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I think, therefore I am? Examining conceptions of the self, soul, and mind

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ABSTRACT

In order to delineate among conceptions of the self, soul, and mind, participants reported where they believe these entities are located in the body and provided definitions of each entity. Results indicated that most people consider the self, soul, and mind localized in specific regions in the body. In contrast to previous research, however, some participants reported that the self is not centralized in one location. Participants tended to locate the self and mind in the head and the soul in the chest. The self and mind were commonly defined in mental terms and the soul as one's essence. These results suggest that people tend to distinguish the soul from the mind, both in how they define each entity and where they locate them in the body. Although some people locate the soul in the same region as the self, most people more closely align the mind with the self.

1. Introduction

Humans have long been interested in phenomenological experiences, such as consciousness, which appear to define human existence. Throughout history, philosophers, theologians, and scientists have developed various theories about the relationships among the body, self, soul, and mind, which people have adopted, rejected, or revised over time. The purpose of the present study was to examine current conceptions of the body, self, soul, and mind.

1.1. History of the philosophy of mind

According to the dualist philosophical perspective, the mind and body are separate entities; that is, mental phenomena are, to some extent, distinct from physical matter and events. In *Phaedo*, Plato described his classic dualist account (see Cooper, 1997). He proposed that eternal, immaterial forms (i.e., immortal souls) are separate substances from physical bodies; they are embedded in bodies during life but strive to enter into the immaterial world after death. Aristotle also endorsed the idea that immaterial souls are made from different substances than physical bodies, but he claimed that souls cannot exist independently from the body (and thus are not immortal; see Hamlyn, 1968/1993). Similarly, Aquinas (1912) believed souls are immaterial substances, and that people are only whole when their souls are united with their bodies; without the body, Aquinas proposed, no memories exist.

Descartes (1641) is credited for establishing the modern dualist perspective in his *Meditations*. Descartes promoted *substance dualism*, the perspective that mental substances are separate from material substances. Mental substances (or minds) have no extension in space, but material substances (or bodies) cannot think. Descartes suggested that minds influence

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bodies through the pineal gland. Descartes' dualism is compatible with the existence of immortal souls, in that immaterial substances can exist independently from the material world, according to this perspective. However, another form of dualism, *property dualism*, maintains that only one substance exists, which can have either physical or mental properties. According to this view, mental phenomena emerge from matter but cannot be reduced to physical matter.

The monist philosophical perspective emerged in 20th century philosophy, which dismissed dualism entirely. Coinciding with the behaviorist movement in psychology (Watson, 1913), the monist view purported that the mind and body are a single entity. A specific form of monism, materialism, contends that all mental phenomena (e.g., thoughts, emotions, desires, consciousness) derive from physical matter.

1.2. Modern psychological research on conceptions of the body, soul, and mind

Cognitive development research suggests that cognitive defaults that emerge in early childhood predispose people to endorse a dualist rather than materialist perspective (Bloom, 2007; Uhlmann, Poehlman, & Bargh, 2008). Young children readily separate the body from the mind. Kindergartners tend to believe that the brain is responsible for deliberative mental activities like reading, thinking, and remembering but not for physical activities like walking or kicking a ball (Johnson & Wellman, 1982). Children as young as four recognize that biological states and functions discontinue after death (e.g., hunger, thirst, brain activity; Bering & Bjorklund, 2004) but believe that psychological states persist (e.g., thoughts, feelings, and desires; Bering & Bjorklund, 2004). Although humans may be "natural dualists," or cognitively predisposed to believe in dualism (Bloom, 2007), some people question and abandon these beliefs as they grow older. In particular, those who are exposed to and subsequently embrace a scientific, materialist perspective of existence are likely to become skeptical of the dualist perspective (Norenzayan & Gervais, 2013). For others, however, beliefs about the separation of the mind and body persist into adulthood (Stanovich, 1989).

Although researchers have investigated beliefs about mind–body dualism (e.g., Bering & Bjorklund, 2004; Bloom, 2004; Forstmann, Burgmer, & Mussweiler, 2012; Gray, Knickman, & Wegner, 2011; Stanovich, 1989), less attention has been given to examining beliefs about the soul (Bloom, 2007; Uhlmann et al., 2008), despite the fact that over 90% of adults worldwide believe humans have souls (Halman et al., 2008). Many people believe that the soul differentiates humans from animals (Templer, Connelly, Bassman, & Hart, 2006). Some believe both the soul and body continue to exist after death, whereas others believe that only the soul continues on (Burris & Bailey, 2009). Therefore, in addition to mind–body dualism, it seems likely that at least some people also believe in soul–body dualism (i.e., that the soul and body are distinct entities).

1.3. Current study

In some literature (e.g., Forstmann et al., 2012), researchers equate the mind with the soul, referring to them as a single entity: "mind/soul." However, there is no empirical evidence demonstrating that people believe the mind and soul are the same. Without such evidence, it is unclear whether people believe the soul and the mind are interchangeable or distinct. If people consider them separate entities, then the question arises as to whether people believe the self is primarily defined by the soul or the mind.

People's beliefs about the self, soul, and mind are often intuitive and have not been explicitly defined or articulated (Bloom, 2007; Haidt, Bjorklund, & Murphy, 2010; Uhlmann et al., 2008). One way of examining such intuitive beliefs about whether (1) the soul and mind are distinct entities and (2) the soul or mind is the key feature defining the self is to measure where people believe the self, soul, and mind are located in the body. Several studies have demonstrated that most people believe the self is located at a single point in the body, rather than distributed throughout (Alsmith & Longo, 2014; Bertossa, Besa, Ferrari, & Ferri, 2008; Limanowski & Hecht, 2011; Starmans & Bloom, 2012). When participants were asked to point to the location on their own body where the self is located, participants either pointed to their upper face or their upper torso (Alsmith & Longo, 2014). Likewise, when asked to indicate the point on a human silhouette as the location of the self, participants either identified the brain or the heart (Limanowski & Hecht, 2011). When identifying the location of the self on non-human silhouettes, however, participants only pointed to the brain as the location of the self (Limanowski & Hecht, 2011). Starmans and Bloom (2012) used a more indirect procedure to assess the perceived location of the self among preschoolers and adults. Participants were shown pictures of objects (i.e., a fly or a snowflake) superimposed on figures (i.e., a girl or an alien) and were asked to select the pictures where the objects were closest to the self. Using this indirect method, both preschoolers and adults perceived objects near the eyes to be closer to the self than objects near other parts of the body.

Taken together, these studies suggest that people may be identifying different entities as the self. Although Starmans and Bloom's (2012) findings provide evidence that people intuitively locate the self in the head, Alsmith and Longo (2014) and Limanowski and Hecht's (2011) findings indicate that a sub-group of individuals locate the self in the heart. Some people may point to the head because they equate the self with the mind or brain, whereas others may point to the heart or chest because they equate the self with the soul. The purpose of the present study was to examine whether people believe the soul and mind are located in different locations in the body (and thus are distinct entities), and if so, whether people tend to equate the self with the soul or the mind. To investigate these questions, participants indicated where they believe the self, soul, and mind are located in the body and defined the self, soul, and mind.

2. Method

2.1. Participants

A total of 206 students (65 men, 135 women, 6 unreported; M_{age} = 18.78, SD = 2.46) from the psychology subject pool at Rutgers University participated in this study. The sample was 38.5% Christian, 14.5% Hindu, 13.5% Other, 11.5% Atheist, 7.5% Agnostic, 6.5% Jewish, 4.5% Muslim, and 3.5% Buddhist.

2.2. Materials and procedure

2.2.1. Identifying location of self, soul, and mind

Participants were first asked, in a free-response format, where the self, soul, and mind are located in the body. These three questions were presented in randomized order.

Following the open-ended items, participants were presented with a figure of the human body, which contained numbers identifying eight different regions of the body (see Fig. 1). To be consistent, all regions were presented down the center of the body. Below the figure were two additional options participants could select if they believed the self, soul, or mind (1) was not located in a centralized region or (2) does not exist (see Fig. 1). Participants were asked, in a forced-choice format, to select which region best represents the location of the self, soul, and mind in the body. These three items were presented in randomized order.

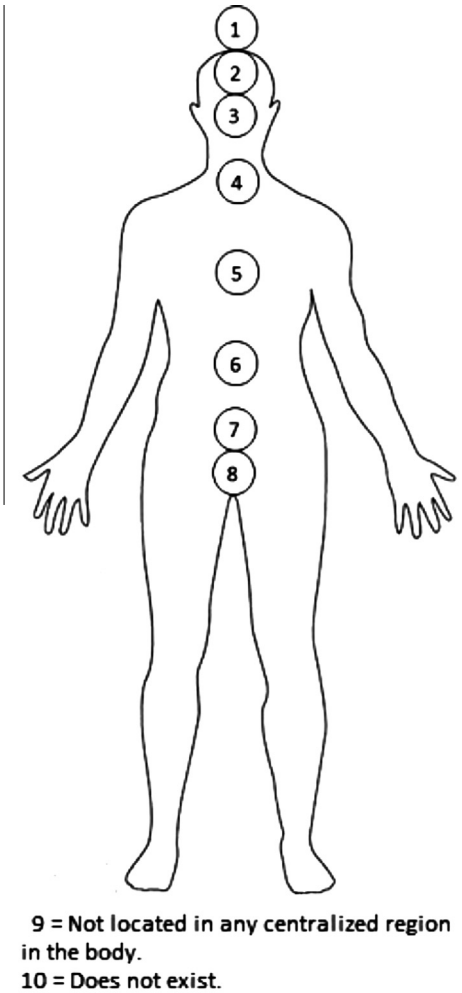

Fig. 1. Body diagram for forced-choice items assessing the perceived location of the self, soul, and mind.

2.2.2. Defining the self, soul, and mind

After identifying the location of the self, soul, and mind, participants were asked how they would define the self, soul, and mind. These questions were also presented in randomized order.

Following the open-ended questions, participants were presented with a forced-choice item asking them which of eight options best defines the soul (i.e., essence, inner being, or immaterial self; life force; conscience or morals; personality; motivations and goals; memories and experiences; other; does not exist).

2.2.3. Coding

Two coders blind to the study's goals were instructed to read through the responses to the open-ended items and inductively generate categories that captured the common responses for the location and definition of each entity (self, soul, and mind). After generating these categories, each coder independently categorized participants' responses into a single category. Inter-rater reliability was greater than 95% for all items, and discrepancies were resolved through discussion.

2.2.4. Additional measures

After identifying the location of the self, soul, and mind in the body and defining these entities, participants completed a few additional measures. These measures were not central to the main goals of the study but were included for exploratory purposes. The measures assessed the strength of participants' beliefs in the soul, afterlife, and mind–body dualism; varieties of afterlife beliefs; and their religiosity, frequency of religious service attendance, and political orientation.

2.2.4.1. Strength of soul and afterlife beliefs. The first exploratory items presented assessed the strength of participants' soul and afterlife beliefs. These items were: "I believe humans have souls" and "I do not believe in an afterlife" [reverse-coded]. Participants responded to these items on a scale ranging from 1 (*strongly disagree*) to 8 (*strongly agree*).

2.2.4.2. Afterdeath Beliefs scale (Burris & Bailey, 2009). After the single-item soul and afterlife questions, participants completed the Afterdeath Beliefs and Dualism scales, presented in randomized order. The Afterdeath Beliefs Scale was employed to measure varieties of afterlife beliefs. This scale assesses five varieties of afterlife beliefs: *annihilation* (the belief that consciousness discontinues at death), *disembodied spirit* (the belief that consciousness continues on, but an individual's identity and body do not), *spiritual embodiment* (the belief that consciousness and identity continue on but the body does not), *reincarnation* (the belief that consciousness continues, identity is lost, and a new body is acquired), and *bodily resurrection* (the belief that consciousness, identity, and the body are preserved). The scale also assesses *belief/behavior efficacy*, or the degree to which individuals consider their fate determined by their beliefs and behaviors in this life. Overall, the measure contains 24 items, four for each of the six subscales. Items were rated on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Each subscale achieved acceptable reliability in the present sample (α's $\geqslant 0.75$).

2.2.4.3. Mind–body dualism scale (Stanovich, 1989). The Dualism Scale was used to assess beliefs in mind–body dualism. This scale contains 27 items assessing the degree to which individuals believe the mind and body are separate entities (e.g., "Minds are inside brains but are not the same as brains"). Items were rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). This scale achieved acceptable reliability in the present study ($\alpha = 0.80$).

2.2.4.4. Religiosity, religious service attendance, and political ideology. Lastly, participants rated the strength of their religiosity (on a 7-point scale), reported how often they attend religious services (1 = never, 6 = daily), and indicated their political orientation (1 = very conservative, 7 = very liberal).

3. Results

3.1. Location of self, soul, and mind

3.1.1. Self

The most frequent free-response provided for the location of the self in the body was the head, brain, or mind (40.5%; see Table 1). Another 22.4% simply reported that the self was located in the body, without specifying any single location. It is unclear whether participants who reported the self is not located anywhere in the body (4.9%) also believed that the self is not localized in a single region in the body. A smaller subset of participants identified the heart or chest as the location of the self (12.7%). Less frequent responses included the soul (3.9%), the head and chest (2.9%), and the abdomen (1.0%).

The forced-choice item demonstrated a similar pattern of responses. On this item, 39.7% of participants selected the head as the location of the self (5.4% chose the top of the head, 25.0% the forehead, and 9.3% the center of the face; see Table 1). 27.0% reported that the self is located in the chest, 22.1% reported that the self is not centralized in the body, and 6.5% reported that it is located in the abdomen.

Table 1
(A) Coded free responses to location of self in body and (B) Perceived location of self on figure.

	N	%
(A)		
Head, brain, or mind	83	40.5
Heart/chest	26	12.7
Head and chest	6	2.9
Soul	8	3.9
Body	46	22.4
Abdomen	2	1.0
Nowhere	10	4.9
Other	24	11.7
(B)		
1. Top of head	11	5.4
2. Forehead	51	25.0
3. Center of face	19	9.3
4. Throat	5	2.5
5. Center of chest	55	27.0
6. Center of abdomen	13	6.4
7. Center of hips	1	0.5
8. Groin	0	0.0
9. Not centralized	45	22.1
10. Does not exist	4	2.0

Note: The *N* for each item is lower than the total *N* for the study because a few participants dropped out before completing the study. Percentages were calculated for each item based on the number of participants who responded to that item.

Table 2
(A) Coded free responses to location of soul in body and (B) Perceived location of soul on figure.

	N	%
(A)		
Head, brain, or mind	45	22.0
Heart/chest	86	42.0
Head and chest	9	4.4
Body	25	12.2
Abdomen	6	2.9
Nowhere	21	10.2
Other	13	6.3
(B)		
1. Top of head	8	3.9
2. Forehead	29	14.2
3. Center of face	5	2.5
4. Throat	3	1.5
5. Center of chest	108	52.9
6. Center of abdomen	7	3.4
7. Center of hips	2	1.0
8. Groin	1	0.5
9. Not centralized	33	16.2
10. Does not exist	8	3.9

Note: The *N* for each item is lower than the total *N* for the study because a few participants dropped out before completing the study. Percentages were calculated for each item based on the number of participants who responded to that item.

3.1.2. Soul

In contrast, the most frequent free-response provided for the location of the soul in the body was the heart or chest (42.0%; see Table 2). A smaller subset of participants identified the head, brain, or mind as the location of the soul (22.0%). The non-descript response of the body was also common (12.2%), as was the response that the soul is not located anywhere in the body (10.2%). A few participants identified the head and chest (4.4%), abdomen (2.9%), or provided another response (6.3%).

The forced-choice item also demonstrated a similar pattern of responses for the soul: 52.9% selected the chest as the location of the soul, 20.6% selected the head, 16.2% reported that the soul is not centralized in the body, and 3.9% reported that the soul does not exist (see Table 2).

3.1.3. Mind

The most consensus was found for the location of the mind. On the free-response item, 97.1% of participants reported that the mind is located in the head or brain (see Table 3). A few participants reported that the mind was not located anywhere in the body (1.5%), was located in the soul (0.5%), or provided another response (1.0%).

Table 3
(A) Coded free responses to location of mind in body and (B) Perceived location of mind on figure.

	N	%
(A)		
Head or brain	199	97.1
Soul	1	0.5
Nowhere	3	1.5
Other	2	1.0
(B)		
1. Top of head	3	1.5
2. Forehead	187	91.7
3. Center of face	9	4.4
4. Throat	0	0.0
5. Center of chest	1	0.5
6. Center of abdomen	0	0.0
7. Center of hips	1	0.5
8. Groin	0	0.0
9. Not centralized	3	1.5
10. Does not exist	0	0.0

Note: The *N* for each item is lower than the total *N* for the study because a few participants dropped out before completing the study. Percentages were calculated for each item based on the number of participants who responded to that item.

Likewise, on the forced-choice item, 97.6% of participants selected the head as the location of the mind and 1.5% reported that the mind is not centralized in the body (see Table 3).

3.2. Definitions of the self, soul, and mind

3.2.1. Self

Participants most frequently defined the self as one's personal identity (53.7%; see Table 4). Smaller subsets of participants defined the self as one's personality (10.3%), thoughts/consciousness (10.3%), or body (6.4%). See Table 4 for the distribution of all definitions provided.

3.2.2. Soul

The most common definition of the soul was one's essence, inner being, or immaterial self (47.3%; see Table 5). Other definitions included one's emotions (12.3%), conscience/morals (11.8%), life force (7.4%), and consciousness (2.5%). A considerable number of definitions did not fit in any of these categories (16.3%), and a small percentage of participants indicated that the soul does not exist (2.5%).

The majority of participants selected essence or immaterial self as the definition of the soul on the forced-choice item (71.9%; see Table 5). Fewer participants selected one's conscience/morals (5.9%), life force (5.4%), personality (4.4%), motivations and goals (3.0%), memories and experiences (2.0%), other (3.4%), or does not exist (3.9%).

3.2.3. Mind

Nearly all participants defined the mind as one's thoughts or consciousness (94.1%; see Table 6), although a small percentage provided an alternative definition (5.9%).

Table 4
Coded definitions of the self.

	N	%
Personality	21	10.3
Identity	109	53.7
Thoughts/consciousness	21	10.3
Behavior	9	4.4
Physical body	13	6.4
Beliefs/values	6	3.0
Soul	5	2.5
Body and mind	4	2.0
Body, soul, and mind	7	3.4
Other	8	3.9

Note: The *N* for this item is lower than the total *N* for the study because a few participants dropped out before completing the study. Percentages were calculated based on the number of participants who responded to this item.

Table 5
(A) Coded definitions of the soul and (B) Forced-choice definition of the soul.

	N	%
(A)		
Essence/inner being/immaterial self	96	47.3
Consciousness	5	2.5
Life force	15	7.4
Conscience/morals	24	11.8
Emotions	25	12.3
Other	33	16.3
Doesn't exist	5	2.5
(B)		
Essence/inner being/immaterial self	146	71.9
Life force	11	5.4
Conscience/morals	12	5.9
Personality	9	4.4
Motivations and goals	6	3.0
Memories and experiences	4	2.0
Other	7	3.4
Doesn't exist	8	3.9

Note: The *N* for each item above is lower than the total *N* for the study because a few participants dropped out before completing the study. Percentages were calculated for each item based on the number of participants who responded to that item.

Table 6
Coded definitions of the mind.

	N	%
Thoughts/consciousness	191	94.1
Other	12	5.9

Note: The *N* for this item is lower than the total *N* for the study because a few participants dropped out before completing the study. Percentages were calculated based on the number of participants who responded to this item.

3.3. Exploratory analyses

When asked to select the region in Fig. 1 that corresponded to the location of the self in the body, participants most commonly selected the head. A smaller but significant number of participants identified the chest as the location of the self in the body. However, when asked to choose the region that corresponded to the location of the soul, the majority of participants selected the chest (and a smaller number selected the head). A series of exploratory analyses was conducted to test for possible differences in religious, supernatural, and political beliefs based on whether participants identified the head or chest as the location of the self and soul in the body. Participants' responses to the forced-choice items were used for these analyses because some participants provided unclear or multiple responses to the free response items. Where Levene's tests indicated inequality of variances between the two groups, corrected *t*-values were reported. Because nearly all participants located the mind in the head, comparisons of religious, supernatural, and political beliefs could not be made based on the reported location of the mind.

3.3.1. Self location

3.3.1.1. Strength of soul and afterlife beliefs by self location. Participants who located the self in the chest tended to report stronger soul and afterlife beliefs than did those who located the self in the head, though these differences only approached statistical significance (see Table 7).

3.3.1.2. Varieties of Afterdeath Beliefs according to self location. Participants who selected the chest as the location of the self were more likely to believe in bodily resurrection and a disembodied spirit than were those who selected the head (see Table 7). Beliefs in annihilation, spiritual embodiment, reincarnation, and belief/behavior efficacy did not statistically differ by self location.

3.3.1.3. Strength of beliefs in mind–body dualism according to self location. Participants who located the self in the chest reported stronger beliefs in mind–body dualism than did those who located the self in the head (see Table 7).

3.3.1.4. Religiosity, frequency of religious service attendance, and political ideology according to self location. Participants who located the self in the chest also reported stronger religiosity and a more conservative political ideology than did those

Table 7
Religious, supernatural, and political beliefs according to self location.

	Head ($N = 79$)		Chest ($N = 54$)		Levene's test		
	M	*SD*	*M*	*SD*	*F*	*t*	*p*
Soul Beliefs	6.20	2.06	6.73	1.22	15.40***	−1.86	.06
Afterlife Beliefs	5.84	2.37	6.40	1.67	7.49**	−1.62	.11
Afterdeath Beliefs							
Annihilation	3.73	1.71	3.58	1.26	3.60	0.55	.59
Spiritual embodiment	4.43	1.63	4.72	1.36	1.59	−1.07	.29
Bodily resurrection	2.57	1.32	3.18	1.52	1.52	−2.47	.02
Disembodied spirit	3.80	1.38	4.20	0.98	6.33*	−1.95	.05
Reincarnation	3.53	1.79	3.96	1.49	4.79*	−1.48	.14
Belief/behavior efficacy	4.02	1.55	4.44	1.29	1.99	−1.61	.11
Mind–Body Dualism	2.89	0.42	3.06	0.32	4.67*	−2.61	.01
Religiosity	3.92	2.11	4.57	1.73	7.71**	−1.95	.05
Frequency of religious service attendance	2.61	1.58	3.04	1.64	0.02	−1.52	.13
Political ideology	4.53	1.04	4.11	1.22	0.13	2.14	.03

* Levene's Test for equality of variances was significant at $p < .05$.
** Levene's Test was significant at $p < .01$.
*** Levene's Test was significant at $p < .001$.

Table 8
Religious, supernatural, and political beliefs according to soul location.

	Head ($N = 41$)		Chest ($N = 108$)		Levene's test		
	M	*SD*	*M*	*SD*	*F*	*t*	*p*
Soul Beliefs	6.15	1.85	6.72	1.37	7.14**	−1.81	.08
Afterlife Beliefs	5.56	2.25	6.34	1.87	3.29	−2.16	.03
Afterdeath Beliefs							
Annihilation	3.88	1.67	3.45	1.29	3.33	2.06	.04
Spiritual embodiment	4.23	1.62	4.84	1.25	4.37*	−2.18	.03
Bodily resurrection	2.79	1.64	2.85	1.34	4.07*	−0.19	.84
Disembodied spirit	3.79	1.24	4.21	1.00	2.45	−2.16	.03
Reincarnation	3.77	1.75	3.91	1.63	0.46	−0.43	.67
Belief/behavior efficacy	3.95	1.26	4.41	1.36	2.01	−1.89	.06
Mind–Body Dualism	2.88	0.43	3.00	0.38	0.51	−1.68	.10
Religiosity	3.88	2.09	4.45	1.91	0.80	−1.60	.11
Frequency of religious service attendance	2.41	1.55	2.97	1.54	0.00	−1.96	.05
Political ideology	4.29	1.12	4.28	1.15	0.00	0.05	.96

* Levene's Test for equality of variances was significant at $p < .05$.
** Levene's Test was significant at $p < .01$.

who located the self in the head (see Table 7). However, participants' frequency of religious service attendance did not significantly differ based on whether they identified the head or chest as the location of the self in the body.

3.3.2. Soul location

3.3.2.1. Strength of soul and afterlife beliefs by soul location. Participants who located the soul in the chest reported stronger soul and afterlife beliefs than did those who located the soul in the head, though the difference in strength of soul beliefs only approached statistical significance (see Table 8).

3.3.2.2. Varieties of Afterdeath Beliefs according to soul location. Participants who selected the head as the location of the soul were more likely to endorse total annihilation after death than were those who selected the chest, whereas those who selected the chest as the location of the soul were more likely to believe in spiritual embodiment and a disembodied spirit (see Table 8). Beliefs in bodily resurrection and reincarnation did not significantly differ based on whether participants located the soul in the head or chest. However, participants who selected the chest as the location of the soul were marginally significantly more likely to report that people's beliefs and behavior affect their postmortem fate than were those who selected the head (see Table 8).

3.3.2.3. Strength of beliefs in mind–body dualism according to soul location. Participants who located the soul in the chest tended to report stronger beliefs in mind–body dualism than did those who located the soul in the head, though the difference was not statistically significant (see Table 8).

Table 9
Religious, supernatural, and political beliefs according to Soul definition.

	Metaphysical ($N = 31$)		Metaphorical ($N = 157$)		Levene's Test		
	M	*SD*	*M*	*SD*	*F*	*t*	*p*
Soul Beliefs	6.80	1.33	6.26	1.39	0.73	2.05	.04
Afterlife Beliefs	6.38	1.85	5.19	2.15	1.77	3.16	.01
Afterdeath Beliefs							
Annihilation	3.35	1.29	3.83	1.46	0.45	−1.83	.07
Spiritual embodiment	4.88	1.24	4.21	1.52	2.67	2.62	.01
Bodily resurrection	2.74	1.40	3.13	1.48	0.10	−1.41	.16
Disembodied spirit	4.19	1.08	3.95	0.94	1.27	1.13	.26
Reincarnation	3.81	1.70	4.21	1.28	6.17*	−1.47	.15
Belief/behavior efficacy	4.32	1.41	4.14	1.23	0.79	0.65	.51
Mind–Body Dualism	3.05	0.36	2.86	0.43	0.27	2.52	.01
Religiosity	4.43	1.93	4.13	1.83	0.17	0.78	.43
Frequency of religious service attendance	2.86	1.56	2.63	1.40	1.85	0.73	.46
Political ideology	4.29	1.13	4.40	1.22	0.48	−0.48	.63

* Levene's Test for equality of variances was significant at $p < .05$.

3.3.2.4. Religiosity, frequency of religious service attendance, and political ideology by soul location. Participants who located the soul in the chest reported attending religious services more frequently than did those who located the soul in the head (see Table 8). Those who located the soul in the chest also tended to report greater religiosity than did those who located the soul in the head, though the difference was not statistically significant (see Table 8). Political ideology did not differ by soul location.

3.3.3. Soul definition

The majority of participants defined the soul in metaphysical terms (i.e., as an immaterial essence or life force). However, a smaller subset of participants defined the soul in more metaphorical terms (i.e., as one's personality, motivation and goals, morals, and memories and experiences). Possible differences in religious, supernatural, and political beliefs were examined based on whether participants defined the soul in metaphysical or metaphorical terms. Because participants' free-response definitions were not always neatly classified into one category (explaining the large number of participants grouped in the 'other' category), participants' responses to the forced-choice item were used for these analyses.

Differences in religious, supernatural, and political beliefs were not examined according to participants' definitions of the self and mind because definitions of the self varied widely (and thus were not easily grouped into distinguishable conceptions) and definitions of the mind were nearly identical (and thus comparisons were not possible).

3.3.3.1. Strength of soul and afterlife beliefs by soul definition. Participants who defined the soul in metaphysical terms reported stronger soul and afterlife beliefs than did those who defined the soul in metaphorical terms (see Table 9).

3.3.3.2. Varieties of Afterdeath Beliefs according to soul definition. Participants who defined the soul in metaphysical terms were less likely than those who defined it in metaphorical terms to believe in reincarnation and marginally less likely to believe in complete annihilation after death (see Table 9). Those who chose metaphysical definitions were more likely to believe in spiritual embodiment than were those who selected metaphorical definitions. Participants' beliefs in bodily resurrection, a disembodied spirit, and that beliefs and behavior influence postmortem fate did not significantly differ according to whether participants selected metaphysical or metaphorical definitions of the soul (see Table 9).

3.3.3.3. Strength of beliefs in mind–body dualism according to soul definition. Participants who defined the soul metaphysically reported stronger beliefs in mind–body dualism than did those who defined the soul metaphorically (see Table 9).

3.3.3.4. Religiosity, frequency of religious service attendance, and political ideology by soul definition. Participants who defined the soul metaphysically did not differ from those who defined the soul metaphorically in terms of their religiosity, frequency of church attendance, and political ideology (see Table 9).

4. Discussion

This study investigated people's beliefs about what defines the self, soul, and mind and where these entities are located in the body. In support of previous research (Alsmith & Longo, 2014; Bertossa et al., 2008; Limanowski & Hecht, 2011; Starmans & Bloom, 2012), participants most commonly reported that the self is located in the head. However, this percentage was lower than in previous research. The difference may be attributed to differences in methodology. In prior studies, participants were asked to point to (Alsmith & Longo, 2014), mark (Limanowski & Hecht, 2011), or determine when an object was closest to the location of the self (Starmans & Bloom, 2012). In the present study, participants were not directed to

pinpoint a location. First, they used their own words to report the location of the self, and second, on the forced-response item, they were given the option to state that the self is not located in a centralized region. Although the majority of participants did still report that the self is localized in a single region in the body, a considerable number of people stated that the self is not located in a centralized region when given this option, suggesting that the claim that people believe the self is localized has been overstated in previous research.

Even so, it is unclear whether participants who reported that the self is not located in a centralized region believe that the self is located in more than one region at a time, in different regions at different times, or is distributed throughout the body. When asked in a free-response format where the self is located, a significant number of participants simply reported that the self was located in the body, suggesting that these participants believe the self is distributed throughout the body, rather than located in multiple regions. Nevertheless, to clarify this ambiguity, future researchers should directly ask participants whether they believe the self is located in more than one region or in different regions at different times.

As in previous research (Alsmith & Longo, 2014; Limanowski & Hecht, 2011; Starmans & Bloom, 2012), a sub-group of participants indicated that the self is located in the chest. Participants appear to be more likely to pinpoint the head as the location of the self in the body when indirect methods are employed (Starmans & Bloom, 2012) than when they are asked more directly, as in the present study.

The most consensus was found for responses concerning the location of the mind. Consistent with previous research (Bertossa et al., 2008), participants nearly unanimously agreed that the mind is located in the head/brain. The most common location reported for the location of the soul was in the chest. Therefore, although the soul and mind are sometimes equated in the literature (e.g., Forstmann et al., 2012), it appears that many people believe they are distinct entities. Because participants frequently selected the head as the location of both the self and the mind, it is possible that people tend to equate the self with the mind/brain. However, given that some participants selected the chest as the location of the self and many selected the chest as the location of the soul, it is also possible that a subset of people equate the self with the soul. Importantly, for questions concerning the location of each entity (self, soul, and mind), a similar pattern of responses was observed on the free-response items as on the forced-choice items.

Most participants defined the self as one's identity, personality, or thoughts, suggesting that self-perception is a major component of how people conceive of the self. Nearly all participants defined the mind as thoughts/consciousness. The fact that most people defined the self and mind in mental terms further demonstrates overlap between individuals' conceptions of these entities. That is, by providing similar definitions of the self and mind and locating them in similar regions of the body, the results from this study suggest that many people consider the mind closely aligned with the self.

The most common definition provided for the soul was one's essence or immaterial self. Other common definitions included emotions, conscience, and life force. Few defined the soul as consciousness, providing further evidence that people distinguish the mind from the soul. As in previous research (Halman et al., 2008), only a small percentage of participants reported believing that the soul does not exist.

In general, participants who located the self and soul in the chest and provided metaphysical definitions of the soul reported stronger beliefs in the soul, afterlife, and mind–body dualism than did those who located the self and soul in the head and provided metaphorical definitions of the soul. Participants who located the self and soul in the chest and defined the soul metaphysically were more likely to endorse the belief that the body is a vessel for the soul, which is released at death, than were those who located the self and soul in the head and defined the soul metaphorically. Similarly, those who located the self and soul in the chest and defined the soul metaphysically were more likely to believe that consciousness continues after death, whereas those who located the soul in the head and defined it metaphorically were more likely to believe that consciousness ceases along with the body. Participants who located the soul in the chest were also more likely than those who located the soul in the head to believe that their beliefs and behavior influence their postmortem fate.

Taken together, these findings suggest that people who locate the self and soul in the chest are less likely to adopt a materialist perspective of existence than are those who locate the self and soul in the head. When participants are asked to pinpoint the location of these entities in the body, they are not simply responding arbitrarily. Rather, different responses appear to reveal different beliefs about human existence and functioning and different underlying worldviews. Future research should examine the extent to which people's conceptions of the self and soul (i.e., where they locate these entities in the body and how they define them) vary or correspond across cultural and religious groups. Different conceptions of the self and soul may reflect different morals, value systems, goals, and lifestyles. In fact, Forstmann et al. (2012) found that people who believe in mind–body dualism are less likely to engage in health behaviors (e.g., maintaining a healthy diet and good hygiene, exercising, and engaging in preventative health care). Indeed, research on conceptions of the body, self, soul, and mind potentially has implications for understanding health behaviors. People who adopt a materialist perspective of existence may take better care of their physical bodies than those who endorse a dualist perspective. People with metaphysical perspectives of existence (such as those who believe in the separation of body and soul) may also hold different beliefs about the etiology of disease. Thus, conceptions of the self and soul may also have implications for medical decisions, diagnosis, and treatment. Furthermore, people's conceptions of the self and soul may relate to their views on social issues, such as capital punishment, genetic testing, abortion, stem cell research, euthanasia, the teaching of evolution and creationism in schools, animal rights, and religious conflict and prejudice.

Although this study yielded a consistent and interpretable pattern of results, in hindsight, the regions marked on the forced-choice body diagram were less than optimal. The distinctions among the three regions specified in the head are unclear, making it difficult to know whether participants who selected one of these three options were identifying different

regions in the head or the same region. In addition, the region in the chest was drawn in the center of the chest to be consistent with the other locations, which were presented down the center of the body. However, it is unclear whether participants who chose this option would have preferred to select the heart and whether other participants were deterred from selecting this option because it was not presented off-center. Future research should present options in the center of the chest and the heart to more fully capture the range of individuals' beliefs. The forced-choice items produced a similar pattern of results as the open-ended items, suggesting that these limitations did not compromise a test of the questions under investigation in this study. Even so, participants' responses to the forced-choice items may have mirrored their responses to the open-ended items because they aimed to provide consistent responses to these items, and the available options constrained their selections in such a way to appear more consistent and coherent than they really were.

Moreover, the experimental procedure may have also prompted participants to distinguish among their responses when locating and defining the self, soul, and mind. Although the order in which each entity was presented was randomized, after locating and defining the first entity, participants may have been induced to differentiate among the final two entities more than they would have if each had been considered on its own. Due to this procedural limitation, fewer people may believe that that the soul and mind are separate entities than the present findings suggest. In addition, this limitation could explain why participants were less likely to localize the self in a specific region of the body than they were in previous research. Therefore, future research should examine whether similar distributions of responses emerge when participants are only asked to locate and define only one entity (self, soul, or mind).

It is also important to note that participants were asked where the self, soul, and mind are located in the body, rather than where the self, soul, and mind are located in *their* body. Some participants may have interpreted the question as asking where most people perceive these entities to be located in the body, instead of where they themselves believe the self, soul, and mind are located. Although it seems likely that most participants understood that the question was asking about their personal beliefs (considering that the study was titled, "What Do You Believe?"), future researchers should clarify the wording of these questions to ensure that all participants interpret the questions in the same way.

Finally, people's automatic conceptions of the self, soul, and mind may differ from the explicit responses examined in the present study. Future research should employ indirect methods like those used in prior research on the self (Starmans & Bloom, 2012) to determine whether people's implicit beliefs about the self, soul, and mind align with their explicit beliefs.

4.1. Conclusions

In sum, this study replicates and extends previous research by delineating among conceptions of the self, soul, and mind. Results indicated that most people consider the self, soul, and mind localized in specific regions in the body. However, this study differed from previous work in that participants were not prompted to pinpoint a specific location. This difference may suggest that some individuals believe the self is not centralized in one location in the body. Results from this study also suggest that people tend to distinguish the mind from the soul, both in how they define each entity and where they locate them in the body. Although some people locate the self in the same region as the soul, most people more closely align the self with the mind. Importantly, people's conceptions of the self and soul appear to reflect their underlying beliefs about human existence. People who locate the self and soul in the chest and define the soul metaphysically are less to adopt a materialist perspective than are those who locate the self and soul in the head and define the soul metaphorically. Overall, this study provides a foundation for future work examining beliefs about the self, soul, and mind.

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