twelve years old and the two adolescent groups did, as expected (Figure 3). Treating the four alternatives as a 4-point scale (0-3), we found a significant effect of condition, F (1, 137) = 20.5, p<.0001, η_p^2 = .136 and a borderline interaction effect between age and condition, F (1, 137) = 2.13, p< .10, η_p^2 = .047. Figure 3 suggests that the condition effect might be greatest for the 10-12 year olds but non-existent for the 7-9 year olds, thus paralleling the pattern for eyewitness decision-making (bias).

----------Insert Figure 3 about here----------

Concern for the innocent vs., the guilty. Here, the measure of concern for protecting the innocent, as described in the Methods section (*which kind of error is*

worse?), reveals main effects for condition, $F\ (1, 137) = 9.68$, $p < .001$, $\eta_p^2 = .069$, but unlike our earlier studies age does not have a main effect, $F\ (1, 137) = 1.119$, $p > .20$. Nor is there an interaction effect, $F\ (1, 137) = 1.49$, $p > .20$. However, when scored according to whether they gave a moral reason at all, regardless of whether it was to justify choosing a *false alarm* or a *miss* as the worse error to make, labeled *Moral Reasoning* (Figure 4) show that, like in the previous results, moral responses to this question (i.e., responses which focus on either the unfairness of convicting an innocent person or of letting a guilty person go free) increase from the 7-9 year olds to the other three age groups. $F\ (3, 130) = 10.34$, $p < .0001$, $\eta_p^2 = .193$.

----------Insert Figure 4 about here----------

Is there any relationship between stated concerns for the innocent vs. concerns for letting the guilty go free and bias (C3). A point-biserial correlation between these judgments and bias in performance on the task reveals a significant correlation, $r = .249$, $p < .003$. This further supports our overall hypothesis although it should be noted that age might complicate this relationship.

Discussion

In the first study reported here, eyewitness identification was compared for the same act framed as either (a) malevolently intended or (b) unintended, both resulting in the same major damage. With damage controlled, intentions had no effect on the decisional criterion for the 7-9 year olds; however, 10-12 and 14-15 year olds used a looser decisional criterion, resulting in more *false alarms* when intent was malevolent than when innocent; however, 16-18 year olds did the reverse, using a more stringent criterion, fewer *false alarms,* when the act was clearly intended. The fact that the results

for *bias* or decisional criterion was significant only when "very sure it was the man" was contrasted with the other three is consistent with prior findings that younger children are particularly prone to erroneously decide that it 'definitely was the person' (e.g., Pozzulo & Lindsay, 1999) and with our past findings.

In the 2012 study the ten-twelve year olds used a looser decisional criterion (indicated by the bias score) when an unintended act resulted in major damage; however, in study1 here an intended act resulting in major damage also produced lower bias scores. Was it the intention or the outcome, which produced the lower bias scores (more false alarms)? Therefore, we decided to replicate the findings from the earlier study (Spring et al., 2012) contrasting major vs. minor damage both for an unintended act. In the second study, here, two framing conditions of the same act were contrasted: both unintended but where one condition featured major (material) damage and the other, minor damage. If the results replicate the earlier study, this would help confirm the conclusion that (a) whether outcome is bad (involving major material damage) but unintentional or intentions are bad the 10-12 year old children implicitly use a looser criterion to identify with certainty; however, also (b) when intent is malevolent and outcome bad, then the 10-12 year-old children also use a looser criterion to identify the culprit. In other words, whatever element stresses the "badness of the act", *whether the intentions or the outcome* (damage), induces a looser decisional criterion and therefore more *false alarms* or false recognitions for these age groups.

Study 2

We collected another sample of 10-12 year olds comparing two framings: both involving neutral or innocent intentions but one version with little bad outcome or

damage (fire) and the other version with a major bad outcome (fire). The purpose of this study was to help disambiguate the results for this age group (above).

Method

Participants –Forty-two 10-12 year olds were recruited from two Roman Catholic parochial elementary schools in New York City to participate in the study. Both parental consent and child assent was obtained for each participant. The sample consisted of forty-two 10-to12 year olds (*M* = 11.29, *SD* =.94, 16 males & 26 females). Most of the children were of African-American or Latino ethnic background and from lower SES.[2] Half of the participants were randomly assigned to small damage (fire) condition and half to the large damage (fire) condition.

Design and Stimulus materials - The same filmed act of setting a fire was again framed in two different ways by means of a voice-over: as either (a) an unintentional wrong doing with a serious consequence (a fire that ruined the restaurant) or (b) an unintentional wrong doing with a minor consequence (one that only damaged the wastebasket but left the restaurant undamaged). The film and procedures were the same as those that had been used in study 1. Depending on the version (condition) the act either results in a major fire, which burns down the restaurant *(very bad outcome)* or a minor fire (*not bad outcome*) that just results in a little smoke. In the past study the actor's intention and the outcome had been confounded by design. However, in the present study it was the outcome (a major vs. a minor fire) that was varied with intentionality controlled at the unintentional level. Thus, the voice-over was the same as in the first study but with different endings in the two conditions:

[2] Although the SES and ethnicity of this sample is different from the sample in study 1, our past research has shown that while ethnicity/SES may have a general main effect on the dependent variables, it does not interact with condition or age.

A. Voice over for Film Version 1 *(Neutral Intent with not a bad outcome):* "He doesn't see that the candles are still burning and smoking when he throws out the cake. Oh look the trash is smoldering but the restaurant did not catch fire."

B. Voice over for Film Version 2 *(Neutral Intent with bad outcome):* "He doesn't see that the candles are still burning and smoking when he throws out the cake. Oh look the trash is smoldering and the restaurant is ruined."

Once the participants completed the identification portion of the task, they were asked how serious false alarms and misses are, in an age-appropriate manner (as described above). At the end of this task, each participant was asked the same additional questions: how bad was (a) a *false alarm* and (b) a *miss*. Then the participant was asked (c) which kind of error was worse and why?

Results

Eyewitness Performance: There was again a significant condition effect on bias when "very sure it is the man" was contrasted with the other three alternatives (C3), $t(41) = 7.795$, $p < .008$, $\eta_p^2 = .163$.

Moral Judgments of the act ("how bad was what the man did"). When the participants were asked to explicitly judge the perpetrator's act as described in the two conditions, the comparison was also significant, $t(1, 41) = 27.16$, $p < .001$, $\eta_p^2 = .144$. However, there were no significant condition effects for either punishment or moral judgment of the perpetrator ("how bad was the man").

General Discussion

What conclusions are we to draw from the findings reported here and those from the previous paper? First, most generally, the decisional criteria implicitly used by

children or adolescents when identifying a perpetrator are substantially influenced by the moral nature of the act and the moral orientation of the eyewitness. Thus, in the prior studies, (1) whether the actor being identified committed a moral transgression or a morally neutral act influenced the decisional criterion implicitly used by children 10 and over; but unexpectedly there was no difference for the youngest children (ages 7-9). When the children were asked how bad a false positive and a false negative were and why, their reasons strongly indicated it was because the latter did not appreciate the decision as being moral, i.e., having consequences for others (Spring et al., study 1).

(2) Instructing children either of the dangers of false positives or false negatives has no discernible influence on the decisional criteria used although socio-economic class/ethnicity does, with decisional criteria being less stringent (indicated by more false alarms) for lower SES/minority than higher SES/majority children (Spring et al., 2012, Study 2). However, the demographic variable did not interact with age and condition, but operated as a main effect.

(3) Eyewitnesses age 10-12 appear to use a looser decisional criterion when the actor unintentionally produced great damage than when the actor intentionally produced little damage, but the reverse was true for children age 13-15. Again, there was no effect for the youngest age group studied 7-9 year olds (Spring et al., 2012, study 3).

As to the two studies reported here: (4) in the first study, eyewitnesses 10-12 and 13-15 appear to use a looser criterion when the intentions are malevolent than when the act was unintended, but resulted in a bad outcome, in the form of material damage. However, the reverse was true for the 16-18 year olds. The latter finding may be because more is at stake when *mens rea* has been established in the form of bad intentions and

therefore the culpability is greater and so is the punishment and perhaps one must use greater caution in identifying the perpetrator. The results for the 10-12 year olds was puzzling in that we had expected them to ignore intentions and therefore not use different decisional criteria in the two conditions.

(5) However, in the second study, eyewitnesses 10-12 years old also used a looser criterion when outcome was bad even if unintended, confirming the results in the earlier study.

What is the most parsimonious conclusion to be drawn from the two studies reported here and the prior studies, and especially the apparently contradictory results for the 10-12 year olds? It is that whatever feature of the act, *intention or outcome,* is bad, will elicit a lower bias score indicating more false alarms for the 10-12 year olds.

So it seems to be that whatever feature of the act, the intentions behind it or the outcome of it, is bad, decisional criteria are weakened resulting in more false alarms. Doesn't this contrast what one should expect from Piaget's early finding that young children emphasize outcome whereas older children emphasize intention in assigning blame and imposing punishment? However, some reflection indicates that this may really be compatible with a Piagetian explanation after all.

What Piaget reported was a gradual shift from stressing outcome to intentions. However, Piaget's (later) theory stresses structural change as key to development and the shift from focusing on outcome to focuses on intention involves a shift in content not structure. (He sometimes even referred to his earlier theorizing as his own 'pre-operational' stage.) A genuine structural shift would rather involve a change from treating outcome and intentions as two separate negative features to integrating them. Ten

to 12 years have difficulty doing this and thus whatever negative feature is prominent, it will implicitly lead them to use a looser criterion, thus sacrificing the possibility of convicting an innocent person to the need to convicting someone. [3]

It should be noted that, the studies reported here are not typical studies of moral judgment and reasoning, based on explicit verbal responses. Rather, they may be understood to provide implicit judgments of culpability, which are not completely under conscious control and thus contrast with the more *explicit* or conscious measures of culpability (e.g., such as the explicit moral judgments or judgments as to which kinds of errors, *false alarms or misses,* are worse). Thus, to recapitulate the relevant findings: (1) all age groups judged the bad intended act as worse than the innocently intended act. (2) But, when asked explicitly for an appropriate punishment, all but the youngest group judged the bad intended act as deserving of more punishment than the unintended act. (3) Also, when asked which kind of error, *false alarms or misses,* are worse we did not obtain the previous shift from *misses* to no difference to *false alarms* with age regardless of the framing of the event. (4) However, the shift from non-moral reasons to moral reasons (whether focusing on the danger of letting a guilty man go free to convicting an innocent man) was marked when comparing the youngest participants (7-9) to the other three age groups. Thus, different measures, more explicit or more implicit, elicit different responses and different effects of age and framing condition.

The implications of these findings for the real-world of eyewitness identification are, in general, that the process of eyewitness identification is not independent of the moral nature of the crime or transgression, and, in particular, on whether the crime or transgression is framed or presented as due to the eyewitness's intentions behind the act

[3] We wish to thank Brian Cox for suggesting this explanation.

and the severity of the outcome resulting from the act. We believe that not only are these findings important for the study of the development of moral decision-making but they also have implications for the real-world of forensic decision-making.

References

Boehm, L., (1962) The development of conscience: A comparison of American children of different mental and socio-economic levels. *Child Development* 33(3) 575-590.

Brewer, N., Weber, N., & Semmler, C. (2005) "Eyewitness Identification" pp. 177-221 in Brewer, N. and Williams, K. D. (Eds.) *Psychology and Law: An empirical perspective.* New York: Guilford Press.

Ceci, S. J., & Bruck, M. (1993). Suggestibility of the child witness: A historical review and synthesis. *Psychological Bulletin, 113*(3) 403-439.

Ceci, S.J., Bruck, M. (1995). Jeopardy in the courtroom: A scientific analysis of children's testimony. Washington, DC: American Psychological Association.

Costanzo, P. R., Coie, J. D., Grumet, J. F., & Farnill, D. (1973). A reexamination of the effects of intent and consequence on children's moral judgments. *Child Development*, 154-161.

Cultice, J. C., Somerville, S. C., and Wellman, H. M. (1983). Preschoolers' Memory. Monitoring: Feeling-of-Knowing Judgments. *Child Development*, 54, 1480-1486.

Cutler, B. L. & Penrod, S. D. (1995). Mistaken Identification: The eyewitness, psychology, and the law. New York: Cambridge University Press.

Gescheider, G. A., *Psychophysics : Methods , Theory , and Application* , 2d ed ., Lawrence Erlbaum and Associates , Hillsdale , N . J., 1985, pp 174 – 191.

Green, D. M., & Swets, J. A. (1966). Signal detection theory and psychophysics. New York: John Wiley.

Greenwald, A. G., & Krieger, L. H. (2006) Implicit bias: Scientific Foundations. *California Law Review, 94,* 945-967.

Grinder, R.E. (1964). Relations between behavioral and cognitive dimensions in middle childhood. *Child Development,* 881-89.1

Karniol, R. (1978) Children's use of intention cues in evaluating behavior. *Psychological Bulletin,* 85, 76-86.

Keasey, C. B. (1978). Children's developing awareness and usage of intentionality and motive. In C. B. Keasey (Ed.), Nebraska Symposium on Motivation (Vol. 25, pp. 19-260). Lincoln: University of Nebraska Press.

Keast, A., Brewer, N., & Wells, G. L. (2007). Children's metacognitive judgments in an eyewitness identification task. *Journal of Experimental Child Psychology*, *97*(4), 286-314.

Macmillan, N. A., & Creelman, C. D. (2005) Signal Detection theory:: A user's guide. 2nd edition.

Malpass, R. S., & Lindsay, R. C. (1999) Measuring line-up fairness. *Applied Cognitive Psychology, 13, 51-57.*

Meissner, C. A., Tredoux, C. G., Parker, J. F., & MacLin, O. (2005). Eyewitness decisions in simultaneous and sequential line-ups: A dual-process signal detection theory analysis. *Memory and Cognition, 33,* 783-792.

Munsterberg, H. (1908) *On the witness stand: Essays on psychology and crime.* New York: Clark, Boardman, Doubleday.

Piaget, J. (1932/1965). *The moral judgment of the child.* New York: New York Free Press.

Pozzulo, J. D. & Lindsay, R. C. L., (1999). Elimination line-ups: An improved identification for child eyewitnesses. *Journal of Applied Psychology, 84*(2), 167-176.

Roebers, C. M., Moga, N., & Schneider, W. (2001). The role of accuracy and motivation on children's and adults" event recall. *Journal of Experimental Child Psychology, 78*(4), 313-329.

Sporer, S.L., Penrod, S.D., Read, J. D., & Cutler, B. L. (1995). Choosing, confidence, and accuracy: A meta-analysis of the confidence-accuracy relation in eyewitness identification studies. *Psychology Bulletin, 118,* 315-327.

Spring, T, Saltzstein, H., & Peach, R. (2012) Children's eyewitness identification as moral decision-making. *Applied Cognitive Psychology, 27* (2), 139-149.

Wells, G. L. & Loftus, E. F. (2003). Eyewitness memory for people and events. In A. Goldstein (Ed.), *Comprehensive handbook of psychology*, Volume 11, *Forensic psychology*. New York: John Wiley and Sons.

Whiteman, P.H. & Kosier, K.P. (1964). Development of children's moralistic judgments: Age, sex, IQ, and certain personal-experiential variables. *Child Development,* 843-850.

Appendix: Computer Practice

1. *'Click the button that would tell me that you were very sure about something - like your name';*
2. *'Click the button that would tell me that you are just a little bit less sure than the last time';*
3. *'Click the button that would tell me how sure you are that today is Sunday';*
4. *'Click the button that would tell me how sure you are just a little bit less sure that it isn't Sunday'.*

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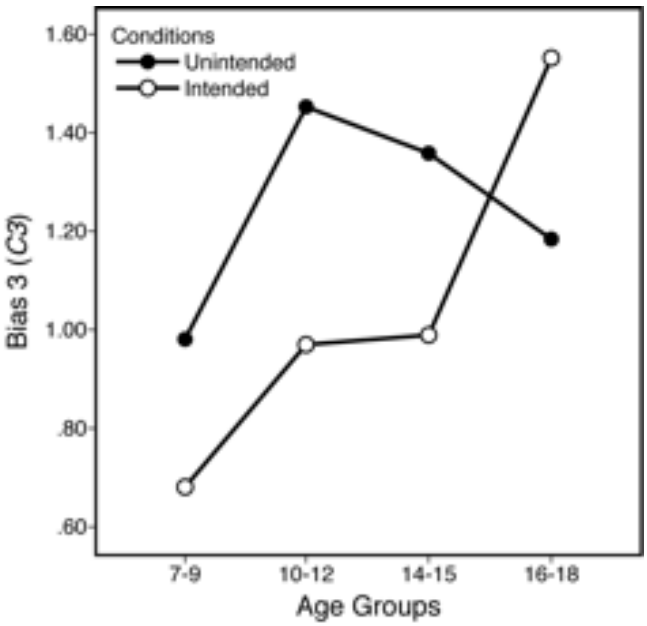

Figure 1. . Relationship between Bias 3 (C3) and age by condition. C3 = indicates the number of false alarms - misses, where a "very sure it is" counts as a positive identification. Higher Bias scores indicate fewer false alarms relative to misses, and lower Bias scores, more false alarms relative to misses.

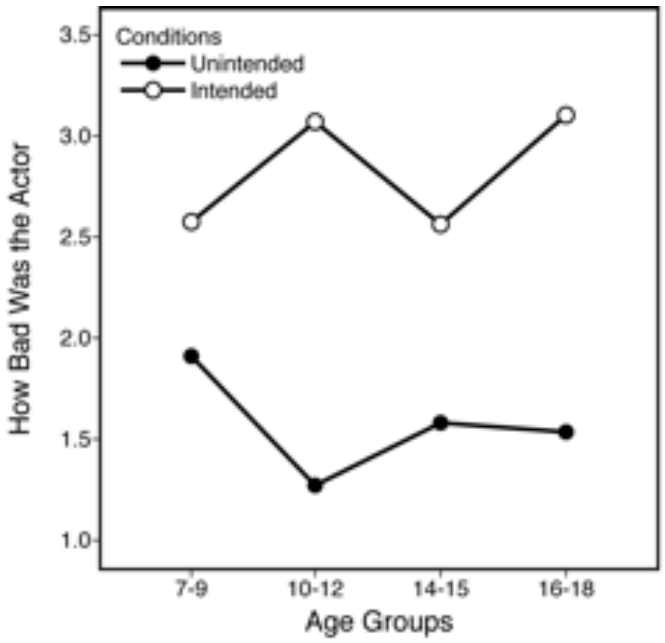

Figure 2. Relationship between "How bad was the actor" and age by condition. (Where 1 = not bad, 2 = a little bad, 3 = pretty bad, & 4 = very, very bad).

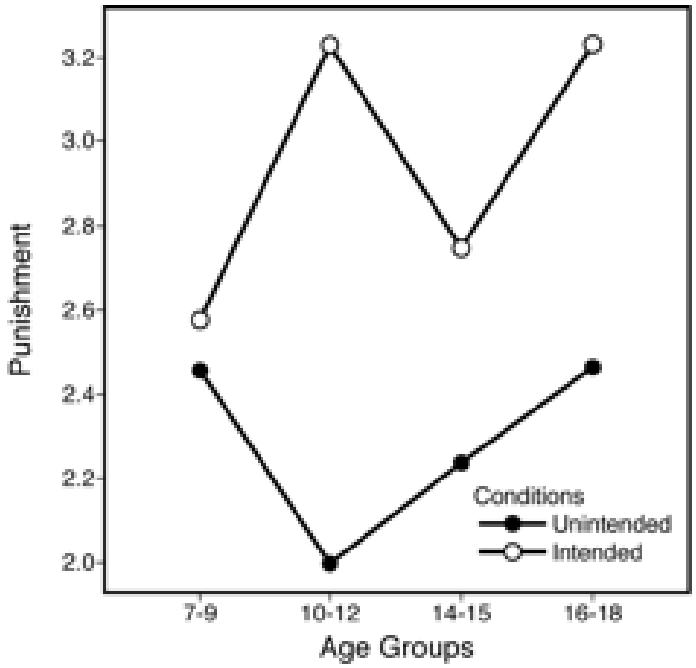

*Figure 3.*Relationship between recommended punishment and age by condition. (Where 1 = no punishment, 2 = community service/picking up trash on the highway, 3 = $5000 fine, & 4 = 1-5 years in jail).

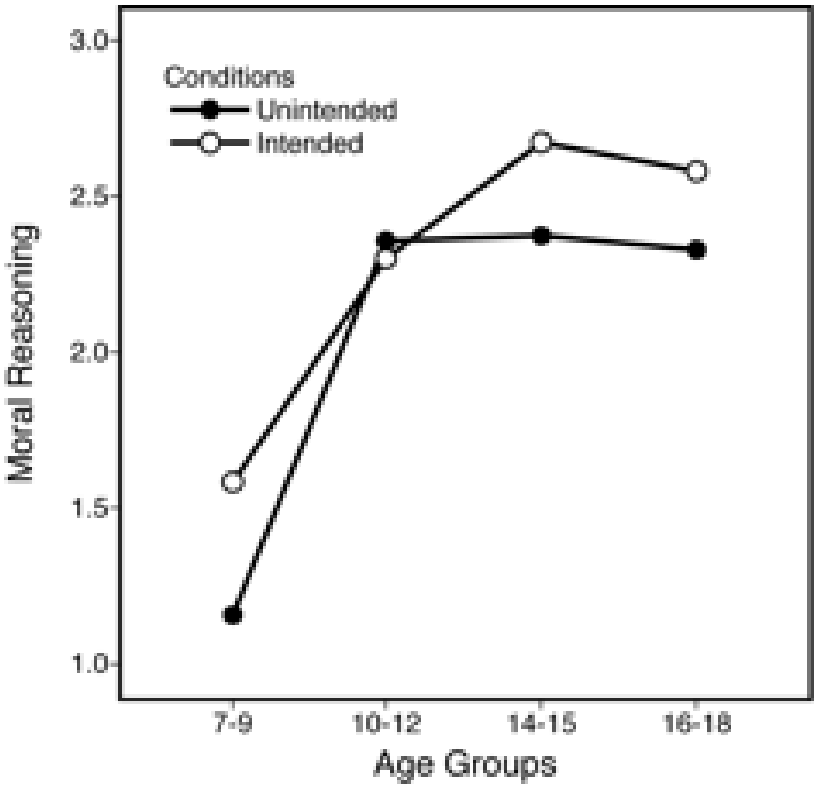

Figure 4. Moral Reasoning and age by condition. A higher score indicates a morally-relevant response.