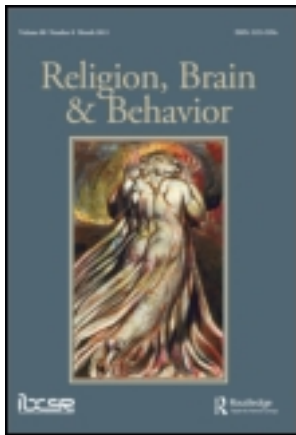


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Rebekah A. Richert^a & Erin Smith^b

^a Department of Psychology, University of California, Riverside, USA

^b California Baptist University, USA

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The essence of soul concepts: how soul concepts influence ethical reasoning across religious affiliation

Rebekah A. Richert^{a*} and Erin Smith^b

^a*Department of Psychology, University of California, Riverside, USA;* ^b*California Baptist University, USA*

Current research on how humans conceptualize other humans has focused on the hypothesis that we have a dualistic conception of others, differentiating the functions of the body from the functions of the mind (Bloom, 2004). Recent criticisms of this approach have suggested that this characterization of cognition is insufficient to account for the common presence of a third intuition humans have about other humans, namely that other people have souls or spirits (Hodge, 2008; Richert & Harris, 2008). We report on a study examining the nature of similarities and differences in the soul concept based on religious affiliation, and the implications of the soul concept for reasoning about beginning-of-life and end-of-life ethical dilemmas. Four hundred and nineteen undergraduate students completed a survey examining concepts of the soul, the mind, and reasoning about ethical dilemmas. The results suggest that adult soul concepts but not mind concepts are considered independent of the life cycle and are related to reasoning about ethical dilemmas independent of religious affiliation. These data lend empirical support to the hypothesis that the human tendency toward psychological essentialism provides a foundation for adults' concepts of the soul.

Keywords: soul; ethical reasoning

Recent research has provided compelling evidence that adults in various cultures demonstrate a separation in their attribution of functions to the body and the mind. This is a consequence of developmentally early intuitions which divide the world into animate and inanimate objects (e.g., Bloom, 2004; Hodge, 2008). In line with recent theorists, however, we argue that this conceptualization of human reasoning may be overly simplistic and therefore inadequate for explaining cultural variation in humans' reasoning about other humans (Hodge, 2008). In this research, we present a study examining the extent to which adults attribute non-mental properties and functions to the soul. We also examine the role that cultural processes play in shaping thinking about other humans by investigating the extent to which concepts of the soul are both similar and different across individuals with different religious affiliations. Finally, we examine the role that concepts of the soul might play in decision-making about ethical issues. Ultimately, we suggest that examining concepts of the soul may provide a unique opportunity to study both intuition and the role of culture shaping in religious cognition.

Afterlife beliefs are one aspect of cognition in which a dualistic pattern of reasoning has been most commonly demonstrated in research. Theorists have

*Corresponding author. Email: rebekah.richert@ucr.edu

suggested that many, if not all, religious beliefs either implicitly or explicitly promote a dualistic stance concerning the mind–body relationship, suggesting that the “self” can continue after the body ceases to function (Bering, 2006). These theorists have typically argued that this dualistic stance reflects an intuitive, fundamental component of human cognition that develops before formal religious instruction in ontology, but that provides a framework into which religious instruction naturally fits (e.g., Bering, 2006; Bering & Bjorklund, 2004; but see Harris & Giménez, 2005). Indeed, research on beliefs about which aspects of people persist after death suggests that people are more likely to attribute continued psychological and mentalistic functioning than continued physical functioning to entities in the afterlife (Astuti & Harris, 2008; Bek & Lock, 2011; Bering & Bjorklund, 2004).

Patterns of reasoning which indicate that people believe physical states cease at death have been demonstrated in American children (Bering & Bjorklund, 2004), Chinese children (Lane et al., 2011), Spanish children (Harris & Giménez, 2005), and Vevo children from Madagascar (Astuti & Harris, 2008). Most of these research paradigms provide children with a death scenario designed to evoke either religious or biological explanations for the continuation or the cessation of physical or mental processes. A common finding in this research is that is the presence of afterlife concepts are typically closely connected with the post-life continuation of mental processes rather than physical processes.

Using a different approach, Cohen, Burdett, Knight, and Barrett (2011) investigated British and Brazilian adults’ conception of the role of the body in specific physical and mental processes. Participants were asked to imagine that they had left their body but were not dead in one of three conditions: they simply left their body, they went into a rock, or they went into a tree. Following the introduction, participants indicated if they could still perform a variety of functions, including Body Independent (e.g., remember things, hope for things, feel happy) and Body Dependent (e.g., feel bloated, feel itchy, feel feverish) functions. In both the UK and Brazil, participants responded by indicating that Body Independent processes could continue if they left their body behind, but that Body Dependent processes could not continue.

Some have criticized this strictly mind–body dualistic description of human reasoning about others as not fully capturing the complexity of human beliefs about other humans (Hodge, 2008; Richert & Harris, 2008). One of the criticisms of this approach is that it implies that humans “intuit that the mind and soul have the identical intension” (Hodge, 2008, p. 411). Examples of collapsing the two concepts are evident in research purporting to examine spirit transfer, which was operationalized as one person’s mind going into another person (e.g., Cohen & Barrett, 2008). Contrary to this assumption, research has suggested that both adults and children distinguish between the mind and the soul. This distinction is specifically associated with conceptions of death – when asked what part of a person continues on after they die, both adults (Richert & Harris, 2008) and children (Richert & Harris, 2006) are far more likely to spontaneously mention the soul than the mind. Additionally, children and adults make distinctions between the mind and the soul in scenarios that are not restricted to reasoning about the afterlife, but that have implications for reasoning about the beginning of life and personal identity (Richert & Harris, 2006, 2008).

This research considers the extent to which the concepts of the mind and soul do and do not overlap over the course of development, and suggests that the

differentiation of the soul from the mind may come online before children clearly differentiate the functions of the mind from the functions of the brain (Richert & Harris, 2006). Richert and Harris (2006) examined 4- to 12-year-olds' concepts of the brain, mind, and soul. Based on a method derived from Johnson and Wellman (1982), children were asked to imagine that a newborn baby's brain, mind, or soul had been magically removed and were asked whether the baby could still perform certain cognitive (e.g., dream, think), non-cognitive (e.g., see, want mommy), or behavioral (e.g., suck on thumb, use eyes) functions. Children did not differentiate the mind and brain from each other on these dimensions, and most children claimed that the mind but not the soul was important for all of these functions. However, children did claim that the soul had functions. In responding to open-ended questions, children of all ages tended to indicate that the soul had primarily spiritual functions (e.g., connects you to God, goes to heaven when you die). Mental functions were rarely applied to the soul; conversely, spiritual functions were rarely applied to the mind. In addition, all children claimed that the soul was the aspect of identity most affected by a "spiritual act" (e.g., a ritual). Regardless of age or task, young children distinguished the functions of the soul from those of the mind before they distinguished the functions of the mind and the brain from one another (Richert & Harris, 2006). These findings suggest that "body-independent processes" (Cohen et al., 2011) can be further subdivided into mental and spiritual processes, and that children exposed to this distinction begin to make it as they develop their understanding of mental processes (e.g., Flavell, 2004).

In a method similar to Cohen et al. (2011), Richert and Harris (2008) asked American college students to imagine that they lost their mind or soul but continued on in some way. Participants then indicated which of a series of abilities they could no longer perform. A principle components analysis revealed that the functions could be separated into two categories: cognitive (e.g., my ability to solve problems) and spiritual (e.g., my ability to continue on after I die). Participants clearly differentiated the functions of the mind from the soul, indicating cognitive functions would cease if the mind ceased and spiritual functions would cease if the soul ceased (Richert & Harris, 2008).

Furthermore, evidence suggested that the participants considered the soul to be in a separate ontological domain from biological or purely mental processes (Richert & Harris, 2008). As expected, the majority of participants indicated that the mind was tied to the life cycle: beginning at birth, growing and changing over the lifespan, and ceasing at death. In contrast, participants claimed that the soul existed outside of these processes: beginning before birth, remaining constant over the lifespan, and continuing on after death. This suggests that the continuation of "mental functioning" from previous research may be more accurately understood as the continuation of specific processes associated with the soul. Importantly, conceptions of the soul were meaningful beyond afterlife reasoning; conceptions of the soul were related to participants' judgments about ethical issues. After controlling for religious affiliation, participants' belief that the soul, but not the mind, existed outside the confines of the life cycle was significantly negatively correlated with approval of stem cell research, cloning, and removing life support (Richert & Harris, 2008).

This research suggests that participants consider the soul, rather than the mind, to be responsible for spiritual functions. Furthermore, children and adults conceive of the soul as existing independent of the human life cycle. These findings suggest the possibility that the human tendency toward dualistic views of other humans may be

interacting with another fundamental cognitive process, namely the tendency toward psychological essentialism. Psychological essentialism is the attribution of hidden, non-obvious, causal properties that impart identity to individual entities (Gelman, 2003). In the realm of biology, essentialism is whatever quality remains unchanging as an organism grows and undergoes morphological transformations (baby to adult; caterpillar to butterfly; Gelman, 2003). Theorists and researchers have argued that the attribution of non-obvious hidden properties is a natural cognitive predisposition (Chandler, 2001) and that evidence of the attributions of hidden essences exists cross-culturally in how people account for regularities in an individual's behavior (Ross & Nisbett, 1991).

Although it has been hypothesized that essentialism is applied to individual persons (Chandler, 2001), to our knowledge there has been no empirical examination of this hypothesis. We hypothesize, however, that concepts of the soul may provide evidence to this effect. The soul concept may reflect psychological essentialism applied to individual persons, or a personal essence, given that children (Richert & Harris, 2006) and adults (Richert & Harris, 2008) conceive of the soul as imparting identity outside the confines of the human life cycle, and with no clear consensus on how or if the soul changes over development.

The veracity of the essentialism hypothesis, however, remains tentative due to the limitations of past research. First, the essentialism hypothesis predicts that ontological attributions to the soul should not vary by religious affiliation, with the attribution of a personal essence to others representing normative cognition. Additionally, ontological attributions to the soul should be significantly different than ontological attributions to the mind, which changes over time and is constrained by the life cycle. However, explicit, functional attributions to the soul may vary by religious affiliation; in this case, essentialist reasoning may provide the structure, but not the specific content, of the personal essence. One goal of the study reported below was to examine similarities and differences in soul concepts based on religious affiliation, as prior research has not explored variance in this attribute.

Previous research has also not considered the extent to which soul concepts influence decision-making about issues relevant to beginning of life and afterlife beliefs. Past research suggested a relationship between a composite score of participants' ontological and functional attributions to the soul and their agreement with abortion, disconnecting someone from life support, and human cloning (Richert & Harris, 2008). Although the practice of examining composites is common, the essentialism hypothesis would predict that different aspects of the soul concept reflect different intuitive reasoning processes. More specifically, whether a person believes the soul has spiritual functions should not be related to ethical decisions relevant to beginning of life and afterlife beliefs. However, participants' ontological attributions to the soul should be related to beginning-of-life and end-of-life decisions. In this study, we examined whether specific aspects of the soul concept were related to participants' ethical judgments about two early-life scenarios (abortion and stem cell research) and three end-of-life scenarios (euthanasia, suicide, and removing a person from life support). Past research has suggested that more traditional and conservative Christian beliefs are associated with a decreased acceptance of abortion (Hoffmann & Johnson, 2005), stem cell research (Nielsen, Williams, & Randolph-Seng, 2009), euthanasia (Moulton, Hill, & Burdette, 2006), and suicide (Siegrist, 1996). In this study, we examine whether these differences based

on religious affiliation are partially accounted for by ontological and functional aspects of the soul concept.

In summary, past research has suggested adults and children distinguish the soul from the mind in ways that may reflect the influence of essentialist thinking on people's cognition about other people. However, researchers have not examined the differences in these concepts based on religious affiliation or the implications of these concepts for reasoning about ethical dilemmas. This study aims to replicate previous research concerning the differentiation of the soul from the mind, to examine the effect of religious affiliation on soul concepts, and to investigate the role that specific conceptions of a soul concept have on ethical reasoning.

Study

Participants

Participants in this study were 419 undergraduate students (57.5% female) from a university in Southern California. In exchange for their participation, students received research credit for an introductory psychology course. Participants ranged in age from 17 to 34 ($M = 19.05$, $SD = 1.66$). The majority of participants were Asian (37.2%) or Hispanic/Latino (28.9%), with 14.8% Caucasian, 7.4% Middle Eastern, 5.7% African American, and 6% other, which reflects the population of student body at the university where the research was conducted. In terms of academic interests, 56.1% were in the College of Humanities, Arts, and Social Sciences. The remaining students were in the colleges for engineering or natural sciences, or were undeclared. In terms of religious affiliation, 65.9% identified themselves as Christian, 13.6% as Agnostic, 9.8% as Buddhist, 3.3% as Hindu, 2.6% as Muslim, 2.6% as Atheist, and .7% as Jewish. For these analyses, we examined the Christian ($n = 276$), Agnostic ($n = 57$), and Buddhist participants ($n = 41$). The justification for using these groups was twofold. First, they were the only religious groups with large enough sample sizes to warrant individual analysis. Second, as outlined below, the groups differentiated along several important dimensions, such as religiosity, spirituality, and concepts of the soul. Other than religious affiliation, there were no significant differences in the demographic variables (e.g., gender, age, academic interests) between the participants we selected for analysis and those we omitted.

Method

Participants answered questions to an online survey for course credit. The survey took participants an average of 30.15 minutes ($SD = 12.54$) to complete. In this survey, questions addressed participants' religious affiliation and spirituality, their explicit concepts of the soul and mind, and their judgments about the acceptability of five ethical decisions.

Religious affiliation and spirituality

To assess participants' *religiosity*, participants rated on a scale from 0 (*not at all*) to 2 (*very strongly*) how strongly they were affiliated with a religious community. *Spirituality* was similarly measured; participants rated on a scale from 0 (*not very*) to 2 (*very*) how spiritual they considered themselves to be. Finally, two questions

were used to assess participants' *religious participation*. Participants indicated on a scale from 0 (*never*) to 5 (*several times a week*) how often they (1) attended religious services, and (2) attended other activities associated with their religion. These responses were averaged to create a *religious participation* variable that could range from 0 to 5.

Concepts of the soul and mind

We first asked participants whether they believed that the soul and mind existed. As a measure of certainty, participants' responses were scored from 0 to 2: *no* (0), *not sure* (1), *yes* (2). We then asked participants about specific features of the mind and soul, based on previous research (Richert & Harris, 2008).

Ontology. Three questions asked participants about their beliefs about the ontology of the soul and mind. Participants were asked to indicate when they believed the soul and mind come into existence: *prior to conception* (1); *at conception* (2); *during pregnancy* (3); *at birth* (4); and *never*. Thus, participants' *soul start* and *mind start* scores could range from 1 to 4. Participants were also asked whether they believed that the soul and mind stays constant over a person's life (1) or changes and develops (0), for *soul develop* and *mind develop* scores. Finally, participants were asked what they believed happened to the soul or mind at death, coded dichotomously as nothing (0) or indicting some kind of afterlife (e.g., heaven, reincarnation; 1), for *soul death* and *mind death* scores. In this coding, higher scores represent more essentialist concepts: an earlier start, increased stability, and continuation after death. On the other hand, lower scores represent less essentialist concepts: a later start in the lifespan, change and development, and cessation at death. In all cases, participants responding that the soul never began (6.4%) or who did not respond to questions about whether the soul changes (5.1%) or what happens to the soul at death (9.4%) were excluded from analyses of the variable. The implications of this approach will be considered in the discussion section.

Function. Participants were asked to imagine whether they could continue to perform specific cognitive (reason, remember, think, solve problems) and spiritual (connect to a higher power, have a life force, continue in an afterlife, have a spiritual essence) functions if they no longer had a soul or mind. These options were derived from prior research and principle components analyses of these options (Richert & Harris, 2006). Responses about which specific functions could continue after losing the soul or mind were tallied to create four variables that ranged from 0 to 4: *soul cognitive* ($\alpha = .84$), *soul spiritual* ($\alpha = .72$), *mind cognitive* ($\alpha = .88$), and *mind spiritual* ($\alpha = .83$).

Participants were also asked an open-ended question about what they thought the soul and mind did. The open-ended responses to the functions of the soul and mind were coded for whether responses indicated cognitive (e.g., thinking, memory, emotions, decision-making, logic, body control), spiritual (e.g., afterlife, morality, conscience, life force), or identity functioning, as well as whether participants indicated the soul or mind did "nothing." Generally, participant responses were brief, using the terminology described above. In the case where a straightforward code was not possible, the authors discussed and agreed on appropriate code(s). Some participants provided more than one function in their responses; the codes

used in the analyses reported below are the first function the participants mentioned in the open response.

Ethical reasoning. Participants were asked to rate on a scale from 1 (*I disagree strongly*) to 5 (*I agree strongly*) their agreement with a statement about the acceptability of abortion, embryonic stem cell research, euthanasia, disconnecting someone from life support, and suicide.

Results

Religiosity, spirituality, and belief in the soul by religious affiliation

In order to contextualize the findings with information about the participants' religious beliefs, the first set of analyses examined whether religiosity, religious participation, spirituality, and belief in the soul and mind differed by religious affiliation (see Table 1). Five separate Univariate Analyses of Variance (ANOVA) indicated religiosity ($F[2,371] = 105.49, p < .001, \text{partial } \eta^2 = .36$), religious participation ($F[2,371] = 53.34, p < .001, \text{partial } \eta^2 = .22$), spirituality ($F[2,371] = 19.47, p < .001, \text{partial } \eta^2 = .10$), and belief in the soul ($F[2,371] = 12.76, p < .001, \text{partial } \eta^2 = .06$) significantly differed by religious affiliation, but belief in the mind did not (see Table 1).

Bonferroni post-hoc tests examined the significant differences between each group. In terms of religiosity, the Christian participants were significantly more strongly affiliated than the Buddhist and Agnostic participants; and the Buddhist participants were significantly more strongly affiliated than the Agnostic participants. The findings for religious participation were similar. The Christian participants were significantly more likely to participate in religious activities than the Buddhist and Agnostic participants; and the Buddhist participants were significantly more likely to participate in religious activities than the Agnostic participants.

The findings related to spirituality were somewhat different. Again, the Christian participants rated themselves as significantly more spiritual than the Buddhist and Agnostic participants. In this case, however, the Buddhist participants were not significantly different from the Agnostic participants. Reported belief in the soul was primarily a function of whether participants claimed religious affiliation or a sense of spirituality. The Buddhist and Christian participants did not differ from each other; and the Buddhist participants also did not differ significantly from the Agnostic participants. However, the Christian participants were significantly more likely to claim that the soul existed than the Agnostic participants.

In summary, participants who self-identified as members of different religious groups also differentiated along specific dimensions. The Christian and Buddhist participants were similar to each other, except that in general the Christian participants reported stronger religious affiliation, more religious participation, and a stronger sense of spirituality. Although the Agnostic participants reported no religious affiliation or religious participation, they did report a general sense of spirituality. Finally, although there were no differences between the participants in belief that the mind exists by religious affiliation, the Christian participants were more certain than the Agnostic participants that the soul existed, and the Buddhist participants' certainty fell between that of the Agnostic and Christian participants. Given the different characteristics of the different religious groups, all variables were

Table 1. Means (and standard deviations) or percentages of variables by religious affiliation

	Religious affiliation			
	Overall	Christian (<i>n</i> = 276)	Buddhist (<i>n</i> = 41)	Agnostic (<i>n</i> = 57)
Religiosity (0–2)	1.00 (.69)	1.22 (.60)	.76 (.49)	.09 (.29)
Religious participation (0–5)	1.61 (1.48)	2.01 (1.49)	1.00 (.80)	.13 (.31)
Spirituality (0–2)	1.09 (.63)	1.20 (.59)	.88 (.56)	.70 (.68)
Belief in soul (0–2)	1.70 (.56)	1.78 (.50)	1.61 (.59)	1.39 (.70)
Belief in mind (0–2)	1.94 (.26)	1.94 (.27)	1.90 (.30)	1.90 (.19)
Soul start (1–4)	2.35 (1.10)	2.32 (1.10)	2.47 (1.20)	2.39 (1.02)
Mind start (1–4)	2.94 (.88)	2.90 (.92)	3.05 (.77)	3.07 (.77)
Soul develop (% stays same)	51.5%	50.6%	55.3%	54.0%
Mind develop (% stays same)	11.0%	9.4%	14.6%	15.8%
Soul death (% continues)	91.7%	93.8%	85.3%	84.4%
Mind death (% continues)	37.8%	40.0%	43.2%	23.6%
Soul cognitive (0–4)	.84 (1.43)	.79 (1.39)	1.44 (1.75)	.67 (1.31)
Mind cognitive (0–4)	3.36 (1.26)	3.33 (1.29)	3.29 (1.29)	3.59 (1.02)
Soul spiritual (0–4)	2.60 (1.39)	2.72 (1.35)	2.54 (1.38)	2.04 (1.46)
Mind spiritual (0–4)	.95 (1.39)	.92 (1.37)	1.10 (1.43)	1.00 (1.45)

analyzed by religious affiliation (see Table 1) and correlational analyses examined the relationship between religiosity, religious participation, spirituality, certainty of belief in the soul, and certainty of belief in the mind with specific ontological and functional beliefs about the soul and mind (see Table 2).

Concepts of the soul and mind

Ontology. Scores for all soul and mind ontology variables are located in Table 1. Participants claimed that the soul begins significantly earlier than the mind, $t(348) = 9.79$, $p < .001$, is more likely to stay the same over a person's lifetime than the mind, $\chi^2 (n = 355) = 16.32$, $p < .001$, and is more likely to continue on in some way at death, $\chi^2 (n = 320) = 19.67$, $p < .001$. ANOVA analyses testing differences

Table 2. Correlation matrix.

		Religiosity	Religious participation	Spirituality	Belief in soul	Belief in mind
Soul	Cognitive	.03	.04	.05	.11*	-.03
	Spiritual	.13*	.13*	.19**	.37**	.10
	Begins	-.25**	-.26**	-.19**	-.11*	-.03
	Develops	-.10	-.09	-.05	-.11*	.01
	Death	.17**	.15**	.27**	.20**	.02
Mind	Cognitive	-.13*	-.10	-.02	-.03	.16**
	Spiritual	.01	.03	.002	-.01	-.05
	Begins	-.10	-.09	-.01	.00	.10
	Develops	-.06	-.06	-.04	-.10	-.11*
	Death	.08	.06	.05	.09	-.05

* $p < .05$, ** $p < .01$, *** $p < .001$

based on religious affiliation indicated a main effect of religious affiliation only on beliefs about what happens to the soul at death, $F(2,336) = 3.01$, $p < .05$, partial $\eta^2 = .02$. Bonferonni post-hoc tests revealed none of the religious groups individually were significantly different from each other. There were no significant differences based on religious affiliation for whether participants believed that the soul and mind stayed constant over the lifespan, when the soul and mind begin, or what happens to the mind at death.

As indicated in Table 2, there was only one significant correlation between mind ontology scores and the religious variables; belief that the mind exists was associated with a decreased belief that the mind was stable over the life course. The soul ontology scores were not significantly correlated with belief in the mind. However, believing the soul begins earlier in the life cycle and continues after death were both significantly correlated with religiosity, religious participation, spirituality, and belief in the soul. Belief that the soul stays the same was significantly correlated with belief in the soul, but none of the other religious variables.

Function. Scores for all soul and mind function variables are displayed in Table 1. The soul cognitive, soul spiritual, mind cognitive, and mind spiritual responses were analyzed with a $2 \times 2 \times 3$ ANOVA, with aspect (mind vs soul) and function (spiritual vs cognitive) as the within-subjects variables and religion (Christian, Buddhist, Agnostic) as the between-subjects variable. There was a main effect of aspect ($F[1,371] = 37.52$, $p < .001$, partial $\eta^2 = .07$), such that participants attributed significantly more functions to the mind than the soul. There was also a main effect of function ($F[1,371] = 44.16$, $p < .001$, partial $\eta^2 = .11$), such that participants attributed significantly more cognitive functions than spiritual functions. These main effects should be considered within the significant interaction between aspect and function ($F[1,371] = 342.47$, $p < .001$, partial $\eta^2 = .48$). Participants were significantly more likely to attribute spiritual functions to the soul than the mind and cognitive functions to the mind than the soul. There was no main effect of religious affiliation; however, there were significant interactions between religious affiliation and aspect ($F[2,371] = 6.57$, $p < .01$, partial $\eta^2 = .03$) and religious affiliation and function ($F[2,371] = 4.50$, $p < .01$, partial $\eta^2 = .02$). These interactions were driven by the fact that the Buddhist participants were significantly more likely than other participants to attribute cognitive functioning to the soul (see Table 1).

As indicated in Table 2, the mind cognitive scores were significantly negatively correlated with religiosity and positively correlated with belief in the mind. There were no other correlations with the mind cognitive or spiritual functions scores. In contrast, the soul spiritual scores were significantly correlated with religiosity, religious participation, spirituality, and belief in the soul, but not belief in the mind. The soul cognitive scores also were significantly correlated with belief in the soul.

Evaluation of the open-ended responses revealed similar findings. Nearly all of the responses about the mind (79.3%) were coded as indicating a cognitive function, followed by 13.4% indicating a spiritual function, 3.8% indicating a tie to identity, and 3.5% indicating the mind does not do anything at all. In contrast, 40.6% of responses indicated the soul had spiritual functions; and an additional 23.6% of responses indicated the soul was tied in some way to identity. Less than a quarter of the responses (20.7%) indicated the soul did nothing at all, and 15.1% of the responses indicated the soul was important for cognitive functions. Open responses

about the functions of the soul and mind did not significantly differ by religious affiliation.

Summary. Consistent with the essentialist hypothesis, participants were similar in their basic ontological description of the soul concepts: regardless of religious affiliation, participants were more likely to claim that the soul existed outside of the life cycle, that it remained stable over time, and that it was more important for identity than the mind. Similar to past research, these findings indicate that adults conceptualize the mind and the soul as having very different functions. Despite differing religious beliefs, adults conceptualized the functions of the mind as primarily being cognitive. In contrast, participants' conceptualized the function of the soul as primarily important for spiritual functioning, with the exception that the Buddhist participants were more likely than the Christian or Agnostic participants to attribute cognitive functions to the soul. Beyond religious affiliation, participants who reported a stronger sense of religiosity, religious participation, spirituality, and belief in the soul were more likely to conceptualize the soul as serving primarily spiritual functions and existing in a separate ontological domain than the mind. Given that participants' judgments about the ontological nature of the soul did not vary by religious affiliation, we examined whether individual differences in these concepts were related to ethical reasoning independently of religious affiliation.

Reasoning about ethical issues and the soul concept

Abortion. The first ethical issue examined was whether or not abortion is acceptable. To examine which factors might be covariates of participants' ratings, correlations were run between participants' abortion acceptability ratings and their ratings of when the soul started, whether the soul remains stable, what happens to the soul at death, and the soul spirituality and cognitive functions scores. Abortion acceptability was significantly negatively correlated with judgments about the continuation of the soul at death ($r = -.14, p < .05$) and soul spirituality scores ($r = -.15, p < .01$) and significantly positively correlated with judgments about when the soul started ($r = .17, p < .001$) and whether the soul changes ($r = .11, p < .05$). An ANCOVA was conducted on participants' ratings about the acceptability of abortion testing for differences by religious affiliation and with participants' ratings of when the soul started, whether the soul changes, what happens to the soul at death, and soul spirituality scores as covariates. There was a main effect of religious affiliation, $F(2, 330) = 27.15, p < .001$, partial $\eta^2 = .14$. Bonferroni post-hoc tests revealed that Christian ($M = 2.66, SE = .08$) participants were significantly less likely than Buddhist ($M = 3.64, SE = .21$), or Agnostic ($M = 3.97, SE = .18$) participants to endorse the acceptability of abortion. Two significant covariates also emerged: when the soul started, $F(1, 330) = 10.52, p < .001$, partial $\eta^2 = .03$, and whether the soul changes, $F(1, 330) = 4.35, p < .05$, partial $\eta^2 = .01$. Regardless of religious affiliation, participants were more likely to disagree with abortion if they believed that the soul began earlier in the life cycle and believed the soul stays the same over a person's lifetime.

Stem cell research. The second ethical issue examined was whether or not it is appropriate to use embryonic stem cells for research. To examine which factors might covary with participants' ratings, correlations were run between stem cell research

acceptability ratings and ratings of when the soul started, whether the soul remains stable, what happens to the soul at death, and the soul spirituality and cognitive functions scores. Similar to the abortion acceptability ratings, stem cell acceptability ratings were significantly negatively correlated with judgments about whether the soul continues at death ($r = -.22, p < .001$) and soul spirituality scores ($r = -.15, p < .01$) and significantly positively correlated with judgments about when the soul started ($r = .14, p < .01$) and whether the soul changes ($r = .12, p < .05$). An ANCOVA was conducted on participants' ratings about the acceptability of embryonic stem cell research, testing for differences by religious affiliation and with participants' ratings of when the soul started, whether the soul changes, what happens to the soul at death, and soul spirituality scores as covariates. There was a main effect of religious affiliation, $F(2,330) = 10.89, p < .001$, partial $\eta^2 = .06$. Bonferroni post-hoc tests revealed that Christian ($M = 3.14, SE = .06$) and Buddhist ($M = 3.30, SE = .17$) participants were significantly less likely than Agnostics ($M = 3.92, SE = .15$) to believe that embryonic stem cell research is acceptable. Buddhist and Christian participants were not significantly different from each other. Additionally, three covariates were significantly related to judgments about stem cell research: when the soul begins, $F(1,330) = 6.87, p < .01$, partial $\eta^2 = .02$, whether the soul changes, $F(1,330) = 5.43, p < .05$, partial $\eta^2 = .02$, and what happens to the soul at death, $F(1,330) = 9.92, p < .01$, partial $\eta^2 = .03$. Regardless of religious affiliation, participants were more likely to disagree with embryonic stem cell research if they believed that the soul begins earlier in the life cycle, stays the same over a person's lifetime, or continues at death.

Euthanasia. The third ethical issue examined was whether or not euthanasia is acceptable. To examine which factors might covary with participants' ratings, correlations were run between euthanasia acceptability ratings and ratings of when the soul started, whether the soul remains stable, what happens to the soul at death, and the soul spirituality and cognitive functions scores. Euthanasia acceptability was significantly negatively correlated with whether the soul continues at death ($r = -.12, p < .05$) and soul spirituality scores ($r = -.13, p < .05$). An ANCOVA was conducted on participants' ratings about the acceptability of euthanasia testing for differences by religious affiliation and with participants' ratings of what happens to the soul at death and soul spirituality scores as covariates. In this case, neither of the covariates was significant, suggesting that specific soul concepts did not explain participants' beliefs about the acceptability of euthanasia above and beyond religious affiliation. There was, however, a main effect of religious affiliation, $F(2, 334) = 11.37, p < .001$, partial $\eta^2 = .06$. Bonferroni post-hoc tests revealed that Christian ($M = 1.98, SE = .08$) participants were significantly less likely than Buddhist ($M = 2.53, SE = .21$), or Agnostic ($M = 2.88, SE = .19$) participants to endorse the acceptability of euthanasia. Buddhist and Agnostic participants were not significantly different from each other.

Life support. The fourth ethical issue examined was whether or not it is acceptable to disconnect someone from life support. To examine which factors might covary with participants' ratings, correlations were run between cessation of life support acceptability ratings and ratings of when the soul started, whether the soul remains stable, what happens to the soul at death, and the soul spirituality and cognitive functions scores. Participants' ratings about the acceptability of disconnecting

someone from life support were negatively correlated with judgments about what happens to the soul at death ($r = -.13, p < .05$). An ANCOVA was conducted on participants' ratings about the acceptability of disconnecting someone from life support testing for differences by religious affiliation and with participants' ratings of what happens to the soul at death as a covariate. The covariate was not significant. There was a main effect of religious affiliation, $F(2, 334) = 12.03, p < .001$, partial $\eta^2 = .07$. Bonferroni post-hoc tests revealed Christian ($M = 3.11, SE = .07$) participants were significantly less likely than Buddhist ($M = 3.54, SE = .18$), or Agnostic ($M = 3.91, SE = .16$) participants to endorse the acceptability of euthanasia. Buddhist and Agnostic participants were not significantly different from each other.

Suicide. The fifth ethical issue examined was whether it is acceptable for a person to end his or her own life through suicide. To examine which factors might covary with participants' ratings, correlations were run between suicide acceptability ratings and ratings of when the soul started, whether the soul remains stable, what happens to the soul at death, and the soul spirituality and cognitive functions scores. Suicide acceptability was significantly negatively correlated with judgments about whether the soul continues at death ($r = -.12, p < .05$) and soul spirituality scores ($r = -.20, p < .001$) and significantly positively correlated with judgments about when the soul started ($r = .16, p < .01$) and whether the soul changes ($r = .12, p < .05$). An ANCOVA was conducted on participants' ratings about the acceptability of suicide testing for differences by religious affiliation and with participants' ratings of when the soul started, whether the soul remains stable, what happens to the soul at death, and the soul spirituality scores as covariates. There was a main effect of religious affiliation, $F(2, 330) = 35.24, p < .001$, partial $\eta^2 = .18$. Bonferroni post-hoc tests revealed Christian ($M = 1.74, SE = .07$) participants were significantly less likely than Buddhist ($M = 2.84, SE = .19$), or Agnostic ($M = 3.00, SE = .17$) participants to endorse the acceptability of euthanasia. Buddhist and Agnostic participants were not significantly different from each other. Three covariates also emerged as significant: when the soul begins, $F(1, 330) = 6.09, p < .05$, partial $\eta^2 = .02$, whether the soul changes, $F(1, 330) = 5.46, p < .05$, partial $\eta^2 = .02$, and soul spirituality, $F(1, 330) = 3.94, p < .05$, partial $\eta^2 = .01$. Regardless of religious affiliation, participants were less likely to believe that suicide is acceptable if they believe that the soul begins earlier in the life cycle, remains the same over a person's life, and has spiritual functions.

Summary. As expected, religious affiliation was significantly predictive of early- and late-life ethical decisions. Christians were less likely to endorse the acceptability of abortion, euthanasia, removing someone from life support, and suicide than Buddhists and Agnostics. Christians and Buddhists were both less likely to endorse embryonic stem cell research than Agnostics. However, of particular interest to the current research were the findings that above and beyond differences by religious affiliation, participants' specific beliefs about the ontological nature of the soul were related to reasoning about these same ethical dilemmas. Specifically, participants who believed that the soul started earlier and was constant throughout the lifespan were less likely to endorse the acceptability of abortion, stem cell research, and suicide compared to participants who believed that the soul started later or changed throughout the life span. Additionally, participants who believed that the soul continues after death were less likely to endorse the acceptability of stem cell research.

Thus, specific beliefs about the ontological, but not functional, nature of the soul influenced reasoning about three of the five scenarios; participants' reasoning about two of the three end-of-life scenarios, euthanasia and removal of life support, were not related to beliefs about the soul independent of religious affiliation.

General discussion

Much of the current research into how humans conceptualize other humans has focused on the hypothesis that we have a dualistic conception of others, differentiating the functions of the body from the functions of the mind (Bloom, 2004). Recent criticisms of this approach have suggested that this characterization of cognition is insufficient to account for the common presence of a third intuition humans have about other humans, namely that other people have souls or spirits (Hodge, 2008; Richert & Harris, 2008). In the study reported above, we examined two aspects of soul concepts in an adult sample: the nature of similarities and differences in the soul concept based on religious affiliation, and the implications of the soul concept for reasoning about beginning-of-life and end-of-life ethical dilemmas.

One goal of the current study was to delineate the nature and influence of soul and mind concepts across religious affiliations in order to examine the role of cultural input in forming and altering these concepts. Similarities and differences in soul concepts based on religious affiliation can provide evidence about the relationship between intuitive cognition about others' minds and souls and the cultural (i.e., religious) influences on this cognition. In the study reported above, most aspects of participants' soul concepts were the same, regardless of religious affiliation. Overall, participants claimed that the soul existed independent of the life cycle, that it did not change across the lifespan, and was associated primarily with spiritual and identity functioning, which replicated the findings of previous research (Richert & Harris, 2008).

One explanation for these findings is that soul concepts do not solely reflect a dualistic pattern of reasoning in which the functions of the mind are differentiated from the functions of the body; the soul concept may also involve the application of elements of psychological essentialism to individual persons, or a personal essence (Richert & Harris, 2008). Developmental evidence suggests essentialist reasoning is an early cognitive bias/reasoning heuristic in concept development, language development, and the development of causal reasoning (Gelman, 2009). Importantly, attributing an essence can operate as a placeholder before a name for the essential feature is known; in other words, a person can believe a category has an essence without knowing what that essence is (Medin & Ortny, 1989). Theorists have also suggested that people attribute essences to individual people (Chandler, 2001). The essentialism hypothesis would predict that concepts of the soul should be differentiated from concepts of the mind and should reflect concepts of personal essentialism, such as the sense of an individual identity that remains stable despite external transformations.

Preliminary evidence for this effect was found in past research in which children differentiated the soul from the mind before they had fully differentiated the mind and the brain from one another (Richert & Harris, 2006). In addition, in previous studies approximately 80% of adults claimed that a person in a persistent vegetative state still had a soul in contrast to 33% who claimed that the person still had a mind

(Richert & Harris, 2008). These findings suggest that participants viewed the soul as conferring some kind of identity which exists outside of the life cycle of the body and which continues even when the mind ceases to function. The findings of the present study are consistent with this interpretation: regardless of religious affiliation, participants had significantly different intuitions about the ontological nature of the soul and mind. Whereas the mind was more directly associated with the life cycle and change, there was general agreement across religious affiliations in their conceptualization of the soul as stable and separate from the life cycle.

Despite the similarities across participants in the differentiation of the soul from the mind, the role of cultural input is evident in the fact that participants' attribution of specific spiritual functioning to the soul differed by degree of religiosity, religious participation, spirituality, and belief in a soul. Although these variables were significantly different across the different religious affiliations, there was only one direct effect of religious affiliation on the attribution of functioning to the soul: Buddhist participants were more likely than other participants to attribute cognitive functioning to the soul.

However, it is also important to note that attributions of spiritual functioning were not related to participants' judgments about ethical dilemmas. It was participants' explicit ontological judgments that were related to ethical decisions beyond the variance accounted for by religious affiliation. Therefore, although research into concepts of the soul indicating that souls are believed to be the primary controller of spiritual functioning (Richert & Harris, 2008) has clear implications for understanding afterlife beliefs (Bering, 2006), individual differences in explicitly stated ontological beliefs about the soul are also reliably related to differences in reasoning about ethical situations. In the research reported above, regardless of religious affiliation, participants were more likely to disagree with abortion, stem cell research, and suicide if they believed that the soul began earlier in the life cycle and believed that the soul stays the same over a person's lifetime. Additionally, participants were more likely to disagree with embryonic stem cell research if they believed that the soul continues at death. Participants' ontological judgments about the soul did not account for additional variance beyond religious affiliation in the cases of life support or euthanasia.

The relationships between ontological attributions of the soul and ethical reasoning should be viewed in the context of the fact that participants were excluded from analyses if they claimed that the soul never began (6.4%) or did not respond to questions about whether the soul changes (5.1%) or what happens to the soul at death (9.4%). Given that these participants did not believe that the soul existed and did not categorize the soul ontologically, one possibility is that these participants' ethical judgments are unrelated to their conceptualization of the soul. However, given that data collection relied on using the term "soul" it is unclear if, and to what extent, people's belief in an immaterial essence that they would not term the "soul" would influence their ethical decision-making. Thus, future research should consider methods of examining attributions of personal essence and the relation between personal essentialism and ethical decision-making.

Despite the limitations due to missing data, the findings on the relationship between soul concepts and ethical decision-making suggest that beliefs about the soul may be one of the underlying concepts which explains broad differences between religions in reasoning about early-life ethical decisions such as abortion. Given that beliefs about the soul influenced reasoning about the general acceptability of

abortion, stem cell research, and suicide, soul concepts may be one mechanism by which religious affiliation works to influence the reasoning of religious compared to non-religious individuals. In other words, religious affiliation may influence ethical reasoning by teaching or endorsing specific concepts about the nature of the soul in relation to the life cycle. Such an interpretation is supported by the finding that although the general structure of soul concepts were similar across religious affiliations, the strength of the beliefs about the soul differed, with Christians more likely to believe in the existence of the soul than Agnostics, and Buddhists not differing significantly from either religious affiliation.

These findings also suggest that an understanding of individuals' soul concepts may shed light on the relationship between religious concepts and religious cognition. Further research is needed on the relationship between reflective concepts of the soul and the underlying intuitive beliefs about the nature of persons and identity. Although there was no difference in participants' ontological and functional beliefs about the soul, differences in attributions of the soul concept (the part of a person that continues on after death) may be found in more other cultural samples (e.g., Lane et al., 2011). Additionally, an understanding of the relationship between soul concepts and religious cognition may reveal how religious affiliation could shape the expression of intuitive cognition in ways that are meaningful to adult cognition. However, the implications of these findings for intuitive cognitions are limited by the methods, which relied on the use of the term "soul." Since the term itself reflects the cultural category, our findings primarily point to the role the explicit soul concept plays in religious cognition. Thus, as with much of the research into the development of religious cognitions, future research should clearly outline the development of the soul concept in relation to cultural input (instruction, ritual practices) supporting that development (Richert & Granqvist, in press).

The findings reported above replicate findings suggesting that the concept of the soul involves more than simply the attribution of mental properties or the refinement of an understanding of the mind. Participants clearly differentiated the functions of the soul and mind from each other, regardless of religious affiliation. According to most participants, the soul has primarily spiritual functions, the mind has primarily cognitive functions, and there is minimal overlap between the two. In addition, the current research suggests that specific ontological, but not functional, aspects of the soul concept influence reasoning about ethical dilemmas, most notably early-life decisions. Taken together, these findings lend further empirical support to the essentialism hypothesis, which suggests that the human tendency toward psychological essentialism provides a foundation for adults' concepts of the soul and is robust in adult cognition.

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