Who am I? The role of moral beliefs in children's and adults' understanding of identity

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ARTICLE INFO

ABSTRACT

Adults report that moral characteristics—particularly widely shared moral beliefs—are central to identity. This perception appears driven by the view that changes to widely shared moral beliefs would alter friendships and that this change in social relationships would, in turn, alter an individual's personal identity. Because reasoning about identity changes substantially during adolescence, the current work tested pre- and post-adolescents to reveal the role that such changes could play in moral cognition. Experiment 1 showed that 8- to 10-year-olds, like adults, judged that people would change more after changes to their widely shared moral beliefs (e.g., whether hitting is wrong) than after changes to controversial moral beliefs (e.g., whether telling prosocial lies is wrong). Following up on this basic effect, a second experiment examined whether participants regard all changes to widely shared moral beliefs as equally impactful. Adults, but not children, reported that individuals would change more if their good moral beliefs (e.g., it is not okay to hit) transformed into bad moral beliefs (e.g., it is okay to hit) than if the opposite change occurred. This difference in adults was mediated by perceptions of how much changes to each type of belief would alter friendships. We discuss implications for moral judgment and social cognitive development.

1. Introduction

Victor Hugo's *Les Miserables* describes the plight of Jean Valjean, who escaped imprisonment and started a new life as Monsieur Madeleine, a factory owner and well-liked mayor. All was going well for Valjean until he learned that another man, presumed to be Valjean, had been arrested in his place. Despite his temptation to continue living outside the prison walls, Valjean ultimately decided to turn himself in to the police. In the Broadway musical based on Hugo's novel, Valjean asked himself, "Who am I?" and ultimately answered that he was Jean Valjean, the man who must take responsibility for his transgressions, and not Monsieur Madeleine, the blameless factory owner. Valjean perceived that his moral convictions made him who he was, and he realized that he was not the kind of person who could allow an innocent man to suffer in his place.

Valjean's perception that his moral character was central to his identity is consistent with a growing body of evidence in psychology. Adults perceive morally relevant characteristics to be more central to identity than other individual traits, including personality traits, memories, preferences, cognitive capacities, perceptual abilities, and physical features (Strohminger & Nichols, 2014). Furthermore, loss of moral faculties makes dementia patients seem less like themselves than loss of other cognitive faculties, including memory and executive function (Strohminger & Nichols, 2015). Finally, adults judge that other people and they themselves would change more if their widely shared moral beliefs (such as those concerning murder), rather than their controversial moral beliefs (such as those concerning abortion), were altered (Heiphetz, Strohminger, & Young, 2017). Crucially, this work (Heiphetz, Strohminger, & Young, 2017) also showed that the difference between widely shared and controversial moral beliefs is mediated by perceptions of how much changing each type of belief would alter relationships with others. This work suggests that characteristics that are most closely associated with interpersonal relationships may be perceived as especially central to identity.

When thinking about what makes individuals who they are, adults seem to place particular emphasis on *good* moral characteristics (De Freitas et al., in press; De Freitas & Cikara, 2018; De Freitas, Cikara, Grossman, & Schlegel, 2017). In one line of work, adults reported that good characteristics, such as the belief that engaging in dishonest business practices is wrong, reflected an individual's "true self" more

strongly than bad characteristics, such as the belief that engaging in dishonest business practices is not wrong (Newman, Bloom, & Knobe, 2014). Adults also reported that fictional characters would undergo more dramatic identity change if they underwent a change for the worse rather than a change for the better, although this experiment tested changes in characteristics (e.g., cruelty, kindness) rather than beliefs (Tobia, 2016).

This past work provides a crucial foundation to the study of perceptions regarding the "true" self. However, these prior studies have all tested adults. The current work is the first to unite these studies with a developmental approach to investigate two alternative hypotheses concerning age differences in perceptions of the role that morality plays in identity. We tested 8- to 10-year-olds and adults to determine the role that changes associated with adolescence (a developmental window from approximately 12 to 17 years) play in the perception that widely shared moral beliefs are particularly central to identity. If the changes that occur during adolescence affect adults' perception that widely shared moral beliefs are especially central to identity, then 8- to 10-year-olds—who have not yet experienced these changes—should not perceive widely shared moral beliefs as especially central. However, another possibility is that judgments of the centrality of morality to identity are in place before adolescence and are not affected by the changes that take during this developmental window. In this case, 8- to 10-year-olds should respond similarly to adults (e.g., by reporting that people would change more if their widely shared moral beliefs, versus their controversial moral beliefs, changed).

In support of the first possibility—that 8- to 10-year-olds and adults have different perceptions of the role that morality plays in identity—is research showing that identity undergoes important changes during the adolescent years (Erickson, 1968; Hitlin, Brown, & Elder Jr, 2006; Klimstra, Hale III, Raaijmakers, Branje, & Meeus, 2010; Kroger, Martinussen, & Marcia, 2010; Steinberg, 2013). In particular, adolescents view themselves in terms of moral characteristics more than do younger children (Hardy & Carlo, 2011). In one study supporting this view, participants told the experimenter about a time that they hurt or helped one of their friends (Recchia, Wainryb, Bourne, & Pasupathi, 2015). Sixteen-year-olds mentioned more self-related insights (e.g., "I reacted wrong") than did seven-year-olds, suggesting that morally relevant behaviors affect adolescents' views of themselves to a greater extent than younger children's views. Another line of work (Nunner-Winkler, 2007) suggests that adolescents feel a greater sense of responsibility for doing the right thing. Participants in this longitudinal study indicated how a character in a story would feel after doing something wrong. Most 4- and 6-year-olds attributed positive emotions to the transgressor, whereas most 17- and 22-year-olds attributed negative emotions to this character. Nunner-Winkler (2007) interpreted these effects as reflecting participants' own propensities (e.g., children may have reported that the transgressor felt the same emotions they themselves would feel if they transgressed).

Several factors could account for changes in moral identity during adolescence, including adolescents' (versus younger children's) greater sensitivity to the needs and viewpoints of others and adolescents' greater sense of autonomy (Hardy & Carlo, 2011). For example, consider Dominique, a fourteen-year-old who notices that her friend is wearing a jacket that she herself wanted to purchase but could not afford. Dominique likely realizes that taking her friend's jacket without permission would upset her friend, and she also likely views herself as having agency in this situation—that is, Dominique may perceive that she can choose to take her friend's jacket, but she can also choose to control that impulse. Making the moral choice can reinforce Dominique's moral identity. In contrast, a younger child may not give much thought to the ways in which her actions would affect her friend; even if she considers this to some extent, she may be less accurate than Dominique at inferring the negative consequences for her friend. Similarly, a younger child may not view herself as particularly agentic because she has not yet learned that she can resist temptation. Thus, this

past work on changes in moral identity during adolescence suggests that 8- to 10-year-olds and adults may differ in the extent to which they perceive moral beliefs to be a central component of identity.

An alternative possibility is that 8- to 10-year-olds, like adults, would judge that widely shared moral beliefs are central to identity. This possibility stems from work showing that some moral judgments and behaviors emerge early and persist throughout development. Infants and adults prefer helpers to hinderers (Hamlin, 2013). Toddlers, like adults, cooperate with others and intervene in third-party transgressions (Jordan, Hoffman, Bloom, & Rand, 2016; Vaish, Missana, & Tomasello, 2011; Warneken & Tomasello, 2006). In other words, some aspects of morality are in place both before and after adolescence. Furthermore, preadolescents and adults also have somewhat similar experiences of others' morality. Specifically, both children and adults have observed others acting in line with their moral beliefs; from early childhood, people have observed others helping and refraining from harm. These experiences may reinforce the notion that morality is a central component of who someone is.

To investigate the extent to which children's judgments regarding the role of moral beliefs in identity mirror or differ from those of adults, Experiments 1–2 tested 8- to 10-year-olds and adults. Experiment 2 also built on Experiment 1 and on prior work regarding adults' perceptions of the "true" self (Heiphetz, Strohminger, & Young, 2017; Strohminger & Nichols, 2014, 2015) by asking whether participants' judgments are influenced by the valence of another person's widely shared moral belief. Specifically, Experiment 2 examined perceptions of transformations in which people acquire versus give up beliefs that are widely perceived as good in their culture.

As discussed above, adults judge that widely shared moral beliefs (Heiphetz, Strohminger, & Young, 2017) and good moral beliefs (Newman et al., 2014) are especially central to identity. However, this prior work did not investigate how people might judge cases in which a person used to hold such beliefs but no longer does versus cases in which a person comes to hold such beliefs after previously holding other types of beliefs. In both of these situations (a switch to or away from a good, widely shared moral belief), the person held a good, widely shared moral belief at one point in time. Perhaps participants care only that this type of moral belief ever existed in a person's mind and pay less attention to exactly when that point was. In this case, participants should not distinguish between a case in which a person used to hold a good belief but changed to holding a bad belief and a case in which a person underwent a change in the opposite direction. An alternative possibility is that participants distinguish between contexts in which people adopt good beliefs (situations in which the current self reflects the "true" self, since the "true" self is perceived as morally good [e.g., De Freitas et al., 2017]) and contexts in which people adopt bad beliefs (situations in which the current self might be perceived as an abandonment of the "true" self). Experiment 2 tested these possibilities by presenting participants with one set of items in which people used to hold beliefs that are widely considered good in their culture but now hold beliefs that are considered bad and also a separate set of items in which people used to hold beliefs that are considered bad in their culture but now hold beliefs that are considered good. (For brevity, we refer to these beliefs as "good" versus "bad.")

In sum, the current work extended previous research on adults' perceptions of the "true" self in two ways. First, Experiments 1–2 tested 8- to 10-year-olds and adults to determine the extent to which changes that occur between these two developmental windows—i.e., changes that occur during adolescence—influence judgments about the role that moral beliefs play in identity. Second, Experiment 2 also asked whether children and adults judge that characters changed more if their good beliefs shifted to bad beliefs or vice versa.

1.1. Experiment 1

The purpose of Experiment 1 was to determine the extent to which

8- to 10-year-olds, like adults, perceive widely shared moral beliefs to be especially central to identity. Because morality and identity become more closely intertwined during adolescence than during earlier childhood (Hardy & Carlo, 2011; Nunner-Winkler, 2007; Recchia et al., 2015), preadolescents may perceive the link between moral beliefs and identity differently from adults. A different possibility is that children and adults alike would perceive widely shared moral beliefs as central to identity, indicating that the changes that occur during adolescence may not influence this perception.

In line with prior work (Heiphetz, Strohminger, & Young, 2017; Heiphetz & Young, 2017), we presented participants with widely shared moral beliefs, controversial moral beliefs, memories, and preferences. Widely shared moral beliefs concerned topics that elicit high social consensus, such as whether it is wrong to hit others. Controversial moral beliefs concerned topics that elicit a high level of disagreement across individuals. Relevant items used in previous research on perceived identity change were geared toward adults (e.g., abortion, the death penalty; Heiphetz, Strohminger, & Young, 2017). However, the present experiment used only items that are appropriate for children as well as adults (e.g., telling prosocial lies); we drew these items from prior work on children's moral cognition (Heiphetz & Young, 2017; Warneken & Orlins, 2015). To measure identity centrality, we asked how much a person would change if each belief changed. The more participants report that changing one belief would change a person overall, the more central that belief is judged to be to identity.

All measures, manipulations, and exclusions are reported below for both Experiments 1 and 2. In both experiments, statistical analyses on the original datasets were conducted only after all data in those datasets had been collected. During the review process, we added an additional condition to Experiment 1, which we then analyzed together with the initial data (see below).

2. Method

2.1. Participants

We sought to include approximately 50 participants per cell based on recommendations for psychology research (Lakens & Evers, 2014; Simmons, Nelson, & Simonsohn, 2013). We over-recruited by a small margin out of concern that data from some participants would not be usable (e.g., due to a failure to correctly answer an attention check question; see below).

The child sample included 62 children between 8 and 10 years old (M_{age} = 8.92 years, SD_{age} = .71 years). Here and in Experiment 2, parents provided written consent for their children, and children provided verbal assent. Children were recruited in a museum in the northeastern United States and received a sticker for their participation. One additional participant was excluded from analyses due to an autism diagnosis revealed after the testing session, and two additional participants were excluded due to parental interference. On a demographic questionnaire that parents completed during the session, 50% of participants were identified as female and 48% were identified as male; the remaining parent did not identify their child's gender. Furthermore, parents identified their children as White or European-American (66%), Black or African-American (8%), Asian or Asian-American (3%), Multiracial (5%), and "Other" (7%); the remaining parents did not identify their children's race. Nineteen percent of parents additionally identified their children as Hispanic or Latino/a.

The original adult sample included 104 participants between 19 and 69 years old (M_{age} = 34.46 years, SD_{age} = 10.98 years). Adults were recruited via Amazon Mechanical Turk, which was configured (here and in Experiment 2) so that only United States residents whose approval rating was at least 95% could participate. Each respondent received $1.35. Here and in Experiment 2, informed consent was obtained prior to the start of each experimental session. On a demographic questionnaire completed at the end of the session, 45% of adults self-

identified as female and 55% self-identified as male. Furthermore, adults self-identified as White or European-American (86%), Black or African-American (4%), Asian or Asian-American (6%), Multiracial (3%), and "Other" (2%). Eight percent of adults additionally self-identified as Hispanic or Latino/a.

The second adult sample (collected in response to feedback received during the review process, see below) included 69 participants between 20 and 64 years old (M_{age} = 35.26 years, SD_{age} = 9.90 years). Recruitment was identical to the original adult sample, except that participants in the new dataset received $1.00. On a demographic questionnaire completed at the end of the session, 55% of adults self-identified as female and 45% self-identified as male. Furthermore, adults self-identified as White or European-American (67%), Black or African-American (23%), and Asian or Asian-American (10%). Six percent of adults additionally self-identified as Hispanic or Latino/a.

Data from six additional adults in the original dataset and 14 adults in the second dataset were excluded because these individuals failed to provide a correct answer to an attention check question at the end of the experiment. One additional participant was excluded from the second dataset because he had completed the original version of this study. In all cases where participants were excluded, here and in Experiment 2, analyses including all participants revealed the same basic results as those described below. Here and in Experiment 2, the attention check asked participants to recall one of the beliefs that had changed in any of the experimental items they had read, and participants did not have the ability to return to prior parts of the experiment when answering this question. A similar attention check item has been used in prior research (Heiphetz, Strohminger, & Young, 2017; Heiphetz & Young, 2017), and responses were straightforward to code: incorrect responses included "I don't know", "I forget," and not answering the question at all. We selected an open-ended attention check item in order to avoid situations where participants who had completed prior studies using close-ended questions with one correct answer shared that correct answer with individuals who were about to complete the experiment.

2.2. Procedure

Child participants heard the experimenter introduce the experiment using two practice trials to determine the extent to which 8- to 10-year-olds could understand sample hypothetical scenarios. The experimenter said, "In this game, I'm going to ask you to pretend that some things have changed about you or another person, and then I'm going to ask you some questions about those things. People can change in different ways. For example, you could be in a different part of the day. Let's pretend that it's the middle of the night right now. If it were the middle of the night right now, what would you be doing?" If participants provided a plausible answer (e.g., sleeping), the experimenter would say, "That's right. If it were the middle of the night right now, you'd probably be [participant's answer]." If participants provided an implausible answer (e.g., going to school), the experimenter would say, "Well, actually, if it were the middle of the night right now, you probably wouldn't be [participant's answer]. You'd probably be sleeping." In either case, the experimenter then moved on to a second practice item, in which children were asked what they would be doing if they were at someone's birthday party. Following this item, the experimenter gave feedback similar to that offered after the first practice item. One child did not respond to either of the practice items asking about hypothetical situations. All remaining children answered both items correctly. Because it is clear that 8- to 10-year-olds as a group can reason about hypothetical scenarios, no child was excluded from analyses on the basis of these practice items.

After the practice items, the experimenter taught children to use a five-point scale to answer the identity items. The experimenter said, "Another way that things can change is if you yourself changed in some way. So for the rest of the game, I'm going to ask you some questions
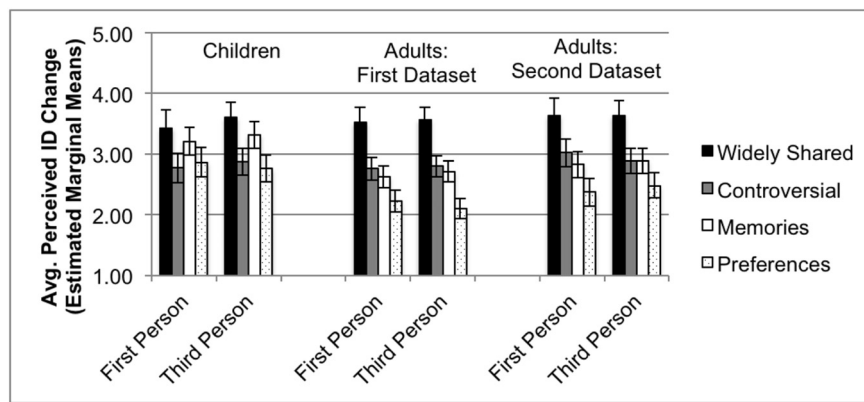
Fig. 1. Perceived identity change, Experiment 1. Errors bars represent 95% confidence intervals.

like the ones I just asked you, but now they will be about things that are different about you or another person. I'm going to ask you to pretend that something is different about you or the other person, and I'm going to ask you how much you or another person would change as a person if that thing were different. To answer the questions, you're going to use these pictures." The scale consisted of five identical stick figures ranging in size, and the experimenter pointed to each figure in turn and identified it with a label (e.g., "If you think you or the other person wouldn't change at all—that is, if you think things would be exactly the same as they are now—you'd point to this [smallest] picture"). The remaining labels were "change a little bit," "change a medium amount," "change a whole lot," and "change completely—that is, if you think you or the other person would be an entirely different person." The experimenter asked whether these instructions made sense and answered any questions before moving on to the identity items.

The experimenter then described the thought experiment used in the current study. She asked children to pretend that it was far in the future and scientists had created a pill that changed people in some ways, but kept them the same in other ways. Children were instructed that if someone took these pills, only one part of the person would change, leaving everything else the same.

Prior work (Heiphetz, Strohminger, & Young, 2017) compared adults' perceptions of how much the pill would change them versus how much the pill would change another person. Results were largely similar across both conditions, and Experiment 1 also included a first person condition and a third person condition to see whether children, like adults, would respond similarly across these conditions. In the first person condition, children indicated how much they would change if they took the pill and it changed their widely shared moral beliefs (e.g., whether hitting is okay), controversial moral beliefs (e.g., whether telling prosocial lies is okay), memories (e.g., their happiest memory), or preferences (e.g., their favorite TV show; for complete experimental script, see Supplemental Materials). In the third person condition, children indicated how much another person, Chris, would change after taking a pill that changed each of the characteristics above. The format of the questions was as follows: "How much would you/Chris be changed by a pill that changed X [e.g., by a pill that changed whether you think/Chris thinks it's okay or not okay to steal]?" (For other work using a similar procedure, see Heiphetz, Strohminger, & Young, 2017; Riis, Simmons, & Goodwin, 2008; Strohminger & Nichols, 2014.) All memory items were followed by this explanation: "Something about the memory changes so that you remember things differently." This explanation was included to ensure that participants were answering about changes to the memories themselves, not changes to the remembered events.

Participants heard four characteristics in each category (e.g., four widely shared moral beliefs), for a total of 48 items (24 concerning themselves and 24 concerning Chris). Item order was randomized.

During each trial, participants viewed a Power Point slide with an image related to the characteristic (e.g., an image of a television for the question about changes to a favorite television show).

Adults in the original dataset completed the same procedure with four modifications designed to make the procedure more appropriate for this age group. First, adults did not complete the practice trials. Second, they responded using a scale marked with the same verbal labels presented to children rather than seeing images. Third, they did not view pictures accompanying the experimental items. Fourth, they completed the experiment online rather than in the presence of an experimenter. Such minor modifications are common in research testing both children and adults (Cogsdill, Todorov, Spelke, & Banaji, 2014; Heiphetz, Gelman, & Young, 2017; Roussos & Dunham, 2016; Smith & Warneken, 2016; Starmans & Bloom, 2016); however, their impact on adults' responses is rarely tested. Therefore, the first three modifications were removed for adults in the second dataset. For feasibility purposes, adults in the second sample still completed the study online. This decision did introduce a difference between the child and adult data sets; however, this difference did not seem to exert a reliable influence on participants' responses (see results below). Like children, adults in the second dataset were adept at answering questions about hypothetical scenarios ($M_{correct}$ = 1.98 out of two, SD = .12), and no adults were excluded from analyses on the basis of these items.

3. Results

Here and in Experiment 2, we group similar statistics together for brevity (e.g., reporting the largest or smallest statistic in a series of tests); for simple effects tests, we report only p values. See Supplemental Materials for detailed statistics and additional analysis, including item-by-item correlations for each experiment and F-tests for simple effects.

The identity measure showed good reliability across all domains ($\alpha_{widely\ shared\ moral\ beliefs}$ = .91, $\alpha_{controversial\ moral\ beliefs}$ = .82, $\alpha_{memories}$ = .85, $\alpha_{preferences}$ = .89). We analyzed responses to this measure using a 2 (Target: first person vs. third person) × 3 (Participant Age: children vs. adults in original dataset vs. adults in second dataset) × 4 (Mental State: widely shared moral beliefs vs. controversial moral beliefs vs. memories vs. preferences) mixed ANOVA with repeated measures on the first and third factors. This analysis revealed main effects of Participant Age (F (2, 232) = 4.20, p = .016, η_p^2 = .04) and Mental State (F (2.26, 524.06) = 104.65, p < .001, η_p^2 = .29) that were qualified by a Participant Age × Mental State interaction (F (4.52, 524.06) = 6.03, p < .001, η_p^2 = .05; Fig. 1).[1] No other main effects or interactions reached significance (ps ≥ .089).

To investigate the Participant Age x Mental State interaction, we

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[1] Here and in all subsequent analyses, non-integer degrees of freedom reflect a Greenhouse-Geisser adjustment for a violation of sphericity.

used simple effects tests to examine differences among Mental States separately among each of the three age groups (children, adults in the original dataset, and adults in the second dataset). We also compared the responses of each age group to each other age group within each mental state (e.g., we asked whether children's perception of identity change following changes to widely shared moral beliefs differed from the perceptions of identity change reported by adults in the original dataset in this condition). Altogether, these pairwise comparisons included 30 analyses. Therefore, we adjusted the alpha threshold such that uncorrected *p* values (reported in all subsequent analyses) needed to be .002 or lower to remain significant after applying a Bonferroni correction.

Replicating the patterns observed in prior work (Heiphetz, Strohminger, & Young, 2017), adults reported that changes to widely shared moral beliefs would result in more change to identity than would changes to any other mental state, whereas changes to preferences would result in less change to identity than would changes to any other mental state. In other words, adults distinguished among all pairs of mental states ($ps < .001$) except for controversial moral beliefs and memories ($ps \geq .197$). These patterns were identical among adults in the original dataset and the second dataset. Like adults, children reported that changes to widely shared moral beliefs would result in *more* change to identity than would changes to controversial moral beliefs and to preferences and that changes to preferences would result would result in *less* change to identity than would changes to memories ($ps < .001$). No other pairwise comparisons among children reached significance ($ps \geq .077$).

In addition to investigating the responses of participants in each age group separately, we also compared the responses of participants in each age group with the responses of participants in each other age group within each mental state. Children perceived greater identity change than adults in the original dataset when responding to memories and preferences ($ps < .001$); no other pairwise comparisons reached significance ($ps \geq .032$). The overall similarities between children and adults suggest that in-person administration (as done with children) versus online administration (as done with adults) did not reliably influence results.

4. Discussion

The purpose of Experiment 1 was to determine whether 8- to 10-year-olds, like adults, perceive that widely shared moral beliefs are especially central to identity. Doing so can reveal the extent to which identity-related changes that occur during adolescence account for adults' perceptions. If 8- to 10-year-olds—who have not yet experienced the changes that occur during adolescence—show the same patterns as adults, this would suggest that the perception that widely shared moral beliefs are especially central to identity does not depend on changes that occur during adolescence. This is, indeed, what we found. Both 8- to 10-year-olds and adults in the current work, like adults in prior research (Heiphetz, Strohminger, & Young, 2017), reported that identity would change more after changes to widely shared (versus controversial) moral beliefs.

Preadolescents, like adults, may judge widely shared beliefs to be especially central to identity because they have a great deal of experience observing people acting in line with these beliefs. Prior to eight years, children have likely observed numerous instances of people helping others and refraining from harm. In contrast, the other mental states tested here vary across people; thus, children have likely had far less exposure to individuals acting consistently with a particular controversial moral belief, preference, or memory. Thus, failing to hold a particular widely shared moral belief may seem more aberrant than failing to hold a different type of mental state, and what is aberrant is sometimes perceived as more central to identity than what is normal

(Kelley, 1967; Uhlmann, Pizarro, & Diermeier, 2015). Of course, it is also possible that the current work failed to detect an actual difference between children and adults. Future research can adjudicate between these possibilities by seeking to replicate the current findings and by testing younger participants, who have had less exposure to people acting in line with any beliefs than the participants in the present research.

A developmental difference did emerge among the non-moral beliefs (preferences and memories) tested here. In these categories, children reported that identity would change more than did adults. One possibility is that, due to their greater social experience as compared with children, adults have learned that changes to memories and preferences need not result in large changes to identity. Adults have had more opportunities than children to change their own preferences and observe such changes among others, and they may have observed that such changes typically do not alter much else about the person. Similarly, adults may have more experience than children with forgetting or embellishing particular aspects of a memory, and these experiences may have suggested that changes to memories do not greatly alter identity. However, we did not predict that a developmental difference would emerge only for the non-moral items, and this effect should be replicated before strong conclusions are drawn.

4.1. Experiment 2

Experiment 2 built on Experiment 1 in two ways. First, Experiment 1—like prior work on the extent to which changes in moral beliefs were perceived to alter identity (Heiphetz, Strohminger, & Young, 2017)—did not specify the direction in which beliefs were changing. For example, participants answered how much people would change if they changed their minds about whether or not it was okay to hit, but participants were left to infer whether the person used to think that hitting is wrong and came to believe that hitting is okay or whether the person used to think that hitting is okay and came to believe that hitting is wrong. Because adults view the "true" self as morally good (e.g., De Freitas et al., 2017), changes in which people adopt beliefs that are widely considered to be good—i.e., changes in which people become more of their "true" selves—might be perceived differently from changes in which people abandon such beliefs. Experiment 2 tested this possibility by explicitly stating the direction of the change.

Second, Experiment 2 is novel in investigating *why* differences might emerge in perceptions of transformations from good to bad moral beliefs versus perceptions of transformations in the opposite direction. In prior work (Heiphetz, Strohminger, & Young, 2017), adults reported that people would change more if their widely shared moral beliefs changed than if their controversial moral beliefs changed. This difference was mediated by adults' perception that relationships with others would change more after changes to widely shared, rather than controversial, moral beliefs. Experiment 2 tested whether a similar process could account for any differences that emerged in perceptions of identity change after changes to good versus bad moral beliefs. To take a specific example, it is possible that Tahani used to believe that calling other people names is okay, but she has now come to believe that this is behavior is wrong. This change may alter who wants to be friends with Tahani; as she shares her new beliefs, more people may want to befriend her. This change in social relationships may, in turn, change perceptions of Tahani's identity. For example, others may perceive Tahani as a nicer person or reason that Tahani has become more like her new friends. It is also possible that identity is partly relational, i.e., partially dependent on one's social connections (Tajfel & Turner, 1986). Experiment 2 also used mediation to test an alternative causal pathway, one in which changes to beliefs are perceived to change someone's identity, and this altered identity, in turn, is perceived to change who wants to be friends with the person. For example, people could perceive

that Tahani's identity changes as a result of her newly acquired beliefs and that, as a result of this shift in identity, Tahani's social relationships will change as well.[2]

Because the main mediational hypothesis tested in Experiment 2 was based on prior work that had only been conducted with adults (Heiphetz, Strohminger, & Young, 2017), it is possible that perceptions of friendship change would not mediate the relation between belief change and perceptions of identity change among children. Indeed, perceptions of friendships change during adolescence, making it possible that the preadolescents in our sample may not perceive the link between friendship and identity in the same way as adults. Prior to adolescence, friendships are largely based on situational factors, such as wanting to play the same game as another person; during adolescence, friendships become more deeply centered around meeting emotional needs, such as the needs for intimacy and loyalty (Poulin & Chan, 2010). During adolescence, friendships become more supportive (Meeus, 2016) and more stable across time (Poulin & Chan, 2010). Perhaps for these reasons, individuals' perceptions regarding the quality of their friendships improves during adolescence (Way & Greene, 2006). Due to these changes, it is possible that younger children would not perceive that changes to friendship impact identity. If one's friends change depending on who wants to play which game or watch the same movie, it makes sense to perceive continuity in identity even if one's friend circle changes quite a bit.

5. Method

5.1. Participants

Recruitment was identical to Experiment 1; however, sample sizes differed for two reasons. First, when collecting data from children, we sought to include approximately 50 children. However, we were able to test only 27 children between 8 and 10 years old ($M_{age} = 8.59$ years, $SD_{age} = .69$ years; no participants were excluded from analyses) before our research shift at the museum expired at the end of the semester. These preliminary data are analyzed below but should be interpreted cautiously. Second, when collecting data from adults, we sought to include approximately 50 participants per cell but again over-recruited out of concern that data from some participants would not be usable. Thus, Experiment 2 initially included 63 adults. Results from this group showed a small, but significant, difference between conditions (see below). To ensure that this effect was reliable and did not emerge as significant due to Type I error, we re-ran Experiment 2 with a new group of adults, recruiting approximately twice as many as the initial sample to obtain a greater degree of confidence in the results. The small effect emerged both in the second group of participants and in a new data set combining responses from both data collections. The text below reports results from this combined data set, which included 170 adults between 18 and 67 years old ($M_{age} = 34.05$ years, $SD_{age} = 10.14$ years).

On a demographic questionnaire that parents completed during the session, 52% of participants were identified as female and 44% were identified as male; the remaining parent did not identify his/her child's gender. Furthermore, parents identified their children as White or European-American (44%), Black or African-American (4%), Asian or Asian-American (19%), Multiracial (7%), and "Other" (4%); the

remaining parents did not identify their children's race. Fifteen percent of parents additionally identified their children as Hispanic or Latino/a.

On a similar demographic questionnaire completed at the end of the session, 43% of adult participants self-identified as female and 54% self-identified as male; the remaining participants did not identify their gender. Furthermore, participants self-identified as White or European-American (85%), Black or African-American (6%), Asian or Asian-American (3%), Native American or Pacific Islander (1%), Multiracial (2%), and "Other" (1%); the remaining participants did not identify race. Seven percent of participants additionally self-identified as Hispanic or Latino/a. Data from 19 additional adults, not included in the description above, were excluded because they did not answer an attention check at the end of the session (the same as the question used in Experiment 1) correctly.

5.2. Procedure

Because strong differences did not emerge between the first and third person conditions in Experiment 1, Experiment 2 included only the third person condition. The introduction to the study was identical to Experiment 1 with one exception: rather than using the gender-neutral name Chris, we did not provide a name for the person undergoing the change.

Instead of using the experimental items from Experiment 1, we used two other types of items (for complete script, see Supplemental Materials). First, we included four items describing a change from a good moral belief to a bad moral belief (e.g., "This person used to think that it is wrong to steal from other people. Then he/she took the pill, and now he/she thinks that it is okay to steal from other people"). Second, we included four items describing a change in the opposite direction (e.g., switching the order of the words "wrong" and "okay" in the previous example). Participants saw each item twice. In one block, they indicated how much the pill changed the person overall. In another block, they indicated how much the pill changed who would want to be friends with the person. The purpose of asking about friends was to test whether perceptions of relationship change mediate the relation between direction of change (good to bad or vice versa) and perceived identity change.

Participants were randomly assigned to answer all the questions about perceived identity change first or all the questions about changes to friendship first. Within each of these blocks, the eight experimental items (four describing a change from a good belief to a bad belief and four describing a change in the opposite direction) appeared in a randomized order. Because participants heard about the same behaviors twice in different contexts (e.g., they heard about someone who used to think that hitting is okay and now thinks hitting is wrong, and they heard about a different person who used to think that hitting is wrong and now thinks that hitting is okay), we did not use images associated with the belief. Instead, we showed children a photograph of another child. On each trial, the experimenter pointed to the photograph and said, "This person used to think X. Then he/she took the pill, and now he/she thinks Y." Because these photographs depicted actual children, we did not include them in the online version of the task completed by adults. Because Experiment 1 did not find differences between adults who viewed exactly the same stimuli as children and adults who viewed slightly modified stimuli (including items with no pictures), we reasoned that these modifications were unlikely to have influenced adults' responses in Experiment 2.

Experiment 2 also included two additional checks on participant understanding. First, participants indicated how much someone would change if he/she used to be a turtle and then became a person and if his/her favorite color used to be green but changed to blue. These items were included as the first two items in each block (i.e., they were the first two questions about identity change and also the first two questions about friendship change); the order of the two items was counterbalanced across participants. If participants understood the items

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[2] Experiment 2 also had a third purpose—to determine how individuals perceive changes to religious beliefs. Thus, Experiment 2 initially included a between-subjects factor, with the participants described in the main text answering questions about changes to moral beliefs and a separate group of participants (32 children and 63 adults) answering questions about changes to religious beliefs. However, perceptions of religious beliefs did not differ across age groups, nor did perceptions of changes from theistic to atheistic views differ from perceptions of changes from atheistic to theistic views. Religious beliefs also did not differ significantly from moral beliefs. Therefore, for simplicity, the main text describes results only from participants who answered questions about moral beliefs. However, future research can examine perceptions regarding religious beliefs in more depth.

and the scale, they should demonstrate greater perceptions of change in response to the question about changing species than in response to the question about changing preferences. Second, after participants had answered all of the experimental items described above, they answered two randomly selected manipulation check items. For each of these items, after seeing what a given character used to believe and what that character believes now, participants were asked, "Did anything else about the person change, or did everything else stay the same? [if former response selected] What else about the person is different now?" If we successfully led participants to believe that the pill changed only one characteristic, they should report that everything else about the person stayed the same. Responses to both items indicated that participants understood how to use the scale and that our manipulation was successful; see Supplemental Materials.

6. Results

The first main goal of Experiment 2 was to determine whether participants perceive greater identity change when people change from holding good moral beliefs to holding bad moral beliefs rather than when people undergo a change in the opposite direction. To achieve this goal, we first determined that each set of items had acceptable reliability (identity change: $\alpha_{good\text{-}to\text{-}bad} = .76$, $\alpha_{bad\text{-}to\text{-}good} = .81$; friendship: $\alpha_{good\text{-}to\text{-}bad} = .82$, $\alpha_{bad\text{-}to\text{-}good} = .78$). We then conducted a 2 (Participant Age: children vs. adults) × 2 (Direction of Change: good-to-bad vs. bad-to-good) mixed ANOVA with repeated measures on the second factor and perceived identity change as the outcome variable. This analysis revealed a Participant Age x Direction of Change interaction ($F (1, 195) = 8.44$, $p = .004$, $\eta_p^2 = .04$), although neither main effect reached significance ($ps \geq .72$). Children did not distinguish between good-to-bad changes ($M_{marginal} = 3.46$, $SE = .15$, 95% CI: [3.18, 3.75]) and bad-to-good changes ($M_{marginal} = 3.63$, $SE = .15$, 95% CI: [3.33, 3.93], $F (1, 26) = .71$, $p = .408$, $\eta_p^2 = .03$). However, adults reported that people changed more in the good-to-bad case ($M_{marginal} = 3.57$, $SE = .06$, 95% CI: [3.45, 3.68]) than in the bad-to-good case ($M_{marginal} = 3.42$, $SE = .06$, 95% CI: [3.30, 3.54], $F (1, 169) = 24.42$, $p < .001$, $\eta_p^2 = .13$). Note that the difference in means was larger among children than among adults, and the non-significant result in that case could be due to the small number of children in the sample; this result should be replicated before strong conclusions are drawn. Additionally, simple effects tests showed that children and adults did not significantly differ from each other when responding to good-to-bad changes ($F (1, 245.21) = .43$, $p = .514$, $\eta_p^2 = 0$) or bad-to-good changes ($F (1, 245.21) = 1.76$, $p = .186$, $\eta_p^2 = .01$).

The second main goal of Experiment 2 was to examine whether the difference between the good-to-bad condition and the bad-to-good condition was mediated by the extent to which participants thought that a change to a particular belief would alter relationships. We tested this prediction using MEMORE (Montoya & Hayes, 2017) with 20,000 bootstrapped samples. Direction of change (good-to-bad versus bad-to-good) was entered as the predictor variable, perceptions of friendship change as the mediator, and perceptions of identity change as the dependent variable. For completeness, we conducted this analysis separately among children and adults. (For analyses of mean ratings of friendship change and additional analyses comparing perceptions of identity change and perceptions of friendship change, see Supplemental Materials.)

As can be seen in Fig. 2, perceptions of relationship change mediated the relation between direction of change and perceived identity change among adults. (For a discussion of inferring mediation from the presence of a significant indirect effect, see Montoya & Hayes, 2017.) Among children, the model failed to meet traditional assumptions of mediation because perceptions of changes to friendship did not significantly predict perceptions of identity change ($p = .638$); further, the direct, indirect, and total effects were all non-significant ($ps \geq .067$). This model is illustrated in more detail in the Supplemental Materials.

To test an alternative causal model, we conducted a second mediation analysis, entering direction of change as the predictor variable, perceptions of identity change as the mediator, and perceptions of changes to friendships as the dependent variable. The indirect effect in this mediation model also reached significance among adults (Fig. 3) but not among children (Supplemental Materials).

7. Discussion

The purpose of Experiment 2 was twofold. First, Experiment 2 was designed to determine whether participants reasoned about changes from good moral beliefs to bad moral beliefs differently from changes in the other direction. Second, Experiment 2 tested whether perceptions of changes to friendships mediated the relation between direction of change and perceptions of identity change.

Adults reported more change in the good-to-bad condition than in the bad-to-good condition. This finding is consistent with prior work on the "true" self, in which participants judged the true self as morally good (Strohminger, Knobe, & Newman, 2017). Adults appear to perceive greater identity change when people move *away* from their true self (in this case, by adopting bad moral beliefs) than when they move *toward* their true self (in this case, by adopting good moral beliefs), perhaps because the latter change is represented as a person becoming more of what he or she already is.

The data from Experiment 2 are consistent with the conclusion that this difference between the good-to-bad condition and the bad-to-good condition among adults is mediated by perceptions of changes to friendships. Participants could have judged that people changed more when their good moral beliefs changed into bad moral beliefs than the reverse because they perceived a change from good to bad moral beliefs to have a greater influence on friendships. This finding is in line with prior work in which adults reported that widely shared moral beliefs were more central to identity than controversial moral beliefs because changes to the former would alter relationships with others more than changes to the latter (Heiphetz, Strohminger, & Young, 2017). The current work also moves beyond this past work by testing direction of change, rather than type of belief, as a predictor of perceived identity change. However, the present data are also consistent with an alternative causal model: that changes in belief lead to perceived changes in identity, which, in turn, lead to perceived changes in friendship (for prior work supporting this model, see Strohminger & Nichols, 2015). See General Discussion for additional discussion of these two mediation models.

Unlike adults, children appeared to reason similarly about good-to-bad and bad-to-good changes in moral beliefs. One possibility is that children do not believe that the "true self" is morally good and therefore reason similarly about changes that, from an adult perspective, result in people moving toward or away from their "true self." However, strong conclusions cannot be drawn from the null effect presented here. Although we did not find a significant difference between the good-to-bad condition and the bad-to-good condition among children, a more sensitive task and/or a larger sample may have uncovered such a difference, and it is possible that such experimental changes would reveal the importance of relationships to children's reasoning about identity.

8. General discussion

The current work examined 8- to 10-year-olds' and adults' beliefs about identity. We compared preadolescents and adults because reasoning about identity changes during adolescence (e.g., Erickson, 1968; Hardy & Carlo, 2011; Steinberg, 2013). If these changes drive adults' perception that widely shared moral beliefs are more central to identity than controversial moral beliefs, then preadolescent 8- to 10-year-olds should not perceive widely shared moral beliefs as particularly central. However, Experiment 1 showed a different result. Namely, both 8- to
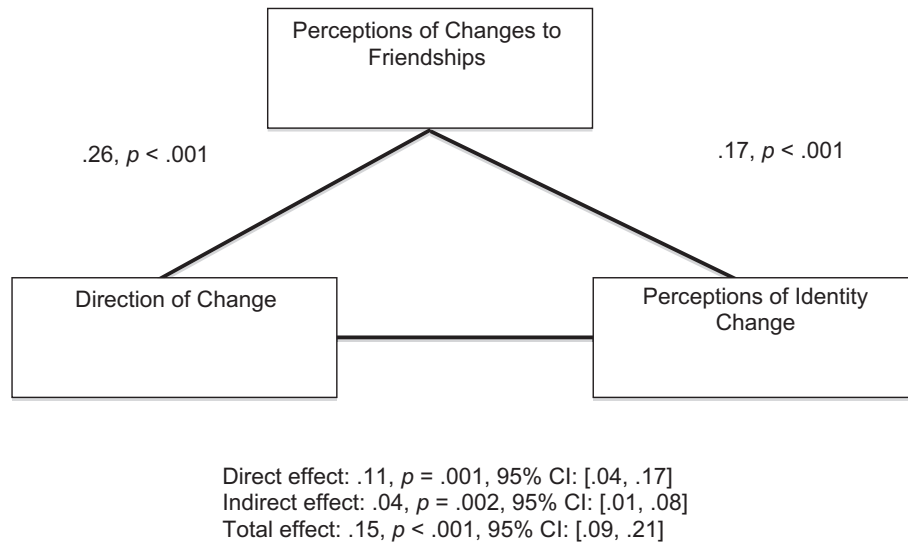
Fig. 2. Mediation model suggesting that perceptions of changes to friendships may mediate the relation between direction of belief change and perceptions of identity change, Experiment 2 (adult participants).
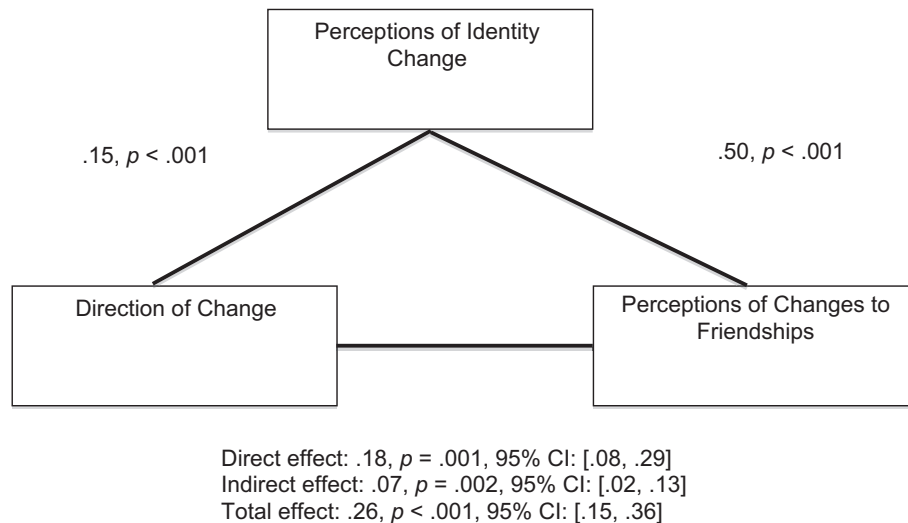

Fig. 3. Mediation model testing an alternative causal pathway in Experiment 2 (adult participants).

10-year-olds and adults reported that people would change more if their widely shared moral beliefs changed than if other mental states, such as controversial moral beliefs, changed. These results suggest that the identity-related changes that occur during adolescence may not alter how individuals perceive the centrality of morality as compared with other characteristics.

Experiment 2 further probed perceptions of identity in two ways. First, unlike Experiment 1—and unlike other previous studies (e.g., Heiphetz, Strohminger, & Young, 2017; Strohminger & Nichols, 2014)—Experiment 2 specified the direction in which beliefs were changing. For example, participants in Experiment 1 indicated how much people would change if they changed their minds about stealing, whereas participants in Experiment 2 indicated how much people would change if they used to think that stealing is wrong but now think that it is okay (and, conversely, how much people would change if they used to think that stealing is okay but now think that it is wrong). In both types of situations presented in Experiment 2, the target held a good, widely shared belief at one point in time. If participants respond simply to the presence of such beliefs, they may judge that people have changed the same amount regardless of when such beliefs were held.

Indeed, we found that children did not distinguish between good-to-bad and bad-to-good changes. This result may indicate that children in fact are not sensitive to the point in time (past versus present) at which such beliefs are held, although it is not possible to draw strong conclusions from this null finding. An alternative possibility, observed among adults in Experiment 2, is that participants judge that people change more if their good beliefs become bad beliefs (i.e., if they abandon their "true" self, De Freitas et al., 2017) than if the reverse change occurs.

Experiment 2 also indicated that relationships may play an important role in social perception. The adult data were consistent with the interpretation that the difference between good-to-bad transformations and bad-to-good transformations was mediated by perceptions of friendship change. In other words, adults may have perceived more change in the good-to-bad condition because they perceived this change, versus a change in the opposite direction, to have a stronger effect on friendships. However, the statistical evidence was also consistent with an alternative causal model: that perceptions of identity change mediated the relationship between belief change and perceptions of changes to friendships. Because statistical support emerged for both causal models, it appears that people may hold both beliefs (that

changes to relationships lead to changes in identity and vice versa). Indeed, both models have found some support in prior work (Heiphetz, Strohminger, & Young, 2017; Strohminger & Nichols, 2015).

Future work can build on the studies presented here by probing the results obtained in Experiments 1–2 in greater depth. Both of these experiments adopt the following logic: If a particular response among adults is dependent on the developmental changes that occur during adolescence, then children who have not yet experienced these changes should respond differently from adults, who have experienced these changes. Future work can build on this reasoning by directly probing adolescents' identity-related judgments.

Future studies could also follow up on the effects observed specifically in Experiment 2. To gain greater confidence in children's perceptions of identity change, future studies could use a more sensitive measure of perceived identity change and recruit a larger sample of children. Additionally, it is likely that factors not tested here also influence perceptions of identity change. One candidate is fundamental attribution error—the common perception among Western adults that others' behaviors are driven more by internal dispositions than by situations (Jones & Harris, 1967). It is possible that adults who commit this error more strongly are more prone to reporting that identity remains consistent regardless of changes to beliefs. Finally, future work could further test the links between perceptions of identity change and perceptions of friendship change by asking for participants' judgments in situations where a group of friends all changed in the same way together.

9. Conclusions

Two experiments investigated children's and adults' perceptions of identity change. Experiment 1 showed similar patterns of responses to changes in moral beliefs among preadolescent children and adults, suggesting that the identity-related changes that occur during adolescence do not play a strong role in judgments of how morality and identity are intertwined. In Experiment 2, adults judged that individuals change more when they abandon, rather than acquire, beliefs that are widely perceived as morally good. Adults may perceive that good-to-bad changes alter relationships more than changes in the opposite direction, and they may judge that larger changes to relationships lead to larger changes in personal identity. However, the data were also consistent with an alternative causal model (adults perceiving that bad-to-good changes alter identity more than changes in the opposite direction and judging that larger changes to identity lead to larger changes in relationships). Taken together, these results shed light on the development of judgments about identity change and highlight a potential mechanism underlying such judgments.

Open practices

The experimental scripts have been included in Supplemental Materials, available online.

Appendix A. Supplementary analyses and study materials

Supplementary analyses and study materials for this article can be found online at https://doi.org/10.1016/j.jesp.2018.03.007.

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