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Behavioral norms for condensed moral vignettes

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Moral judgment is an evaluation of the actions and character of a person made with respect to societal norms. Although many types of vignettes have been used in previous studies on moral beliefs and judgment, what is missing is a set of standardized common vignettes based in real life. The goal of this study was to provide researchers with stimuli that have values on several dimensions pertaining to moral judgment and whose underlying components are known. These values will allow researchers to select stimuli based on standardized ratings rather than on the results of pilot studies, while avoiding the limitations of the classic, abstract moral scenarios. Our study was composed of three phases, (i) collecting and shortening the vignettes, (ii) obtaining ratings of the vignettes on several dimensions including emotional intensity, degree of social norm violation, and level of harm or benefit caused and (iii) determining the underlying components of the vignettes by performing a factor analysis. We found three components that accounted for most of the variance: norm violation, social affect and intention. The resulting vignettes can be used in future parametric studies on moral judgment in behavioral, neuropsychological and functional imaging experiments.

Keywords: moral cognition; moral judgment; norms

INTRODUCTION

Moral judgment is defined as an evaluation of the actions and character of a person made with respect to the norms and values established in a society (Haidt, 2003; Prehn *et al.*, 2008). Much of moral behavior may be relatively unique to humans, albeit with some precursors such as cooperation and aggression in apes (Kluver and Bucy, 1939; de Waal, 2002; Emery *et al.*, 2001; Machado *et al.*, 2008). Moral judgment and related moral decisions and actions are thought to have contributed substantially to the evolution of human culture and society. Greene and Haidt (2002) suggested that morality evolved from humans' expanding cognitive abilities that allowed the development of within-group altruism or cheating, cooperation and norm-following behavior. Establishing such social norms served to promote group cohesion and presumably survival (Hawley, 2003).

Rusbult and Van Lange (1996) proposed three sources of interpersonal moral orientation: (i) interpersonal dispositions, which are person-specific inclinations to act in particular patterns and can include predispositions toward being competitive, individualistic or prosocial; (ii) relationship-specific motives which are inclinations to respond in a specific manner within a particular relationship and (iii) social norms, which are rule-based inclinations to respond in a specific manner. Van Lange (2000) agreed that self-interest is too limited to fully explain the ways we behave and interact, and that prosocial forces (such as compassion) need to be considered. Many moral emotions such as guilt and compassion seem to have relevance only in a social context, and they often motivate behavior in the interests of long-term benefits of the social group rather than the short-term interests of only one person (Adolphs, 2003). Similar to Rusbult and Van Lange (1996), Shweder *et al.* (1997) described three ethical domains: (i) autonomy or ethics that protect the individual human being, including rights, justice, fairness and freedom; (ii) community or ethics that protect the group or society, including duty, respect, loyalty, hierarchy and interdependence and (iii) divinity or ethics that protect the spiritual aspects of the human and nature including sanctity and tradition. Haidt *et al.* (Haidt, 2007; Haidt and Graham, 2007) claimed that there are five moral foundations: (i) harm/care which includes virtues such as kindness and compassion, (ii) fairness/reciprocity, (iii) ingroup/loyalty, (iv) authority/respect and (v) purity/sanctity. These five moral foundations extend Shweder's three ethical domains in that harm/care and fairness/reciprocity fit into the autonomy domain, ingroup/loyalty and authority/respect fit in with the domain of community and purity/sanctity fits in with the

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domain of divinity. The above theories describe the types and range of moral concerns. What we are looking to accomplish in this article is to make available a set of standardized common moral vignettes based in real life that attempts to cover the range of moral concerns in order to provide researchers with stimuli that have values on several dimensions pertaining to moral judgment and whose underlying components are known.

Different moral judgment studies have used different types of moral stimuli. As the study of moral judgment has been traditionally based in the domain of philosophy, many investigators (for example, Greene *et al.*, 2001; Koenigs *et al.*, 2007) have used complex dilemmas similar to those discussed by contemporary moral philosophers. These include the 'trolley scenario' where if you do nothing, the trolley will proceed to the left, causing the deaths of five workmen, but if you hit a switch, causing the trolley to proceed to the right, it will result in the death of a single workman (Foot, 1978; Thomson, 1976, 1985, 1986). Increasingly, rather than approaching the study of moral judgment through a philosophical approach, cognitive neuroscience investigations are providing a powerful empirical approach to understanding this topic. Some of the types of stimuli used by cognitive neuroscience investigators have been short sentences containing either social norm violations or grammatical errors (for example, Heekeren *et al.*, 2003; Prehn *et al.*, 2008). Others used simple moral claims (For example, 'They hung an innocent'; Moll, Eslinger and Oliveira-Souza, 2001), pictures with moral content (Moll *et al.*, 2002a), or sentences with moral components (Moll *et al.*, 2002b). Personal *vs* impersonal moral vignettes have been contrasted in studies (Greene *et al.*, 2001, 2004; Koenigs *et al.*, 2007), and highly structured moral scenarios not based on real life experiences have been used (for example, Young *et al.*, 2007). Some researchers have used scenarios written in the first-person, while others used scenarios written in the third-person (including Berthoz *et al.*, 2006; Borg *et al.*, 2006).

Furthermore, different aspects of moral judgment have been studied, including the moral emotions such as compassion and guilt (Greene and Haidt, 2002), and scenarios involving direct *vs* indirect physical harm (Greene *et al.*, 2001; Greene and Haidt, 2002) and harm or no harm (Heekeren *et al.*, 2005). It is likely that these and other dimensions of moral behavior, including whether the behavior involves only oneself or others (socialness), the intensity of the emotions aroused from the behavior, the level of aversion and moral appropriateness, who benefits or is harmed because of the act, and whether the act is premeditated or impulsive, intentional or accidental, will have differential effects in functional neuroimaging experiments or patient studies [e.g. see Borg *et al.* (2006)].

As in other domains of cognitive and social psychology, we argue it would be advantageous to researchers working in the area of moral cognition to have available a set of standardized stimuli in the form of vignettes containing elements of moral decision making. Therefore, we first collected moral judgment ratings for condensed versions of rather long, self-reported moral vignettes [see Escobedo (2009)] on several dimensions including emotional intensity, degree of social norm violation and level of harm or benefit caused. Further, we analyzed the vignettes to determine their underlying cognitive and social–emotional components.

Using vignettes which are based on real life experiences and hence have ecological validity is important because moral cognition strongly depends on situational and cultural contexts (Casebeer, 2003) and in real life, moral judgment is often quick and implicit (Moll *et al.*, 2005). Basing moral judgments on extreme and unfamiliar situations such as those posed by classic moral dilemmas could evoke unusual strategies and thought processes rather than those typically used for common moral judgments (Moll *et al.*, 2005; Escobedo, 2009). Real-life scenarios are also more relevant to participants in studies and are more likely to be grounded in one's personal upbringing, experiences and religious beliefs making it more likely that participants will be directly accessing knowledge stores related to established moral rules and behavior.

METHODS

Subjects

Thirty normal healthy adult volunteers (15 females and 15 males, mean $\pm$ s.d.: age 26.7 ± 5.1, with 17 ± 2.4 years of education) participated in the normative study performed at the National Institute of Neurological Disorders and Stroke (NINDS) in Bethesda, MD. There were no significant sex differences in age [females: 27.1 ± 4.8; males: 26.3 ± 5.5; $t(28) = 0.43$, $P = 0.67$] or education [females: 17.6 ± 2.3; males: 16.5 ± 2.5; $t(28) = 1.31$, $P = 0.20$]. Participants signed a consent form approved by the NINDS Institutional Review Board and were paid for their participation. Participants reported no prior histories of neurological or psychiatric disorders or learning disabilities, and were not taking any antidepressant or psychotropic medications at the time of testing.

Procedure

Our study was composed of three phases: (i) collecting and shortening the vignettes, (ii) obtaining ratings of the vignettes and (iii) determining the underlying moral cognitive components of the vignettes by performing a factor analysis.

Phase 1: Collecting and shortening the vignettes. Our vignettes are based on those compiled by Escobedo *et al.* (2009), who collected 758 first-person moral vignettes based on episodic memories that were solicited using cue words. Their cue words were selected from a set of potential cues generated by two of the authors (J.R.E. and R.A.), who chose three types of cue words: emotions, actions and superlatives. The emotion-type cues were chosen to span the valence spectrum and included three positive (proud,

compassionate and virtuous), four intermediate (responsible, relieved, bittersweet and doubtful) and three negative cues (regretful, embarrassed and guilty). The action cues (honest, tempted, qualms, reckless, sneaky, hurtful, cheated, lied, took something and unfaithful) also were chosen to elicit both positive and negative moral experiences. The superlative cues ask for some of the best and worst events in someone's life. There also were four control words, two of which, happy and tired, elicited a few moral experiences.

Using these cues, Escobedo *et al.* (2009) collected the moral vignettes from a representative sample of 100 English-speaking healthy adults (47 male) who had resided in Southern California for at least the last 15 years, were recruited using Craigslist, and were between the ages of 40 and 60 (mean age 48.9, s.d. 5.9 years). Participants were excluded if they were under the care of a neurologist or had any history of head injury or seizures, tumor or brain surgery, if they had been diagnosed with any major psychiatric illness or were taking any medications for psychiatric conditions, were unemployed or homeless or had an IQ under 80. The participants held a mix of religious and political beliefs, and matched the ethnic diversity and IQ (mean 110) of California as specified in the US census 2000. Their median income in 2004 was $30 000–60 000. Escobedo *et al.* (2009) verified the truthfulness of these vignettes via follow-up phone calls 2 years later to eleven of the original participants and found that all 11 were able to reproduce narratives that matched their original ones. After collecting the moral vignettes, Escobedo *et al.* (2009), using a list of the original cues, had a separate set of 55 raters select all of the cues that applied to each of the vignettes by circling them in a list. These raters were all affiliated with the California Institute of Technology as either alumni or colleagues. No further demographics are available for these raters.

For the present study, we condensed each of these moral vignettes, which originally averaged 218 words, into moral vignettes of two or three sentences. This was performed so that they could easily be used as experimental stimuli, since long stories that require significant time to read and comprehend would be unfeasible in many patient and functional neuroimaging studies, and since stories varying widely in length would have story length as a confounding variable. Some stories were determined to be too long and complicated to reasonably condense and so were removed from the database. Next, we eliminated those stories that did not have a main cue; that is, a single cue applied to a story more than any other cue by Escobedo *et al.*'s 55 raters (2009). This was performed so that researchers could select vignettes to use as stimuli for studies based on the main cue used to solicit the vignette.

Phase 2: Obtaining ratings. We next had our 30 normal healthy adults rate the 312 vignettes on 13 dimensions (emotional intensity, emotional aversion, harm, self-benefit, other-benefit, pre-meditation, illegality, social norm violations, socialness, frequency, personal familiarity, general familiarity and moral appropriateness). Ratings were taken using a computer-based survey shown in Figure 1.

Phase 3: Factor analysis. We then performed a factor analysis using SPSS version 11 with the option for Varimax rotation and Kaiser normalization (Kaiser, 1958) on the vignettes using the ratings from 10 of our dimensions (excluding the dimensions of frequency, personal and general familiarity as these were not direct ratings of aspects of morality, socialness or emotionality). The purpose of the factor analysis was to reduce these dimensions to describe the underlying moral components of the vignettes. The Anderson–Rubin method (Anderson and Rubin, 1956) was used to calculate the factor score coefficients; this is a modification of the Bartlett method (Bartlett, 1937) and ensures orthogonality of the estimated factors. The resulting scores have a mean of 0 and a s.d. of 1.

RESULTS

Collecting and shortening the vignettes

The 312 moral vignettes were condensed into vignettes of two or three sentences averaging 43 words (and with a limited range of 28–59 words). The complete database of the moral vignettes is available as a Supplement. This database includes the word counts for each vignette and the main cue Escobedo's raters applied to it most frequently.

Obtaining ratings

Each vignette's ratings on the 13 dimensions (emotional intensity, emotional aversion, harm, self-benefit, other-benefit, pre-meditation, illegality, social norm violations, socialness, frequency, personal familiarity, general familiarity and moral appropriateness) are listed in the Supplement. All the dimensions including frequency, personal and general familiarity are included so that researchers can choose vignettes with equivalent (or varying) ratings depending on their needs.

Factor analysis

The factor analysis on the vignettes resulted in three components with an eigenvalue greater than 1.0 (Figure 2). The various indicators of factorability were acceptable, and the residuals indicate that the solution was acceptable. We interpret the components to represent: (i) norm violation, (ii) social affect and (iii) intention. The norm violation component was most positively correlated with the dimensions of social norm violation, harm and illegality, and negatively with other benefit and moral appropriateness. It explained 40% of the variance. The social affect component was most positively correlated with emotional intensity, socialness and emotional aversion. It explained 24% of the variance. The third component, intention, was most positively correlated with premeditation and self-benefit. It explained 15% of the variance. Table 1 shows the three components and the mean

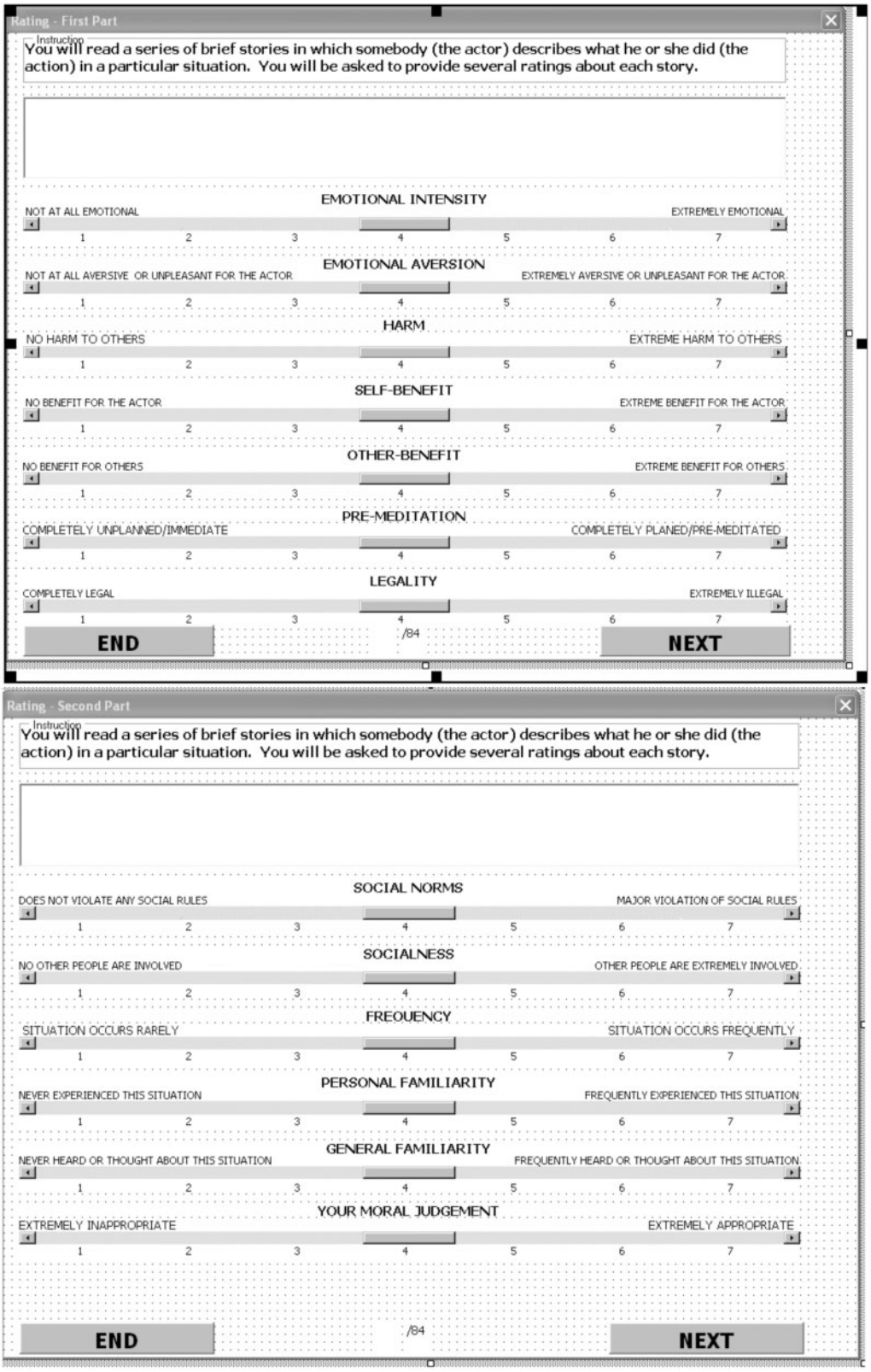

Fig. 1 Screen shots of the questionnaire given to participants for rating the vignettes on 13 dimensions using a scale from 1 to 7. Each vignette appeared in the box at the top.

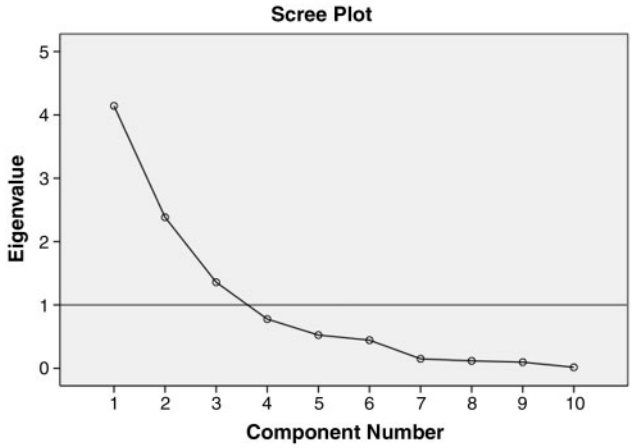

Fig. 2 Screen plot resulting from the factor analysis showing three components with eigenvalues >1.

Table 1 Results of the factor analysis

Components	Dimensions	Norm violation	Social affect	Intention
1. Norm violation	Social norm violation	0.947	0.154	0.144
	Harm	0.803	0.473	0.009
	Illegality	0.737	−0.288	0.115
	Other benefit	−0.883	0.046	0.051
	Moral appropriateness	−0.956	−0.102	−0.120
2. Social affect	Emotional intensity	0.024	0.896	−0.066
	Socialness	−0.115	0.763	0.154
	Emotional aversion	0.336	0.762	−0.258
3. Intention	Premeditation	−0.002	0.175	0.859
	Self-benefit	0.244	−0.304	0.772

ratings on the dimensions for each. The scores for each vignette on the norm violation, social affect and intention factors are included in the Supplement.

DISCUSSION

The goal of this study was to provide researchers with vignettes based on real life that have values on 13 dimensions pertaining to moral judgment and whose underlying moral components are known. We found three components:

(i) Norm violation—This first component accounts for the most variance in the dimension ratings, and concerns the degree of violation of social norms which serve to promote group cohesion (Hawley, 2003) occurring in the vignette. It also includes the amount of harm *vs* benefit to others, the degree of law breaking and the moral appropriateness of the vignette. This component best represents the range of moral concerns as described by Shweder *et al.* (1997) and Haidt *et al.* (Haidt, 2007; Haidt and Graham, 2007). The cues originally used to elicit these vignettes range from those low in norm violation ('virtuous' and 'compassionate') to those high in norm violation ('cheated' and 'took something'). Examples of vignettes low in norm violation are 'A long time ago I helped organize an intervention for my dad's alcoholism. My grandmother and I funded all of the members of the family to assemble together in one location. When my dad walked into the room he began to cry because he was so touched by our action' and 'A friend of mine decided to move to the city where I lived. My friend didn't know anyone in the city. So I went to pick her up at the airport and drove her around the city throughout the next week so she could become familiar with the city.' Examples of vignettes high in norm violation are, 'I put a poster that I had on EBay. There was a man who bid on it and paid with a system that sent the money directly to me. He was kind of a jerk during the whole transaction, so I decided not to send the poster and just keep the money' and 'Ten years ago I was staying with a friend who lived in a house of a very famous man. There were many autographed books in the house. I stole one of the books, which was autographed by a very famous celebrity.' The strict prohibition against these social norm violations may be due to the breakdown of group cohesion they cause.

(ii) Social affect–The second component reflects the emotional intensity and aversion present for the actor in the vignette, and the number of other people involved. The cues originally used to elicit these vignettes range from those low in social affect ('took something' and 'cheated', behavior which is generally performed when one is alone and unwatched) to those high in social affect ('hurtful to someone' and 'unfaithful', both of which require the presence of other people and involve intensely aversive emotions). Examples of vignettes low in social affect are 'I once took a Post-It pad from a job I was working at. I was given a big supply of them and I wasn't really likely to use them at work. It was just a Post-It pad, so I took one home with me' and 'I was taking a vocabulary test in class, and usually I am so great at vocabulary. But, as I was passing my paper forward I realized that the girl behind me had one different answer than I did. So I changed my answer to the same as her answer'. Examples of vignettes high in social affect are 'My friend was always putting down all the men I dated because she was jealous. I confronted her about it and said some really mean comments to her about how no man wants her. I hurt her feelings a lot' and 'I cheated on my current boyfriend. I was really upset because I wanted to get married but he didn't. I thought it was because of me, so I had a quick affair.'

(iii) Intention–The third component is correlated with the level of premeditation or planning and self-benefit in the vignette. The cues originally used to elicit these vignettes range from those low in intention and

self-benefit ('regretful' and 'honest') to those high in intention ('sneaky' and 'unfaithful', both of which require some planning with the intention of benefiting oneself). Examples of vignettes low in intention are 'A drunk driver killed my girlfriend. The night that this happened, my girlfriend and I got in a really big fight. We said goodnight angry and I let her drive home alone' and 'I was at an office party and the company had decorated a room for a fancy dinner. At the end of the night my friend, Darla, said that we could take the candles that were on the table. Darla didn't know that we weren't supposed to take the candles, so we returned them.' Examples of vignettes high in intention are 'When I knew that I was going to divorce my ex, I started a credit card account in my name that he didn't know about. I hid away some money that I would save and I would stash it away. This way I would be prepared for the divorce' and 'I was in a relationship with a girl named Pam that I didn't really want to be with anymore. I was attracted to another girl named Annie who I hung out with often. So, she and I engaged in very loud sexual play on my couch so that Pam would hear us in the other room.'

Haidt *et al.*, claim that morality is composed of 'five sets of intuitions that human minds are prepared to have' and that these five moral foundations are not separate modules (Haidt and Graham, 2007). The cues used to elicit our vignettes represent behaviors or emotions that fit into one or more of these foundations. For example, the 'hurtful to someone' and 'compassion' cues are represented in Haidt *et al.*'s theory by their harm/care foundation. Also the cues of 'guilt' and 'took something' fit into the fairness/reciprocity foundation; the cue of 'unfaithful' fits into both the ingroup/loyalty and the fairness/reciprocity foundations; and the cue of 'sneaky' contains components of several foundations including the harm/care, fairness/reciprocity and authority/respect foundations. Of course, there are other concerns such as emotional intensity and aversion, intention of the actor and whether or not the transgression was carried out or only considered. These are covered by the second and third components we found underlying the structure of our moral vignettes, social affect and intentionality.

The original cues used by Escobedo *et al.* (2009) to elicit the moral vignettes certainly influenced the outcome, resulting in vignettes containing a range of moral emotions and actions. However, as Escobedo *et al.* (2009) eliminated vignettes that based their morality on a reference to a religious belief, keeping only those vignettes that based their morality on a personal moral code, the resulting vignettes do not include any dealing with divinity or religious belief. For this reason, there are no vignettes that fit into Shweder *et al.*'s ethical domain of divinity (1997) or Haidt's moral foundation of purity/sanctity (Haidt, 2007; Haidt and Graham, 2007). This limitation within our vignettes should be kept in mind when discussing the results of studies using these vignettes. A further limitation is that the original stories were rated by a highly educated group of college alumni and colleagues, and the raters in the present study also were highly educated and fairly young (mean age 26.7). We therefore encourage other researchers to collect ratings on these vignettes using additional demographic groups.

In summary, the set of 312 moral vignettes reflects a variety of common moral behaviors and complements the moral scenarios used by others (for example, Greene *et al.*, 2001; Moll, *et al.*, 2001; Moll *et al.*, 2002a; Moll *et al.*, 2002b; Greene and Haidt, 2002; Heekeren *et al.*, 2003; Greene *et al.*, 2004; Heekeren *et al.*, 2005; Koenigs *et al.*, 2007; Berthoz *et al.*, 2006; Borg, *et al.*, 2006; Young *et al.*, 2007; Prehn *et al.*, 2008). In our opinion, using moral vignettes based on real life will avoid the inherent characteristic involved in judging classic complex and impersonal scenarios like the trolley scenario (Foot, 1978; Thomson, 1976, 1985, 1986), in which abstract reasoning and problem solving are required in addition to processes usually used in common moral judgment. We believe it is important to identify the underlying moral components of the vignettes, as they will likely affect the results of brain imaging studies or patient studies (Borg, 2008). Our vignettes show a range of values across the norm violation, social affect and intention components. These well-described vignettes will facilitate research on moral judgment and cognition since they are based on real life, are short so can be read quickly during a behavioral, neuropsychological or functional imaging experiment, have a limited range of word length, are each based on one main cue, and are well characterized both by ratings and the component scores. Given the improvement in theorizing in psycholinguistics, object recognition, sentence processing and other psychological domains that came with the availability of normed stimuli, we hope that the use of our vignettes will provide a similar boost to studies of moral judgment and social neuroscience in general (Moll *et al.*, 2005; Adolphs, 2009).

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