

The Role of Target “Humanness” on Killing: A Study of Moral Disengagement within a Bug-
Killing Paradigm
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Abstract

Dehumanization—the stripping of human qualities from someone—has been theorized to exclude that individual from the bounds of morality, thereby making violent and transgressive behavior perpetrated against that individual acceptable and appropriate. Although past research has indeed found this to be the case, various qualities of these previous findings cloud confidence in the causal nature of these relationships and the relationship between dehumanization and observed behavior. The present studies were designed to provide an experimental examination of the moral exclusion properties of dehumanization on killing behavior. This was accomplished with an experimental bug-killing paradigm in which the humanness of insects was manipulated through anthropomorphism (Studies 1-3) and dehumanization (Study 4) techniques. The present studies also sought to provide evidence for all aspects of the moral disengagement process. As such, participants were more willing to volunteer to kill (Study 1), killed to a greater degree (Studies 2-3), and experienced less guilt for their actions (Studies 3-4) when killing dehumanized (vs. anthropomorphized or neutral) insects. Evidence also revealed that the effects of the humanness manipulations were mediated by participants' ability to justify their actions as moral. The theoretical implications and importance of these findings within the greater moral disengagement and moral exclusion literatures will be discussed.

Preface

This thesis is an original work by David Webber. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, “Examining the role of dehumanization in killing decisions”, Pro00036379, August 7, 2013.

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General Introduction

Dehumanization, that is, denying another human their human qualities, and perceiving them as nonhuman, is a common feature in intergroup relationships. Indeed, this process, which can occur through two different forms—denying uniquely human features to represent one as animal-like or creaturely, and denying human nature to represent one as an object or automaton—is rooted in ordinary social-cognitive processes (Haslam, 2006; Haslam, Kashima, Loughnan, Shi, & Suitner, 2008). It is a key component of prejudice and discrimination, such that the prejudiced group is not perceived as human, but is instead likened to lower animals (i.e., the ape metaphor to describe African Americans; Goff, Eberhardt, Williams, & Jackson, 2008). It is prominent in feminist writings, whereby women are no longer thought of as human beings, but as sexual objects to be owned and used by men (e.g., Check & Guloine, 1989). And it remains a key aspect in situations of intergroup conflict, in which each side must take strides toward portraying the “enemy” as barbaric or creaturely in order to justify their actions of war or genocide (e.g., Bandura, 1990; Bar-Tal, 1990; Becker, 1975; Kelman, 1976; Opatow, 1990). In all of these cases, dehumanization becomes a mechanism used to make people more comfortable with or to justify the negative treatment of or attitudes toward other social groups.

For Bar-Tal (1990), dehumanization was a specific instance of a process he called delegitimization, which referred to the “categorization of a group or groups into extremely negative social categories that are excluded from the realm of acceptable norms and/or values” (p. 65). As such, he proposed that categorizing another as less than human—some kind of barbarian, creature, or animal—excluded them from the appropriate treatment prescribed within a culture’s moral code and value set. Similar sentiments were echoed in Bandura’s (1990)

discussion of dehumanization as a mechanism by which self-sanctions are disengaged to enable one to behave counter to internalized moral standards.

The Ethnocentric Model: Dehumanization to Distinguish Groups

Although dehumanization is common in these aforementioned intergroup relations, Bar-Tal (1990) proposed two different models of delegitimization—the ethnocentric model and the conflict model—wherein he theorized two different processes through which dehumanization is used in intergroup relations. In the ethnocentric model, dehumanization is perpetrated in the service of viewing one’s ingroup positively. At its core, this model describes the process of ingroup bias and the need to relegate outgroups to dehumanized status in order to perceive one’s own group positively. It leads to a discussion of *who* will be dehumanized.

The work on infrahumanization has been particularly enlightening in this regard (e.g., Leyens et al., 2003). Infrahumanization refers specifically to the process of ascribing greater human essence or humanness to the ingroup, and as a result, perceiving outgroup members as less than human. Much of this work has focused on the distinction between secondary and primary emotions (Demoulin et al., 2004). Secondary emotions include love, hope, and contempt, and are believed to be uniquely human. Primary emotions, on the other hand, are those that are not expressly experienced by humans, but are also found in other creatures—emotions such as joy, surprise, fear, and anger. Across various studies and methodologies, research has consistently found that people tend to reserve uniquely human emotions (i.e., secondary) for the ingroup, as a way of engaging in ingroup bias. Specifically, individuals show a greater implicit association between the ingroup and secondary emotions (Paladino et al., 2002), and are more likely to ascribe secondary emotions to the ingroup when asked to identify the most typical characteristics (Leyens et al., 2001). Furthermore, the stronger one’s identification is with the

ingroup, the more pronounced this ascription of secondary emotions (Paladino, Vaes, Castano, Demoulin, & Leyens, 2004).

The Conflict Model: Moral Exclusion of the Dehumanized Other

“All you have to do is to say that your group is pure and good, eligible for some kind of eternal meaning. But others like Jews or Gypsies are the real animals, are spoiling everything for you, contaminating your purity and bringing disease and weakness into your vitality. Then you have a mandate to launch a political plague, a campaign to make the world pure. It is all in Hitler’s *Mein Kampf*, in those frightening pages about how the Jews lie in wait in the dark alleys ready to infect young German virgins with syphilis. Nothing more theoretically basic needs to be said about the general theory of scapegoating in society...” (Becker, 1975, pp. 93)

The conflict model, on the other hand, views dehumanization as a mechanism that enables one to inflict harm against another human being. This model portrays dehumanization as a tool used before a violent conflict to paint the destruction of an enemy outgroup as justifiable, but also as a tool used post-hoc to justify why, in hindsight, negative actions against an outgroup were necessary or acceptable. The conflict model therefore discusses the *ramifications* or consequences of dehumanization, and involves concepts of moral exclusion (Opotow, 1990) or moral disengagement (Bandura, 1990) that are critical in understanding violent actions perpetrated against others.

As Becker (1975) states in the above quote, once an individual or group has been labeled as less than human, immoral and violent action against them becomes acceptable and justifiable. When an outgroup is blocking one’s ingroup from attaining their goals, this group is perceived as threatening to the success of the ingroup. The ingroup can then attempt to delegitimize the

outgroup through dehumanization (Bar-Tal, 1990). As morality is perceived as something reserved for humans, the outgroup is no longer protected by these bounds, and the ingroup is free to behave against them in an immoral manner. Consider, for example, the widely held moral regarding taking another's life. Whereas it is generally immoral, wrong, and punishable to take the life of another human being, it is not generally immoral to take the life of an animal. Indeed, killing an animal for its flesh is necessary for sustaining human life. Likewise, once a human is lowered to the level of animal, as was the case with the Jews and Gypsies in Becker's quote, it becomes morally acceptable to slaughter them like animals.

Bar-Tal (1990) discusses this process of moral exclusion as it pertains to threatening outgroups and intergroup conflict, and dehumanization as one mechanism through which moral exclusion can be accomplished. This process, however, is not limited to threatening outgroups. Once anyone has been dehumanized they are excluded from the bounds of morality. Bandura (1990) made this very claim in his theory of moral disengagement. Bandura took a social-cognitive approach, and proposed that when it comes to moral behavior, self-imposed moral sanctions prevent one from engaging in immoral action. We learn moral beliefs through socialization, and perceive them as not only the law of what is acceptable for the greater collective, but as rules for what is personally acceptable. In this vein, people internalize moral standards and judge their own sense of value or worth with these standards. Self-sanctions keep one's behavior in line with these standards.

However, these sanctions are not static, but fluid, and can be disengaged, thus enabling one to act in an immoral fashion. Bandura identified four domains (and eight mechanisms) in which sanctions can be disengaged: (1) construal of the immoral behavior in ways that make it no longer immoral (i.e., moral justification, euphemistic language, advantageous comparison),

(2) reducing perceptions of responsibility (i.e., diffusion or displacement of responsibility), (3) minimizing the consequences, and (4) blaming of the victim (i.e., dehumanization, attribution of blame). If an individual disengages moral sanctions using the above mechanisms, traditionally immoral behavior is no longer perceived as immoral, allowing that individual to not only engage in immoral action, but do so without feeling guilt or shame.

The earliest empirical evidence for this process, specifically when speaking of dehumanization, presents a case in which dehumanization was experimentally manipulated (Bandura, Underwood, & Fromson, 1975). Participants were recruited for a study they believed assessed the effectiveness of electric shock punishment on decision making. Prior to beginning the punishment task, researchers' "accidentally" left a microphone in the lab on and participants' overheard a conversation between the researchers that described the about-to-be-punished individuals. Comments made in passing between the researchers humanized (i.e., perceptive and understanding), dehumanized (i.e., "an animalistic, rotten bunch"), or did not reference qualities of the target group (neutral condition). When the target group was dehumanized, they received significantly greater punishment, particularly under conditions in which responsibility for the punishment was diffused within a group (Study 1), and when the punishment was ineffective at correcting behavior (Study 2).

Much of the remaining evidence measured, instead of manipulated, dehumanization, specifically, or moral disengagement processes, generally. These studies, often conducted in the field, mostly used correlational designs that assessed the relationship between self-reported moral disengagement (i.e., the moral disengagement scale; Bandura, Barbaranelli, Caprara, & Pastorelli, 1996), and immoral attitudes or behavior. Other studies utilized quasi-experimental designs to assess differences in the above stated relationship for different groups of subjects. For

instance, Bandura et al. (1996) assessed the relationship between moral disengagement and aggressive/delinquent behavior among children. As expected, children prone to moral disengagement enacted greater aggressive behavior, but also felt less guilty and less likely to make amends for that behavior. Similarly, research found a positive correlation between moral disengagement and bullying. For instance, Pornari and Wood (2010) found that moral disengagement, as measured with Bandura's (1996) scale, was positively related to both self-reported indicators of traditional forms of aggression (i.e., physical violence) and cyber aggression (i.e., sending a threatening email or text message). Likewise, Obermann (2011) found that both self-identified bullies and those nominated by their peers as bullies, expressed greater moral disengagement, again measured with Bandura's scale.

Osofsky, Bandura, and Zimbardo (2005) similarly examined moral disengagement among individuals involved in the capital punishment system. This research specifically examined the self-reported degree of moral disengagement among (1) prison guards directly responsible for executing inmates, (2) individuals only involved in the execution in a supporting role (i.e., counselors and priests providing support to inmates up until execution), and (3) a control group of prison guard that worked with the general inmate population and had no contact with inmates awaiting execution. Results revealed that those directly responsible for killing death-row inmates expressed a greater degree of moral disengagement. Thus, just as it was with the children who were bullies, the individuals that engaged in the most extreme form of aggression—here, the taking of human life—engaged in greater moral disengagement, for instance, by dehumanizing the very prison population with which they worked. Viki and colleagues (2012) similarly examined the role of moral disengagement in attitudes toward violent offenders, but specifically sex offenders. The more individuals dehumanized sex offenders, the

more likely they were to recommend prison sentences, exclude sex offenders from society, and support violence against sex offenders.

Likewise, other research found that video game induced aggression (for a review of this literature, see Anderson et al., 2010) operates through dehumanization (Greitemeyer & McLatchie, 2011). After participants played a violent video game, they received negative feedback from a supposed other participant designed to provoke them, and commonly used in the aggression literature (Bushman & Baumeister, 1998; Twenge, Baumeister, Tice, & Stucke, 2001). They were then given a chance to retaliate against this same individual by evaluating them harshly (for a review of similar procedures, see Bushman & Anderson, 1998). Participants that played the violent video game evinced greater aggression (i.e., lower evaluations), an effect that was mediated by the extent to which they dehumanized this individual—video games increased participants' dehumanization of another individual, which thereby increased aggression against this individual.

Still, other research found that meat-eaters (i.e., omnivores) show greater dehumanization of animals as food products than vegetarians and vegans (Bilewics, Imhoff, & Drogosz, 2011). And finally, feeling social connection (either to another individual or group) increased dehumanization of outgroup members, which then increased supporting aggressive policies against these outgroup members (Waytz & Epley, 2012). In one study (Study 4), participants arrived at the laboratory alone, or brought a friend. Those that brought a friend completed all measures in the same room as their friend, thus inducing a feeling of social connection. Participants were then shown the faces of the terrorists responsible for carrying out the 9/11 attacks, and self-reported the extent to which they dehumanized these individuals (Bandura, 1996), and indicated the extent to which it was acceptable to torture (i.e., water board, electric

shock) these individuals. Those participants in the social connection condition found the torture techniques more acceptable, but this was mediated by dehumanization—social connection increased dehumanization of the detained terrorists, which thereby increased support for aggressive action toward these individuals.

This last form of aggression, namely, support for military action or governmental policies that are aggressive or restrictive of individual rights, has received further attention. McAlister, Bandura, and Owen (2006), for instance, examined moral disengagement among U.S. citizens in response to the terrorist attacks on September 11, 2001. Data was collected prior to the attacks and in the weeks following. Unsurprisingly, both moral disengagement and support for force against Iraq and terrorists increased after the attacks, however, moral disengagement fully mediated this increase. In other words, only those individuals that morally disengaged in response to the terrorist attacks supported increased military force. Other research found that Christian participants who expressed greater dehumanization of Muslims showed a greater proclivity to torture Muslim prisoners of war (Viki, Osgood, & Phillips, 2013). The relationship between moral disengagement and war support has also been found to be higher among individuals high in right-wing authoritarianism, as opposed to social dominance orientation (Jackson & Gaertner, 2010). Interestingly, individuals that evinced a social dominance orientation were more apt to engage in dehumanization, arguably because they perceive the world as a zero-sum struggle and are motivated to maintain a dominant position. Still, other research found that moral disengagement is only related to lowered guilt and increased support for aggressive policy among people without a strong moral identity (Aquino, Reed, Thau, & Freeman, 2007).

Moral disengagement has also fostered research that, instead of proposing moral disengagement as a strategy utilized prior to enacting immoral action, examines these same strategies as defensive reactions to already perpetrated transgressions (Castano, 2008; Castano & Giner-Sorolla, 2006; Cehajic, Brown, & Gonzalez, 2009; Leidner, Castano, Zaiser, and Giner-Sorolla, 2010; Zebel, Zimmermann, Viki, & Doosje, 2008). Castano and Giner-Sorolla (2006), as an example, manipulated whether participants read about situations in which the ingroup was responsible for the death of countless outgroup members (e.g., British settlers brought diseases with them to America that decimated the Native American population) or not (e.g., Native American population decreased, but stabilized to pre-colonization numbers), and measured participants' dehumanization of these outgroup victims. As expected, when the ingroup was responsible for the transgression, participants dehumanized the victims greater in an effort to justify the occurrence of such an atrocity.

As with the research on the ethnocentric model reviewed earlier, this research relies on the social identity theory (Tajfel & Turner, 1979) perspective that people base their own identity and self-worth on their group identification. According to the ethnocentric model, this leads individuals to engage in ingroup bias, and thus dehumanize individuals that belong to other, competing groups, as a mechanism to perceive their ingroup positively. The same process occurs when faced with reminders of the ingroup's past transgressions (i.e., genocide). Participants justify past transgressions by dehumanizing the outgroup victims of the, for example, genocide, because it enables them to keep a rosy perspective of their ingroup—i.e., if these victims were in fact not victims, but barbarians that deserved to be massacred, then my ingroup was justified by so doing, and I can continue to view myself positively as a member of this group. Where this research goes beyond the ethnocentric model, and instead provides evidence for the conflict

model, is that it demonstrates how dehumanization is used to increase support for aggressive or violent behaviors.

The Present Research

The present research approached dehumanization in terms of Bar-Tal's conflict model (1990) and Bandura's theory of moral disengagement (1990), and thus sought to better understand and provide a unique test of this process. When examining the corpus of this research, several potential shortcomings were apparent. First, it is difficult to determine causation given the heavy utilization of correlation. Excluding Bandura et al. (1975), procedures measured moral disengagement, as well as guilt or aggression (or support for aggressive policies), and then found predicted relationships between moral disengagement and guilt or aggression. In some cases, path analyses were conducted to suggest process. Bandura et al. (1996) is a good example of these analyses. The best fitting model was one in which moral disengagement indirectly increased delinquent behavior of youths by increasing aggression proneness, and reducing guilt and prosocial behavior. This suggests causation, and is a good alternative when the variable of interest cannot be feasibly manipulated. Other studies used a subject variable to show that certain people, like guards that work on death row, express high levels of moral disengagement or dehumanization, which is likely what enabled them to, for instance, take the life of a condemned inmate (e.g., Osofsky et al., 2005). The problem with designs like this is that it is impossible to determine at what point the individual began to dehumanize. The person could have done so initially, which enabled the execution of the inmates. Dehumanization could have also occurred after conducting the first execution to justify such actions post hoc.

Second, very few studies actually address the moral emotions of guilt and shame that should be mitigated once self-sanctions have been disengaged. Of the studies reviewed, only two found that moral disengagement does indeed decrease the experience of guilt (e.g., Aquino et al., 2007; Bandura et al., 1996).¹ In this regard, the brunt of the research focused on only the behavioral outcome (i.e., increased immoral action) and less on the emotional consequences. The term “behavioral outcome” is a bit of an overstatement, given the reliance on attitudinal measures, over assessment of actual behavior. The initial examination conducted by Bandura and colleagues (1975) is the only one that utilized an actual observation of behavior. The field studies of school age children (e.g., Bandura et al., 1996, 2001) come close to assessing behavior, but relied on self-reported (and also peer-reported) frequencies of antisocial and transgressive behavior.

It comes as a surprise that since the original empirical demonstration in 1975, not one study has been published that uses both a behavioral measure of immoral action and an experimental design, let alone included an assessment of guilt. This is not to downplay these previous findings, as they applied dehumanization to a vast array of circumstances and enabled us to better understand the intricacies of the effect. Researchers most likely favored attitudinal measures because of the ease in using them in the field, and because of the ethical concerns that arise when assessing violent behaviors such as killing. This latter point is crucial, given that both Bandura and Bar-Tal spoke of dehumanization in terms of inhumanities and killing perpetrated through conflict, war, and genocide. Indeed, assessing killing, at least of another human being, would be unequivocally unethical.

A behavioral measure of killing. As such, the present research employed an experimental design aimed at bridging the gap between the assessment of violent attitudes and

the assessment of killing behavior. This feat was accomplished with a bug-killing paradigm that brings participants into the lab to complete a bug extermination task (e.g., Martens, Kosloff, Greenberg, Landau, & Schmader, 2007; Martens, Kosloff, & Jackson, 2010; Martens & Kosloff, 2012; Webber, Schimel, Martens, Hayes, & Faucher, 2013). Although I am not equating the killing of a human with the killing of an insect, the use of such a task provides a better approximation of killing behavior than do attitudinal measures, particularly given the notorious history that attitudes have in not predicting behavior (LaPiere, 1934; Wicker, 1969). This paradigm was initially designed to examine how killing can subsequently fuel future killing as a behavior justification effect (Martens & Kosloff, 2012; Martens et al, 2007; Martens et al., 2010). The paradigm was recently adapted by Webber and colleagues (2013) to assess how social consensus for the act of killing influences the distress experienced after one has been forced to kill. All participants killed a number of bugs, and after killing were randomly assigned to conditions where the act of killing bugs was socially validated by their peers (i.e., previous participants also willingly killed bugs), was socially invalidated by peers (i.e., previous participants refused to kill bugs), or a control condition where they had no access to social information. Afterwards, various indices of distress were assessed. The results revealed that when killing was socially validated participants experienced significantly less distress than when killing was invalidated. In the present research, I further adapted this paradigm to manipulate participants' perceptions of the insects—whether these insects were perceived as human or less than human—and measure how these manipulations influenced killing behavior and the guilt expressed after having killed.

Evidence for the entire process of moral disengagement. If we take a temporal view of the moral disengagement process, we get a more specific understanding of how dehumanization

influences immoral behavior. After having convinced oneself that another being is less than human, one has to go the next step of actually inflicting harm. This process first includes a decision stage where one chooses to harm or not harm. Having decided to harm, one then decides what degree of harm to inflict—minor, moderate, severe, etc. And finally, in the aftermath of one's actions, the individual assesses his or her behavior and has to live with the consequences; at this stage one's conscience is polled to determine if one should feel guilty or distressed about their actions. Dehumanization should influence each of these stages: increase one's willingness to act immorally, increase the degree of one's immoral behavior, and reduce the guilt experienced in post. Importantly, all of these actions should be a result of the ability to disengage moral sanctions for that specific behavior. In other words, the act of perceiving an entity as less than human excludes the person or group from the bounds of morality, thereby making any action against them free from the rules of morality. Only through this moral exclusion can dehumanization increase immoral action and decrease the resulting guilt.

In the present research, four studies were conducted, each one examining each of the various steps of the process outlined above. Study 1 examined the initial decision to kill or not. In this vein, after reading information about the insects and the extermination they would complete, participants were given the opportunity to volunteer to kill the insect or complete an alternative task that did not involve killing. Studies 2-3 assessed the extent to which dehumanization influenced the degree of killing. Participants were required to kill, but could choose the number of insects they killed, thus providing a continuous measure of killing behavior to examine if participants became more immoral after dehumanization. And finally, Study 4 measured guilt experienced after killing insects. If dehumanization truly disengages moral sanctions placed on behavior, then participants that killed under conditions of

dehumanization should experience less guilt. The mediating role of moral justification was also assessed throughout.

Studies 1-3: The Anthropomorphism Studies

As discussed, stripping individuals of their human qualities should disengage moral sanctions, thus increasing immoral action, and decreasing moral emotions. The present research, utilized a bug-killing task to circumvent the ethical impossibility of studying killing in the lab. Although this paradigm has the positive features of experimental manipulation and the assessment of actual behavior, it does bring its own complications; whereas this paradigm circumvents ethical concerns, it does so by removing humans from the equation. How then can one study a theory about stripping human qualities from a human by studying behavior against creatures with nonhuman status?

I thus studied the dehumanization process via the inverse process of anthropomorphism (Epley, Waytz, & Cacioppo, 2007; Waytz, Epley, & Cacioppo, 2010). Whereas dehumanization involves stripping human qualities from someone human, anthropomorphism entails ascribing human qualities to something nonhuman. Such actions are commonly undertaken, for instance, when a lonely, twenty-something woman talks to her dog as if it were a child and takes that dog's actions toward her as a demonstration of love and affection—emotions thought to be uniquely human. Or when a professor curses at his computer for “acting up” after it “failed” to correctly save his manuscript revisions.

Epley and colleagues (2007; 2010) view anthropomorphism and dehumanization as “theoretical inversions” of one another, arguing that a variable that influences one's anthropomorphism tendency in one direction, should influence one's dehumanization tendency

in the opposite direction. Sociality—the basic motivation for social connection—is one variable with such an effect. As such, participants experimentally induced to feel socially connected to their group (i.e., a friend, family member, some close to them) engaged in greater dehumanization of members of other, more distant groups by rating them as less capable of engaging in purposeful action or experiencing emotion, and supported harsh interrogation practices against terrorists (Waytz & Epley, 2012). In support of inversion, when participants felt a sense of social rejection, they engaged in greater anthropomorphism of deities and their pets (Epley, Akalis, Waytz, & Cacioppo, 2008). Similarity between the target and the individual is another variable with inverse effects. As discussed previously, dehumanization is most common for targets that do not belong to one's ingroup, and are thus dissimilar (e.g., Leyens et al., 2003). In support of inversion, anthropomorphism of mechanical devices such as robots is more likely when those robots are made more similar by the addition of humanlike faces or bodies (Burgoon et al., 2000; DiSalvo, Gemperle, Forlizzi, & Kiesler, 2002).

The present research applied this logic of theoretical inversion. As anthropomorphism is the inversion of dehumanization, applying human qualities to nonhuman insects should turn them into moral agents deserving respect and appropriate treatment (cf. Epley et al., 2007). Indeed, this can be seen in the struggle pet owners go through when the veterinarian requires them to euthanize the family dog—the anthropomorphized animal has become like one of the children in the family and deserving of human treatment. By thus bringing the insect into the bounds of morality, immoral action against the insect are subject to moral standards, thus reducing one's willingness to harm said insect, and increasing the guilt experienced as a result of harming the insect.

Study 1: The effect of anthropomorphism on the decision to kill

Study 1 examined how anthropomorphism influences one's initial killing decision. Participants were introduced to a bug extermination task. After participants understood exactly what would be required of them to complete this task, they had the option to complete the extermination or complete an alternative assignment that involved reading an essay. In essence, this set up the killing task as completely voluntary.

While getting acquainted with the extermination task, researchers randomly exposed participants to manipulations that either anthropomorphize the insects, or a control condition in which the insect remained in their dehumanized state. Anthropomorphism was accomplished by relying on the idea that humans have a tendency to name nonhuman beings and objects whenever they want to perceive those beings as more humanlike—for instance, Mickey Mouse, the family dog Sparky, or the beloved sports car Sophia. As such, labels were affixed to containers holding the insects. These labels either portrayed names or numbers. It was predicted that naming (anthropomorphizing) the insects would humanize them, thus bringing them under the purview of moral standards, and decreasing one's willingness to kill them. Participants in the names condition were expected to be more likely to opt-out of the killing task and choose the alternate task, relative to their counterparts in the numbers condition.

Indices of guilt and moral disengagement were also measured after participants made their decisions. Anthropomorphism was expected to likewise impair one's ability to morally disengage from the act of killing, and for those that volunteered to kill, increase the guilt experienced as a result of killing.

Method

Participants

Participants were undergraduate students at the University of Alberta participating for partial course credit. Only participants that completed an online mass pretesting survey, and indicated that they were not highly fearful of small insects and bugs (a response of ≤ 6 on a 9-point scale; 1 = *not at all afraid*; 9 = *extremely afraid*) were eligible to participate. Participants also reported how similar they thought insects and humans were (1 = *not at all similar*; 9 = *extremely similar*) during that same survey. Data were excluded because participants failed to follow instructions ($n = 1$), guessed the research hypothesis ($n = 2$), or thought the killing task was fake while doing the task ($n = 5$). Data from the remaining 78 participants (44 women, 34 men) were included in the analyses examining participants' willingness to kill ($M_{age} = 18.96$, $SD_{age} = 1.90$). An additional three participants questioned the legitimacy of the killing task, but not until after beginning the questionnaires, and a single participant failed to complete the questionnaires. As such, all analyses examining or including either the moral justification or guilt items were restricted to 74 participants (43 women, 32 men; $M_{age} = 18.97$, $SD_{age} = 1.93$).

Materials

Trauma-Related Guilt Inventory. I utilized the Trauma-Related Guilt Inventory (TRGI; Kubany et al., 1996) to capture various affective and cognitive components of guilt that participants may have experienced in response to killing the insects. This inventory, originally derived from clinical experience, interviews with trauma survivors, and a review of the clinical literature (e.g., Kubany et al., 1995), is divided into two scales: global guilt and guilt cognitions. The guilt cognitions scale is further divided into four subscales—distress, lack of justification, hindsight bias/responsibility, and wrongdoing—each capturing distinct components of traumatic guilt, as experienced in relation to some specific traumatic event. The distress subscale assesses negative emotional arousal. The wrongdoing subscale captures if the traumatic event violated

moral standards about right and wrong. The hindsight bias subscale examines perceptions of personal responsibility in causing the traumatic event, and cognitions about the changeability of the event. Finally, the lack of justification subscale measures the existence of justifiable reasons explaining why the event occurred.

The TRGI was revised, a priori, to adapt it to the experimental context (see Appendix A). The global guilt scale was removed entirely because it asked participants to indicate how frequently they experienced guilt since the occurrence of some traumatic event (e.g., “Indicate how frequently you experience guilt that relates to what happened”). These items were deemed unnecessary as the traumatic event of interest had occurred merely minutes before completing the inventory. Within the guilt cognition scale only the distress subscale was revised. Two items were removed because they also dealt with the frequency of distress (e.g., “When I am reminded of the event, I have strong physical sensations such as sweating, tense, muscles, dry mouth, etc”). The remaining four items were revised to reflect the type of distress expected from the killing paradigm. For example, “I feel sorrow or grief about the outcome” was changed to “I feel troubled and concerned when I think about what happened.” The hindsight, justification, and wrongdoing subscales were completely unrevised, however, another four items comprising the guilt cognition scale, but not comprising any of the four subscales were removed to reduce redundancy. The resulting scale consisted of 22 items rated on a 5-point scale (1= *not at all true*, 5 = *extremely true*).

State Shame and Guilt Scale. A measure of guilt not specific to traumatic experience was also used. The State Shame and Guilt Scale (SSGS; Marschall, Sanfter, & Tangney, 1994) consists of 15 brief phenomenological depictions of shame (e.g., “I want to sink into the floor and disappear”; “I feel worthless, powerless”), guilt (e.g., “I feel remorse, regret”; “I feel bad

about something I have done”), and pride (e.g., “I feel good about myself”; “I feel proud”).

Statements are rated on a 5-point scale based on how participants feel at the present moment (1 = *Not feeling this way at all*; 5 = *Feeling this way very strongly*).

Moral disengagement measure. Eleven items rated on a 7-point Likert scale (*1 = strongly disagree*; *7 = strongly agree*) were created to assess participant’s ability to morally disengage from the act of killing insects (see Table 1).² These items were based on those used in previous research (e.g., Bandura et al., 1996), but were designed to specifically address the immoral act of killing insects. Several mechanisms of moral disengagement, namely, dehumanization, moral justification, advantageous comparison, and displacement of responsibility were assessed by this measure.

The dehumanization items were included to assess if anthropomorphism increased participants’ perceptions that the insects were indeed humanlike. Essentially, these assessed if the manipulation had the intended effect. The remaining items were included to assess process—i.e., does anthropomorphism influence behavior by increasing other strategies of moral disengagement. According to Bandura’s (1990) theorizing, dehumanization disengages moral sanctions by operating on the victim of the soon to be perpetrated action. However, it seems possible that if dehumanization is to actually influence immoral action, it might require the disengagement of moral sanctions operated directly on the conduct itself. In other words, dehumanization should enable one to perceive the victim of their action immorally, but it does not necessarily enable one to act immorally against him or her. The present research thus examined if dehumanizing the insects increased disengagement at the level of the conduct (i.e., moral justification and advantageous comparison) and responsibility for conduct (i.e., displacement of responsibility).

Moral justification seemed the most likely candidate to perform this function. It refers to construing one's conduct in a manner that makes it acceptable, right, or moral (Bandura, 1990), and was assessed with three items. Anthropomorphism was expected to make it so that participants now included insects under the purview of moral standards. Moving the treatment of insects to this moral high ground, should likely mean that detrimental conduct performed against the insects would become immoral. This process would be captured by impaired ability to justify the actions on moral ground, or impaired moral justification. Advantageous comparison also acts on the level of the conduct, by construing it as relatively good in relation to other highly immoral actions. And finally, displacement of responsibility enables one to place this responsibility squarely on something external to the individual (i.e., another person or situational constraints).

These items were used in Studies 1-3. All three samples were collapsed ($N = 148$) and factor analyses were conducted. A confirmatory factor analysis was first performed to confirm the a priori 4-factor structure. The structure could not be confirmed. Two of the factors had a correlation greater than 1, suggesting that fewer factors were required to explain the data. An exploratory (maximum likelihood) factor analysis was then conducted to determine an appropriate factor structure. An examination of the scree plot (see Figure 1) suggested a 1-factor solution; Eigenvalue = 4.07. Past research using the moral disengagement scale from which these items were adapted likewise reported a single factor solution, so this was not surprising (Bandura et al., 1996). The factor loadings are reported in Table 1. A conservative coefficient cut-off of .30 or higher was used, resulting in the removal of two items (see Table 1). The remaining nine items ($\alpha = .85$) were combined to create an overall moral disengagement composite.

Given the theoretical interest in testing each of the individual moral disengagement techniques, the a priori factors were retained and analyzed alongside the general disengagement

factor. Analyses revealed that the items designed to measure advantageous comparison ($\alpha = .30$) and displacement of responsibility ($\alpha = .31$) were unreliable. These composites contained the items that did not load in the previously reported factor analysis. These items were dropped, and single items were used to assess each advantageous comparison (i.e., “Exterminating bugs today is not a big deal when you consider all of the bugs and pests killed every day by real exterminators”) and displacement of responsibility (i.e., “It was okay to exterminate bugs because the researcher wouldn’t let me do anything that is wrong”). The composites measuring moral justification ($\alpha = .68$) and dehumanization ($\alpha = .72$) had acceptable reliability, so all of the individual items were retained in each of these composites.

Willingness to kill. A single item asked participants to rate how willing they were to complete the extermination task on a 9-point scale ($1 = \text{completely unwilling to kill}$; $9 = \text{completely willing to kill}$).

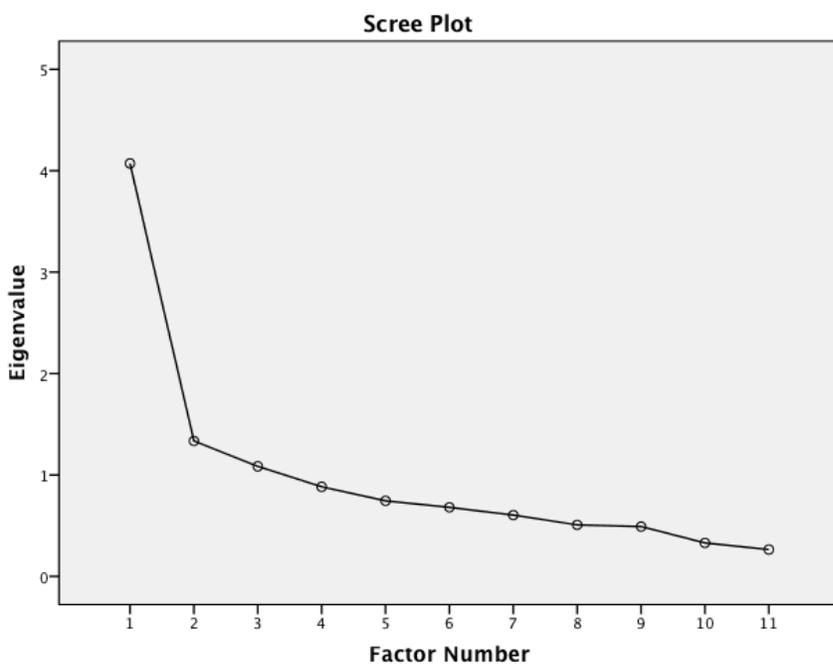


Figure 1. Scree plot for factor analysis of moral disengagement items.

Table 1

Moral disengagement factor loadings from maximum likelihood analysis.

| | Factor 1 |
|---|----------|
| 1. Even after reading the information I felt it was wrong to exterminate the bugs. | -.68 |
| 2. It is alright to exterminate “lower” life forms like insects. | .64 |
| 3. Sometimes, exterminating insects is the right thing to do. | .64 |
| 4. It is okay to exterminate bugs because they don’t really have feelings that can be hurt. | .77 |
| 5. Some things do not deserve to be treated like humans. | .67 |
| 6. Exterminating bugs today is not a big deal when you consider all of the bugs and pests killed every day by real exterminators. | .71 |
| 7. It was okay to exterminate bugs because the researcher wouldn’t let me do anything that is wrong. | .49 |
| 8. After reading the information, I better understood why these insects were chosen for extermination. | .35 |
| 9. I felt it was wrong to kill these specific insects because they may have qualities that make them more similar to humans. | -.48 |
| 10. I felt like I didn’t have much choice to exterminate the bugs or not because this is for my research participation. | -.12 |
| 11. Exterminating bugs using the grinding machine would be more humane than using poisonous sprays. | .24 |

Note. The theorized factor loadings were as followed: moral justification (1, 3, 8),

dehumanization (2, 4, 5, 9), advantageous comparison (6, 11), and displacement of responsibility (7, 10).

Procedure

All participants were run one at a time. The cover story required participation in a study that examined how people in different societal roles interact with different types of animals, but specifically, how exterminators deal with the insects. To this end, the researcher instructed participants to complete a bug extermination task and answer questions about their experience doing so. If they agreed to undertake these tasks, participants provided informed consent.

Immediately after providing consent, the researcher escorted participants from the main laboratory (i.e., a conference-type room) into a side room referred to as the “extermination area.” The extermination area comprised a cubicle with a desk, upon which sat all of the materials necessary to complete the extermination task. The extermination machine sat on the left side of the desk. The machine consisted of a retrofitted coffee grinder with PVC tubing attached to the side of the grinder assembly. The tubing is attached in such a way as to give the *illusion* of a chute leading directly into the grinder chamber of the machine. In actuality, the tubing does not penetrate the outer edge of the grinder. Thus, anything placed inside the chute does not enter the grinder chamber, but merely rests on the inside of the tubing, along the outer edge of the coffee grinder. Nothing placed inside the tubing can be seen when looking down the exterior opening of the chute. The opening of the coffee grinder itself was modified so that participants cannot see anything inside the grinder chamber. Prior to each participant arriving, the researcher placed pieces of Styrofoam inside the grinder chamber.

Because using a grinder to complete an extermination is not the typical method for bug extermination, I used a cover story to provide participants with a believable reason as to why they would kill using this apparatus. Specifically, the researcher explained that although poisons and chemical sprays are more common methods of extermination, they are not safe for use within the Biological Sciences building (where the studies were being conducted). Instead, the extermination machine was designed to circumvent this issue.

Ten plastic cups (about the size of shot glasses) arranged in two parallel columns sat immediately to the right of the grinder. A woodlouse resided inside each cup (for a total of 10 woodlice). Woodlice are small, segmented isopods that are gray to black in color. The insects are quite small, but can reach about half an inch in length. The specific woodlice used belong to the

family *Armadillidium vulgare*, and can be recognized by their defensive ability to roll into a ball. The insects are more commonly referred to as potato bugs, pill bugs, or roly polies. Labels were affixed to the outside of the individual insect containers. This comprised the anthropomorphism manipulation. In the anthropomorphism condition, the containers were labeled with names, thus giving the perception that each individual insect had been assigned a name by the research team. Five of the names were human (e.g., Ethan, Bernie, Madison) and five were pet names (e.g., Speckles, Rolls Royce). In the dehumanization condition, the containers were labeled with the numbers 1-10.

A manila envelope containing an information packet that provided participants with background information on the woodlice sat immediately to the right of the insects. The information was designed to be neutral and scientific in nature (see Appendix B). The researcher presented the packet under the guise of better enabling participants to assume the exterminator role. In other words, since real exterminators are very knowledgeable about the creatures they work with, the packet was presented as a way for participants to increase their own knowledge of the insects with which they would work.

A laptop with a demonstration video opened on the monitor sat immediately to the right of the information packet. The demonstration video depicted a female researcher dressed in a lab coat demonstrating and explaining how to complete the extermination task. In short, the video identified all of the items within the extermination area, and mimed step-by-step instructions for how to complete the task. The demonstration instructed participants to deposit each of the insects into the extermination machine one at a time, by pouring them out of the plastic cups and into the chute. To initiate extermination, participants were instructed to depress the “activation button” on the top of the apparatus, and hold down this button for three seconds to insure that the blades

within the machine spun fast enough for effective extermination. The video was implemented to reduce researcher influence on participant's killing decisions, and ensure researchers were blind to the anthropomorphism conditions to which participants were randomly assigned. A second researcher set up the labeled cups prior to every experimental session, and the main researcher was prevented from entering the "extermination area" to assure he was always blind to condition.

The researcher instructed participants to do as follows: (1) read the information packet, (2) view the demonstration video, and (3) return to the main laboratory for further information. The researcher made no mention of the labels affixed to the containers, nor did he specifically draw their attention to the labels. It was expected that while reading the packet and watching the demonstration video, participants would notice the labels on their own, and that this would sufficiently manipulate perceptions of the insects.

After returning to the main lab, participants were given a choice—they could opt-in and complete the extermination or they could opt-out and complete an alternate reading assignment. Participants indicated their choice by checking the appropriate box on a second consent form. No pressure was placed on participants regarding either choice, and both choices were sufficient methods for obtaining research credit. In essence, participants that opted-in volunteered to kill, knowing full well that it was not required of them and other feasible, morally-correct methods for obtaining research credit existed.

If participants opted-out, the researcher stopped the study and participants completed a packet containing the moral disengagement measure and the single kill willingness item before completing a short reading assignment. If participants opted-in, they returned to the "extermination area" and completed the extermination task. Within this task, no actual insects were killed, and participants were only led to believe that they were exterminating. When

participants depressed the activation button, the blades within the grinder engaged, and participants heard what they believed to be the grinding of the deposited insect(s). In actuality, they only heard the grinding of Styrofoam bits that were placed in the grinder chamber prior to the study. Participants then completed a packet that contained in order, (1) the TRGI, (2) a filler scale assessing emotion, (3) the SSGS, (4) the moral disengagement measure, and (5) the single willingness to kill item. All participants were probed for suspicion and thoroughly debriefed upon completion.

Results

Effect of condition on moral disengagement strategies

Composite scores were created for general moral disengagement ($\alpha = .85$), dehumanization ($\alpha = .75$), and moral justification ($\alpha = .66$). These composites, along with the single items assessing advantageous comparison (i.e., “Exterminating bugs today is not a big deal when you consider all of the bugs and pests killed every day by real exterminators”) and diffusion of responsibility (i.e., “It was okay to exterminate bugs because the researcher wouldn’t let me do anything that is wrong”) were subjected to separate Condition \times Gender ANOVAs. No significant effects were found on the general disengagement composite (all $ps > .204$)

For the individual disengagement techniques, analysis of moral justification revealed main effects of both condition; $F(1, 73) = 4.33, p = .041, \eta^2 = .06$; and gender; $F(1, 73) = 5.88, p = .018, \eta^2 = .08$; but not their interaction ($p = .309$). As predicted, the effect of condition was such that participants in the dehumanization condition (numbers) better justified their actions according to moral standards ($M = 4.50, SD = 1.34$) than those in the anthropomorphism (names) condition ($M = 3.84, SD = 1.31$). Likewise, male participants were better morally justified their actions ($M = 4.59, SD = 1.44$), than were females ($M = 3.88, SD = 1.22$). Analyses on

advantageous comparison only revealed a main effect of condition (all other $ps > .410$); $F(1, 73) = 4.47, p = .038, \eta^2 = .06$. When the insects were less than human, participants engaged in greater advantageous comparison ($M = 4.43, SD = 1.66$), than when the insects were anthropomorphized ($M = 3.65, SD = 1.65$). No significant effects were found for analyses on dehumanization perceptions (all $ps > .419$) and displacement of responsibility (all $ps > .493$).

Effect of condition on willingness to kill

The main dependent variable comprised participants' dichotomous opt-in/opt-out score. A binary logistic regression was conducted with the condition variable (0 = numbers, 1 = names), gender (0 = male, 1 = female), and their interaction predicting the dichotomous killing decision (0 = no, 1 = yes). There was no Gender \times Condition interaction ($p = .81$), so it was dropped from the model. The subsequent model was significant, $\chi^2(2, N = 78) = 21.06, p < .001$, with significant main effects of gender, $\beta = -2.23, SE = .61, OR = .11, p < .001$, and condition, $\beta = -1.28, SE = .56, OR = .28, p = .022$. The percentage of participants that opted-in is presented in Figure 2. When looking at the entire sample (i.e., main effect of condition), the odds ratio revealed that, when controlling for gender differences, there was a 72% reduction in the probability that participants would kill when the insects were given names, relative to when they were labeled with numbers. As can be seen in Figure 2, the number of participants opting-in was reduced by 22.5%. The gender main effect revealed that men had a higher threshold for killing. Indeed, the odds that women would kill was 89% lower than the odds that men would kill; whereas 85% of men opted-in, only 43% of women did. As depicted in Figure 2, however, although men were significantly more likely to agree to kill, naming the bugs had comparable effects for both genders, reducing the percentage of those that agreed to kill by roughly 20% (17.6% for men, 27.9% for women).

The manipulation similarly influenced the single continuous item of kill willingness. An ANOVA with condition and gender entered as independent variables mimicked the above pattern of results. Both condition, $F(1, 76) = 4.06, p = .05$, and gender, $F(1, 76) = 21.31, p < .001$, were significant predictors of willingness to kill. No Gender \times Condition interaction emerged.

Effect of condition on guilt

Those participants that opted-in to complete the extermination task did indeed complete the extermination, whereas those who opted-out did not. After completing the extermination, these participants completed items assessing how guilty they felt about their actions. Because those who opted out did not complete the guilt measures, we only had guilt responses for the 45 participants that opted to kill (58% of the full sample). If they were successfully able to disengage moral standards, these participants should likewise experience less guilt. Mean scores were calculated for each of the subscales of the TRGI (i.e., guilt cognitions, distress, wrongdoing, justification, and hindsight) and SSGS (i.e., guilt, shame, and pride). A guilt composite score ($\alpha = .91$) was calculated by reverse-coding the pride scores, calculating standardized scores (i.e., z scores) for each variable, and taking the mean of all items. This method is identical to that used in previous research using the same guilt scales in conjunction with the bug-killing paradigm (Webber et al., 2013). This composite was subjected to a Condition \times Gender ANOVA. None of the effects were significant (all $ps > .259$).

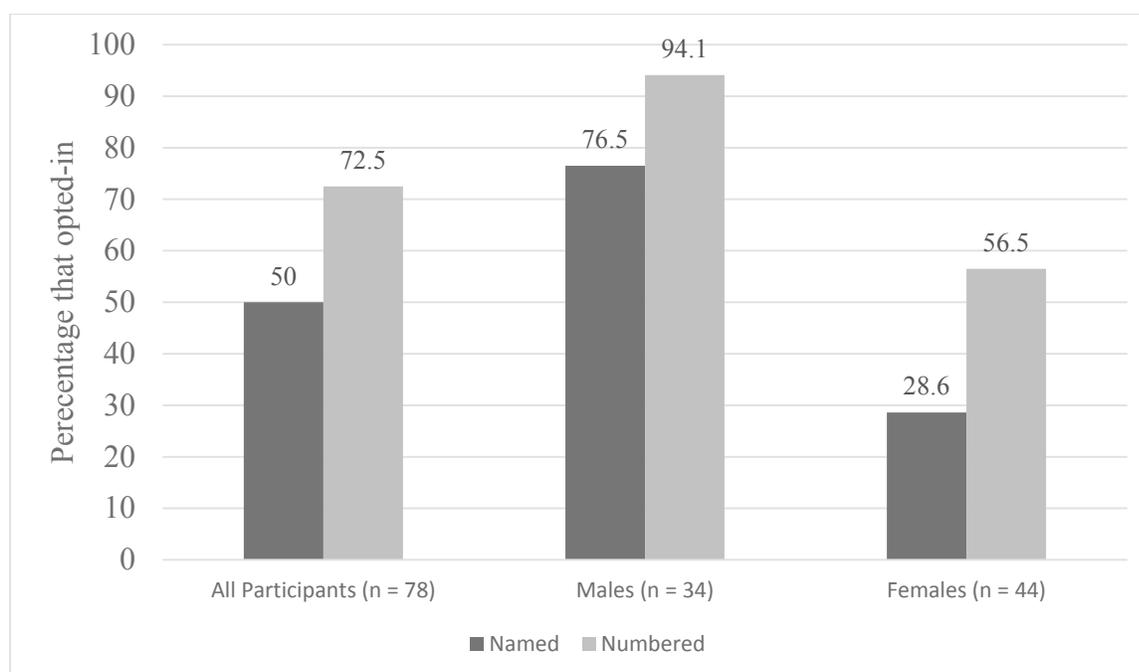


Figure 2. Percentage of participants that opted-in to kill insects as a function of condition and gender (Study 1). Percentages are presented for the entire sample (far left columns), and also separately for each gender. Exact percentages are presented above each column.

Mediating effect of moral justification

Mediation analyses examined if naming the insects reduced participants' willingness to kill as a result of impairing participants' ability to perceive the act of killing as moral. The first two steps of mediation—relationships between condition and killing (outcome variable) and condition and moral justification (mediator)—have been established in the previous analyses. The final step of mediation, that is, the indirect effect of condition on killing through moral justification, was assessed with the PROCESS SPSS macro developed by Hayes (2013). Given the significant main effects of gender, these analyses were conducted with gender as a covariate.

Condition (0 = numbered, 1 = named) was regressed onto kill decision (0 = opt-out, 1 = opt-in) while controlling for moral justification and gender. In support of mediation, when moral justification was included in the model, it significantly predicted killing decision, $z(2, 71) = 3.12$, $p = .002$, $CI [0.310, 1.35]$, and the effect of condition on killing was reduced to non-significance, $z(2, 71) = -1.46$, $p = .145$, $CI [-2.08, 0.305]$. The significance of this indirect effect was assessed by creating bootstrapped confidence intervals. All cases were sampled with replacement from the original data file, the coefficients in the mediation model were estimated, and the indirect effects calculated. This process was repeated 5,000 times to empirically create a sampling distribution, and 95% confidence intervals were calculated. The resulting confidence intervals indicated significant mediation, as “0” was not contained within the upper and lower limits, $CI [-1.57, -0.048]$. The same process analysis found that advantageous comparison also mediated the relationship between condition and kill decision; $CI [-1.286, -0.015]$. When advantageous comparison was included in the model, it significantly predicted killing decision, $z(2, 71) = 3.03$, $p = .002$, $CI [.218, 1.012]$, and the effect of condition on killing was reduced to non-significance, $z(2, 71) = -1.70$, $p = .089$, $CI [-2.257, 0.159]$. Mediation models are depicted in Figure 3.

Moral disengagement regardless of condition

A simple test of moral exclusion was also conducted to assess whether participants that agreed to kill insects (opted-in) were better able to justify their actions along moral lines than those who refused to kill, regardless of condition. As expected, those participants who opted-in evinced significantly greater moral justification ($M = 4.71$, $SD = 1.29$), than those who opted-out ($M = 3.39$, $SD = 1.04$), $F(1, 73) = 21.87$, $p < .001$, $\eta^2 = .23$. Moreover, greater moral justification was highly and negatively correlated with guilt; $R(44) = -.71$, $p < .001$.

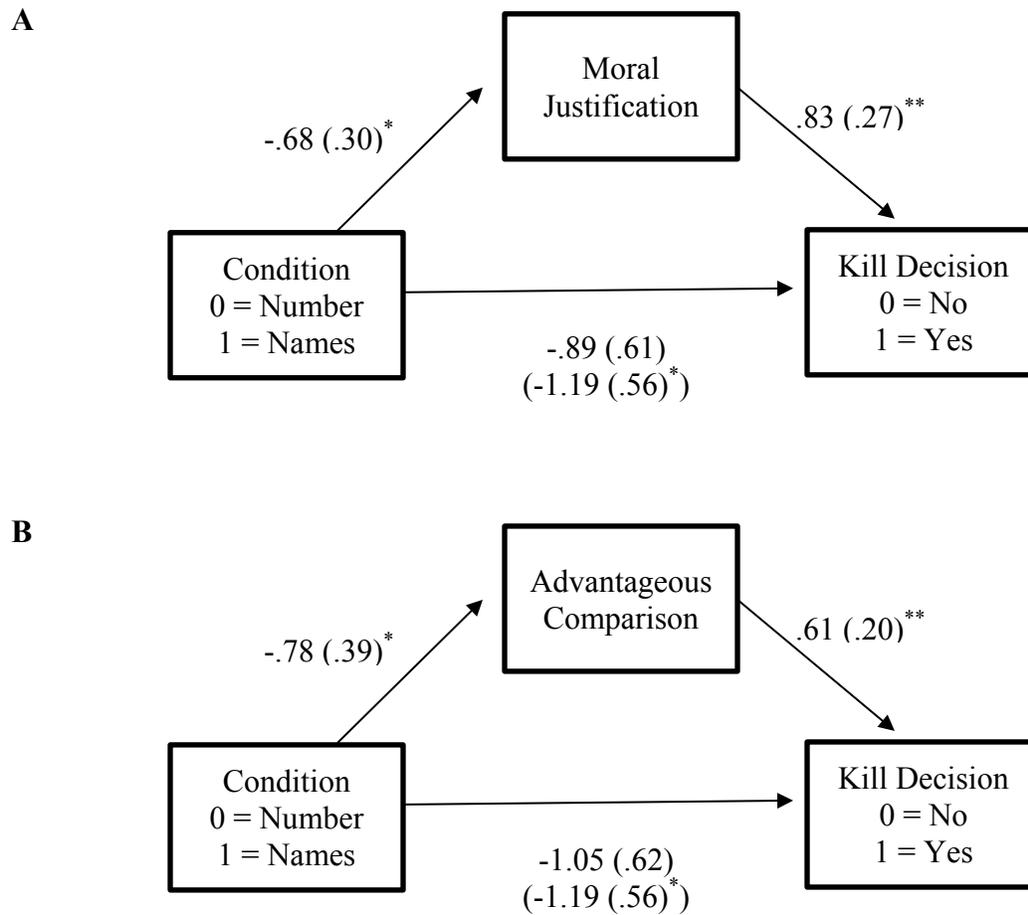


Figure 3. Mediating effect of moral justification (A) and advantageous comparison (B) on killing decision (Study 1). As presented in the model, the previously significant pathway from condition to kill decision was reduced to non-significance when either mediator was included in the model. Coefficients are unstandardized. SEs are presented in parentheses. * $p < .05$, ** $p < .01$.

Discussion

The results of Study 1 provided initial causal evidence for the role of perceptions of humanness in killing behavior. The use of the anthropomorphism technique of naming the insects hindered participants' ability to justify the act of killing insects through either moral

justification or advantageous comparison. This impairment subsequently decreased the likelihood that participants chose to kill the insects instead of completing an alternate task. On the other hand, when the insects were merely insects and identified by numbers, participants found it easier to justify the act of killing them, and were thus more likely to agree to kill them.

One unexpected finding was that condition did not influence post-kill ratings of guilt. This finding seems at odds with the notion of moral exclusion—if anthropomorphism reduced participants' ability to justify killing the insects (which it did), then killing these same insects should be distressing and guilt-inducing. However, it seems likely that this effect (or lack thereof) is an artifact of the experimental procedure. Participants only killed insects and completed subsequent guilt ratings after opting-in to the extermination task. The decision to opt-in first required these participants to successfully justify their future actions. That is, participants were not required to kill. Should they have experienced moral qualms about the killing task, they simply would have opted-out of the task. Any subsequent analyses are thus hampered by a restricted range of responses. Secondary analyses were conducted to examine this possibility.

Recall that condition significantly influenced moral justification—participants in the anthropomorphism condition reported significantly less moral justification ($p = .041$). However, if the range is restricted by only including those participants that opted-in to the extermination task, this effect is reduced to non-significance ($p = .707$). This analysis strongly suggests that although anthropomorphism impaired moral justification overall, this effect is driven solely by those who opted-out of the task. These participants had difficulty justifying the act of killing, and unsurprisingly chose not to kill. Those who opted-in, however, were able to opt-in because the anthropomorphism manipulation facilitated their ability to justify their actions. When faced with killing the insects, they experienced no moral qualms, and thus did not express guilt.

Also unexpected were the various main effects of gender that revealed that men better justified killing, and were also more likely to opt-in to kill. These findings were unexpected because past research using the bug-killing paradigm has not found gender differences (e.g., Webber et al., 2013). Both gender effects, however, are consistent with past research. Bandura et al. (1996), for instance, found that men evinced greater self-reported moral disengagement than women when assessed as an individual difference variable. Likewise, a vast literature shows that men are significantly more likely to engage in direct or overt forms of aggression (for meta-analyses, see Archer, 2004; Card, Stucky, Sawalani, & Little, 2008). This still does not answer why gender differences were not found in past bug-killing research. Again, the explanation may lie in procedural differences.

In previous bug-killing research, participants were required to engage in some level of killing. In some studies (e.g., Martens et al., 2007), participants had a brief kill window (e.g., 20 seconds) in which to “put bugs into the grinder.” Researchers then counted the number of insects deposited within that window as the index of killing. Other studies required that all participants kill a specified number of insects (i.e., 10 insects), and then assessed participants’ feelings in response to killing this standard number of targets (Webber et al., 2013). All of these previous designs placed an experimental demand or expectation that some insects have to be killed. Perhaps the instructions, “put the bugs in the grinder” implies that bugs must go in the grinder and constrains participants’ perception that they could choose not to place bugs in the grinder. If so, this demand likely washed out gender differences. Indeed, previous research has found that although men are more overtly aggressive under normal circumstances, these gender differences are reduced when the situation is constrained (i.e., when provoked, women are equally aggressive as men; Bettencourt & Miller, 1996). Relative to previous iterations of the bug-killing

paradigm, the present design had fewer situational constraints, increasing the likelihood that gender differences would be expressed.

Finally, the lack of movement on the dehumanization composite is also noteworthy. The anthropomorphism manipulation successfully led to the expected behavioral outcome, and did so through the process of impairing moral justification. The manipulation did not, however, increase humanness perceptions. One possible explanation for this finding is that the manipulation was fairly implicit. Names were affixed to the exterior surface of the containers, and participants' attention was never directed to these names. The hope was that this would activate implicit associations between insects and humans. No explicit efforts were otherwise undertaken to portray the bugs as humanlike. It seems likely that since the manipulation occurred at a rather implicit level, that it would influence behavior without being reflected in self-reported attitudes (e.g., Bargh, Chen, & Burrows, 1996).

The designs of Studies 2 and 3 had the benefit of testing some of these propositions. Specifically, I revised the bug-killing paradigm in a manner that increased the situational constraints and eliminated the opt-in or opt-out procedure. These revisions were employed for the purpose of testing a different hypothesis, but had the benefit of examining the proposed post-hoc explanations of gender differences and lack of guilt differences. Likewise, Study 2 employed a different anthropomorphism manipulation. This change was made with the intention of testing the effect of dehumanization in a new manner that would thus increase our confidence in the findings. This manipulation also attempted to influence humanness perceptions explicitly.

Study 2: The effect of anthropomorphism on degree of killing

Study 1 found causal support for the influence of dehumanization on one's willingness to kill, a process that was mediated by moral justification. This increased willingness was especially powerful given that it occurred under constraints with a readily available alternate task. Although the initial determination whether or not one should kill is a crucial component of the decision making process, it is but the first step. The second step of course is actually killing. In the previous design, once participants opted-in, killed all of the insects presented before them. This all-or-nothing design prevented assessing the role of anthropomorphism on the extent to which participants killed. Study 2 was thus examined if anthropomorphism would influence the number of bugs participants willingly killed. Study 2 also attempted a more direct approach at anthropomorphism by presenting participants with information about the insects pre-kill that portrayed them as possessing what are believed to be uniquely human qualities. It was hoped that this portrayal would lead participants to view the insects as more humanlike, and thus decrease their willingness to kill them, as measured by the number of insects killed.

Method

Participants

Participants were undergraduate students at the University of Alberta participating for partial course credit. As in the previous studies, participants were recruited using their responses on an online mass testing survey to two items assessing their fearfulness of insects (only a response of ≤ 6 on a 9-point scale was eligible) and human-insect similarity. Data from two participants were excluded because they were outliers ($> 3SDs$ above the mean) on the number of insects killed. These individuals killed all 12 insects (could range from 0-12), whereas the mean number of insects killed, including these two individuals, was only 2.45 ($SD = 3.17$). Data

from another five participants were excluded because they guessed the predictions, were suspicious that the extermination task was fake, and/or did not follow task instructions. Data from the remaining 35 participants (26 women, 9 men) were included in all analyses ($M_{age} = 18.86$, $SD_{age} = 1.31$). No effects of gender were found, and gender was removed from analyses.

Materials and Procedure

Participants were invited to complete a task assessing how exterminators deal with insects, and upon providing informed consent, the researcher escorted them to the “extermination area” to complete the extermination task. The extermination area was arranged with (1) the retrofitted grinder, (2) insect information packet, and (3) 12 insects placed in plastic cups. The insect containers were arranged in a random, circular, conglomerate (vs. the two parallel columns used in Study 1). This change was employed to impair participants’ ability to quickly ascertain the number of insects present, and also reduce perceptions that the insects should be exterminated in any specific order or pattern.

Anthropomorphism was manipulated in the insect information packet that participants’ read prior to completing the extermination task. Participants read this packet under the auspices of getting into the mindset of an actual experimenter (i.e., real exterminators are knowledgeable about the insects with which they work). This information was manipulated to portray the insects in either a neutral or humanized manner. Both sets of information were presented as excerpts taken from sources used by exterminators to identify insects. The neutral condition was identical to that used in Study 1 (see Appendix B), and merely presented scientific information and an accurate “scientific” drawing of the insects. In the anthropomorphism condition, however, the information described the insects with human-like qualities—unique personality types, ability to experience human emotions, and monogamous creatures that form life-long pair bonds (see

Appendix C). Likewise, a cartoon image of the woodlice characters Tuck and Roll from the Disney/Pixar film “A Bug’s Life” replaced the scientific drawing of the insect.

In Study 1, a video demonstration kept the experimenter blind to conditions, as the names/numbers on the insect containers were clearly visible. In the present study, the information packets containing the manipulation had the same cover sheet and were placed into manila envelopes, thereby preventing the experimenter from identifying the condition. As such, the experimenter, instead of a demonstration video, demonstrated and described the extermination task to participants. The task instructions were revised to provide participants a choice in the number of insects to kill. The basics of the task remained the same: read the information packet, deposit the insects one-by-one into the grinder chamber, and then exterminate the insects. Three important revisions were implemented. First, participants no longer returned to the main laboratory to complete a second consent form. Second, instructions asked participants to press and hold the activation button on the grinding apparatus after depositing every single insect into the grinder, instead of only after all insects were deposited. Thus, if a participant killed six insects, he or she would activate the machine six times to kill each insect individually. Third, task instructions were amended to require participants to choose how many insects they would kill. Participants were specifically instructed, as follows:

Your goal in this task is to get into the head of a real exterminator—to feel how they would feel during an extermination. For this reason, you only have to exterminate as many insects as you feel is necessary to understand what it is like to be an exterminator. In other words, you are free to choose the number of insects you exterminate today.

Participants then returned to the main laboratory where they completed the same series of questionnaires (i.e., guilt, moral disengagement, and kill willingness) prior to being probed for suspicion and thoroughly debriefed.

Results

Study 2 adopted a slightly different analysis strategy. In the previous study, the anthropomorphism manipulation was implicit. Indeed, no mention of the names/numbers was ever made to the participants, and the researcher never directly tuned their attention to the manipulation. In this sense, humanness was not increased by trying to consciously and explicitly influence opinions toward the insects, but merely by an implicit association between a name and human qualities. The opposite was the case in the present examination. The information packet manipulation was clearly explicit, and thus subject to participants' normative beliefs and attitudes toward insects. People tend to perceive insects as lower life forms, and the manipulation was designed to override this belief. As such, all analyses controlled for participants' perceptions of insect-human similarity, as measured during the mass testing survey conducted at the beginning of the semester.

Effect of condition on moral disengagement strategies

The moral disengagement ($\alpha = .73$), dehumanization ($\alpha = .66$), and moral justification ($\alpha = .27$) composites, as well as the single items measuring advantageous comparison and displacement of responsibility were subjected to one-way ANCOVAs with insect-human similarity as the covariate. No significant effects were found (all $ps > .393$).

Effect of condition on killing

The number of insects killed was summed and submitted to the same ANCOVA, revealing a significant effect of condition; $F(1, 32) = 4.03, p = .054, \eta^2 = .12$. As predicted,

participants killed a greater number of insects in the dehumanization condition ($M = 2.00$, $SD = 1.54$), relative to the anthropomorphism condition ($M = 1.00$, $SD = 1.15$).

Effect of condition on guilt

A guilt composite score ($\alpha = .90$) was calculated in the same manner as the previous studies, and submitted to a separate ANCOVA. Only those participants that killed at least one insect were included in the analyses. This was necessary because the guilt items all pertained to the act of killing, rendering the scores of those who had not killed meaningless and difficult to interpret (i.e., they could have felt guilty because by not killing they violated normative participant behavior). This reduced the sample size to 26 (74% of the original sample). None of the effects reached significance (all $ps > .200$).

Discussion

The results of Study 2 partially supported the hypotheses. As predicted, anthropomorphism reduced the degree to which participants killed insects. This finding is entirely consistent with the moral disengagement and moral exclusion literatures outlined in the introduction. This finding also builds upon the effects in Study 1 to demonstrate the influence of anthropomorphism further along the kill decision making tree; whereas Study 1 found that anthropomorphism decreased one's willingness to kill, Study 2 found that anthropomorphism decreased the degree or extent to which one actually kills.

What Study 2 failed to do was provide support for process, as differences were not found between conditions on self-reported dehumanization, moral disengagement, or post-kill guilt. It thus appears that the manipulation was effective at influencing behavior, but not self-report. One interpretation for this lack of an effect is that the manipulation was not very potent. Indeed, the results on number killed were only significant when controlling for participants' pre-existing

beliefs about similarities between insects and humans, a level of control that was not necessary in Study 1 (or any of the subsequent studies, for that matter). It was believed that manipulating anthropomorphism explicitly, would translate into explicit perceptions of humanness associated with the insects. This effect did not occur. Instead, the results suggest that changing explicit attitudes about insects is a very difficult feat. Moreover, the results suggest that attempting this feat through a direct persuasive route is inadvisable, at least in the short-term. The manipulation essentially attempted to persuade participants into believing that insects are more than the subhuman creatures we all know them to be. Parallels to this approach can be drawn to the propaganda efforts employed by the Germans to dehumanize the Jews, and as mentioned in the introduction. Although these propaganda campaigns were effective, they were only effective as a campaign that lasted an extended period of time and routinely bombarded German citizens with information dehumanizing Jewish peoples. A single portrayal of the Jewish peoples as cockroaches, for instances, was not effective at undoing a lifetime's worth of beliefs. Likewise, several paragraphs of written material may not be enough to undo an entire lifetime of beliefs about insects as bothersome creatures worthy of destruction.

It could also be argued that anthropomorphizing the insects in such a manner was just less believable especially given the population utilized in this research was highly educated (i.e., undergraduate students). Although the materials were designed to be as believable as possible, they are arguments that well-informed individuals with a background in biological sciences may have a hard time taking as 100% valid. Either of these explanations suggests that the believability of the manipulation may have been the reason for the failure to demonstrate process. Study 3 was thus designed to replicate Study 2 using the naming/numbering manipulation from Study 1. As the naming manipulation was effective at demonstrating process,

it was believed that this change would replicate the effect on behavior, but also remedy the issues found when assessing process.

Study 3: Effect of anthropomorphism on degree of killing, second attempt

Study 3 returned to the same anthropomorphism manipulation of naming vs. numbering the insects utilized in Study 1, but retained the same bug-killing procedure used in Study 2. The intention was to replicate the effect on the main dependent variable (i.e., the number of insects killed), such that participants in the anthropomorphism condition (i.e., names) were expected to kill fewer insects. Utilization of the naming manipulation was expected to remedy the problems from Study 2, and thus participants in the anthropomorphism condition were expected to indicate an inability to morally justify their actions, and evince higher levels of post-kill guilt, relative to those in the dehumanized condition.

Method

Participants

Participants were undergraduate students at the University of Alberta participating for partial course credit. As in Study 1, participants were recruited using their responses on an online mass testing survey to two items assessing their fearfulness of insects (only a response of ≤ 6 on a 9-point scale was eligible) and human-insect similarity. Data from one participant were excluded from analyses because this participant did not believe the extermination task was real. Data from the remaining 40 participants (26 women, 14 men) were included in all analyses ($M_{age} = 18.18$, $SD_{age} = .93$). There was no effect of gender, so it was dropped from all analyses.

Materials and Procedure

Study 3 used a hybrid of the procedures used in the previous two studies. After providing informed consent, the researcher escorted participants to the “extermination area,” which was arranged in an identical manner to Study 1, with all of the following items placed on a table: (1) the retrofitted grinder, (2) insect information packet, (3) laptop equipped with instructional video, and (4) 10 insects placed in plastic cups labeled with either names (i.e., the same 10 names utilized in Study 1), or numbers. However, instead of using the numbers 1-10 in the numbered condition, random 6-digit numbers (i.e., 1A0042) were affixed to the outside of the cups. Participants were expected to perceive these insect identification numbers as more realistic for a semester-long project that would supposedly require hundreds of insects to be exterminated. As in Study 2, the insect containers were arranged in a random, circular, conglomerate.

The instructional video provided instructions and demonstration. The task instructions were identical to those used in Study 2, in that participants were asked to choose the number of insects they wished to kill, and exterminate them one-by-one. When finished, participants returned to the main laboratory, completed the same series of questionnaires (i.e., guilt, moral disengagement, and kill willingness) as in the previous studies, and were probed for suspicion and thoroughly debriefed.

Results

Effect of condition on moral disengagement strategies

The moral disengagement ($\alpha = .82$), dehumanization ($\alpha = .65$), and moral justification ($\alpha = .63$) composites, as well as the single advantageous comparison and displacement of responsibility composites, were subjected to one-way ANOVAs. Analyses revealed significant effects of condition on both general moral disengagement; $F(1, 39) = 8.25, p = .007, \eta^2 = .18$; and moral justification; $F(1, 39) = 9.29, p = .004, \eta^2 = .20$. Marginal effects were also found on

dehumanization; $F(1, 39) = 3.69, p = .062, \eta^2 = .09$; and advantageous comparison; $F(1, 39) = 3.52, p = .068, \eta^2 = .09$. No effects emerged on displacement of responsibility ($p = .174$). Table 2 presents means and standard deviations. The pattern of the means was such that participants better disengaged from their actions when the insects were dehumanized (numbered), relative to when they were humanized (named).

Table 2

Condition means and standard deviations for the moral disengagement items (Study 3).

| | Named | Numbered |
|--------------------------------|-----------------------------|-----------------------------|
| Moral Disengagement | 2.95 ^a (.75) | 3.64 ^b (.76) |
| Moral Justification | 3.13 ^a (1.22) | 4.32 ^b (1.23) |
| Dehumanization | 2.83 ^a (1.16) | 3.53 ^a (1.15) |
| Advantageous Comparison | 2.95 ^a (1.79) | 4.10 ^a (2.08) |
| Displacement of Responsibility | 2.15 ^a (1.27) | 2.80 ^a (1.67) |

Note. Within each row, means with different superscripts differ significantly from each other.

Standard deviations are presented in parentheses.

Effect of condition on killing

The number of insects killed by each participant, which ranged from 0 – 10 insects, was summed and subjected to an ANOVA using condition as the predictor. When the insects were anthropomorphized (named), participants killed significantly fewer ($M = 2.15, SD = 2.54$) than when the insects were in their natural, dehumanized state (numbered; $M = 3.85, SD = 2.56$), $F(1, 38) = 4.44, p = .042, \eta^2 = .11$. Secondary analyses also revealed an effect of condition on

participants' self-reported willingness to kill; $F(1, 38) = 10.41, p = .003, \eta^2 = .22$. When the bugs were anthropomorphized, participants were significantly less willing to kill them ($M = 2.75, SD = 1.71$) than when they were dehumanized ($M = 4.95, SD = 2.52$).

Effect of condition on guilt

It follows from moral disengagement theory that since participants in the dehumanization condition better disengaged moral sanctions they should therefore experience less guilt and distress as a result of killing. An overall guilt composite ($\alpha = .81$) was calculated in the same manner as before, and subjected to a one-way ANOVA. Only those participants that killed one or more insects were included in the analyses, reducing the sample size to 35. As expected, when killing an anthropomorphized (named) insect, participants experienced significantly more guilt ($M = .33, SD = .54$), than when killing a dehumanized (numbered) insect ($M = -.28, SD = .86$); $F(1, 34) = 6.01, p = .020, \eta^2 = .15$.

Mediating effect of moral disengagement

The mediating role of moral disengagement on both number killed and post-kill guilt was assessed via PROCESS (Hayes, 2013). Analyses of number killed used the entire sample, whereas the analyses on guilt used the sample restricted to participants that killed greater than one insect. Analyses first examined general moral disengagement. Condition was regressed onto number killed while controlling for moral disengagement. Moral disengagement significantly predicted number killed; $t(2, 37) = 2.03, p = .049, CI [0.003, 2.128]$; and the effect of condition on number killed was reduced to non-significance; $t(2, 37) = -1.13, p = .266, CI [-2.699, 0.767]$. Likewise, moral disengagement significantly mediated the effect of condition on guilt; $CI [0.100, 0.770]$. When controlling for moral disengagement, it significantly predicted guilt; $t(2, 32) = -$

4.31, $p < .001$, $CI [-0.883, -0.317]$, and the effect of condition was reduced to non-significance; $t(2, 32) = 1.14$, $p = .262$, $CI [-0.195, 0.694]$. Both mediation models are depicted in Figure 4.

The indirect effects of condition through moral justification on number killed; $CI [-2.498, -0.234]$ and guilt; $CI [0.178, 0.939]$; were similar to those of general disengagement. Moral justification significantly predicted number killed; $t(2, 37) = 2.65$, $p = .012$, $CI [0.196, 1.464]$; and the effect of condition on number killed was reduced to non-significance; $t(2, 37) = -.86$, $p = .396$, $CI [-2.411, 0.975]$. Similarly, when condition was regressed onto guilt while controlling for moral justification, moral justification significantly predicted guilt; $t(2, 32) = -5.66$, $p < .001$, $CI [-0.631, -0.297]$; and the effect of condition on guilt was reduced to non-significance; $t(2, 32) = .60$, $p = .553$, $CI [-0.286, 0.526]$. Both mediation models are depicted in Figure 5.

Given the overlap between these two composites (i.e., the moral disengagement composite includes moral justification), a new composite was created removing the moral justification items, and only including the dehumanization, advantageous comparison, and displacement of responsibility items ($\alpha = .74$). This composite did mediate the effect of condition on number killed; $CI [-1.796, -0.074]$; but did not mediate the effect on guilt, as the condition variable did not lead to significant differences on this composite ($p = .102$). These results suggest that moral justification was the main driving force in the mediation. Indeed, the effect on number killed was strongest when only using the specific moral justification items, but was increasingly weaker when using the overall composite, or when moral justification items were removed from the overall composite. Moreover, removing the moral justification items completely eliminated mediation on the guilt measure.

To further understand these effects, another series of mediation analyses were conducted on advantageous comparison and dehumanization, even though the condition effects on these

variables were only marginal (i.e., technically, these variables violate the requirement that the independent variable must significantly predict the mediator). Nonetheless, advantageous comparison was found to mediate number killed; $CI [-2.032, -0.097]$; but not post-kill guilt; $CI [-0.014, 0.466]$. Dehumanization did not mediate either number killed; $CI [-1.420, 0.046]$; nor guilt; $CI [-0.033, 0.558]$. As with the previous analyses, these suggest that moral justification is the main driving force of the mediation effects.

Moral disengagement regardless of condition

As in Study 1, supplemental analyses examined the basic tenet of moral disengagement theory that those who killed should have been better able to disengage, and that this should be related to their level of guilt. The number of insects killed (0 – 10) was regressed onto the moral disengagement composite. Number killed significantly predicted moral disengagement, $\beta = .41$, $t(38) = 2.76$, $p = .009$, and explained a significant portion of the variance $R^2 = .17$, $F(1, 38) = 7.61$, $p = .009$. As moral disengagement increased, so did the number of insects killed.

To examine the second component of this prediction—that moral disengagement should predict post-kill guilt—another regression was conducted, but only including those participants that killed at least one insect. Moral disengagement was regressed onto the guilt composite score, and was a significant predictor of guilt, $\beta = -.67$, $t(33) = -5.13$, $p < .001$, and explained a significant portion of the variance, $R^2 = .44$, $F(1, 33) = 26.28$, $p < .001$. Again, as expected, as moral disengagement increased, level of guilt decreased.

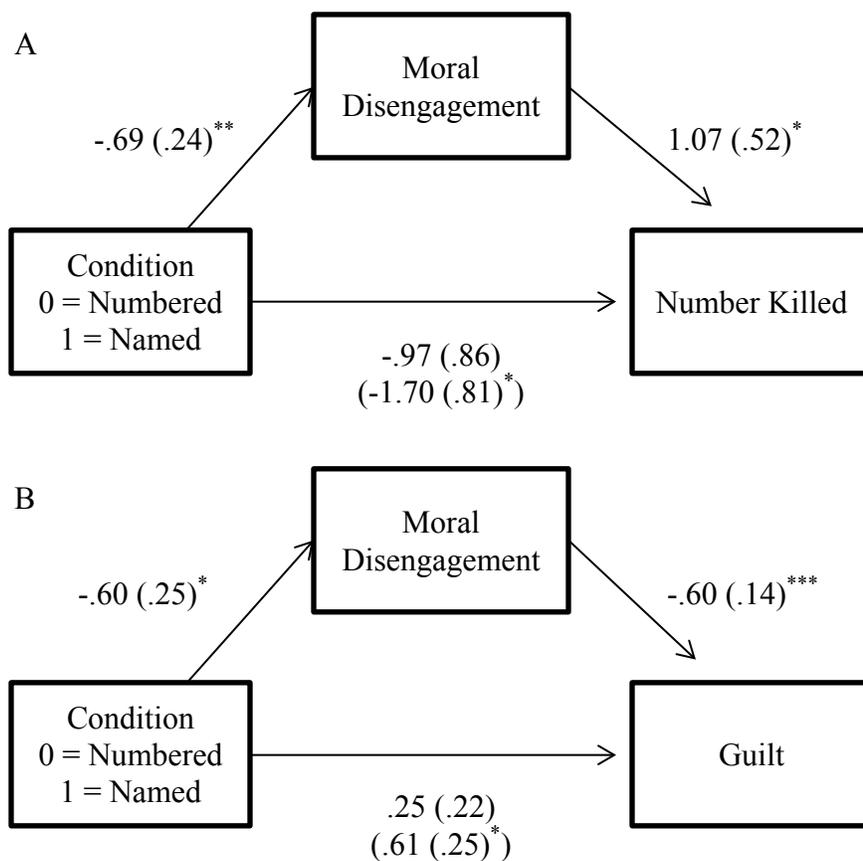


Figure 4. Mediating effect of moral disengagement on number of insects killed (A) and post-kill guilt (B) in Study 3. As presented in the models, the previously significant pathway from condition to dependent variable was reduced to non-significance when moral disengagement was included in the model. Coefficients are unstandardized. SEs are presented in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$.

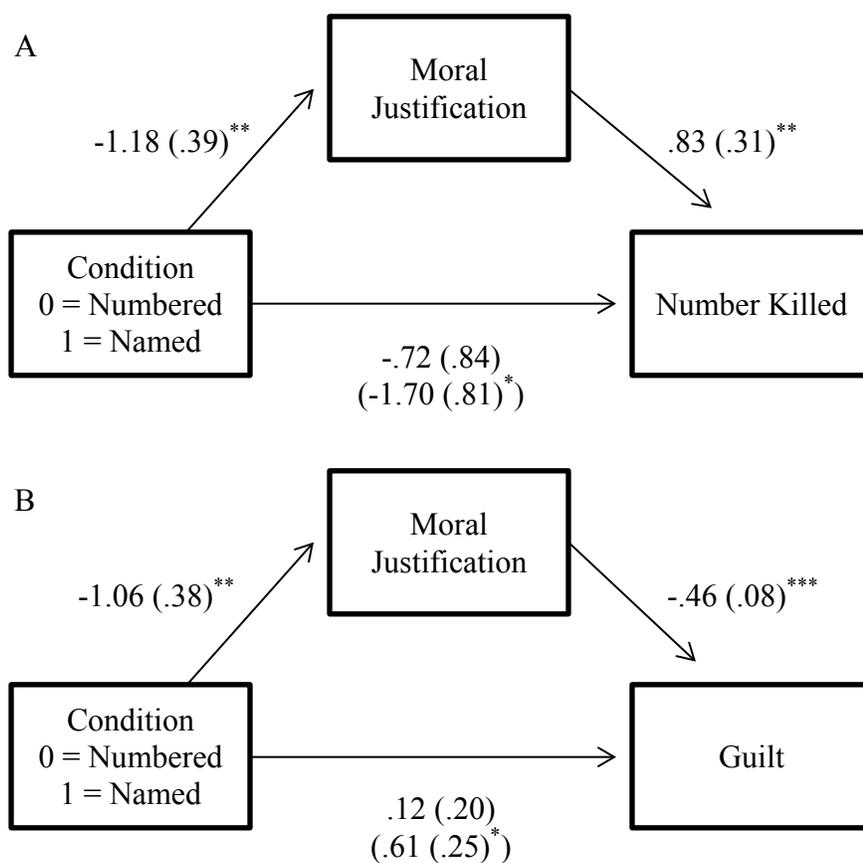


Figure 5. Mediating effect of moral justification on number of insects killed (A) and post-kill guilt (B) in Study 3. As presented in the models, the previously significant pathway from condition to dependent variable was reduced to non-significance when moral justification was included in the model. Coefficients are unstandardized. SEs are presented in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

The results of Study 3 provide strong support for multiple aspects of moral disengagement. First, a causal relationship was found between anthropomorphism and the

number of insects killed: when the insects were humanized by labeling them with names, participants killed significantly fewer than when the insects were in their natural, less than human state (i.e., numbered). Furthermore, the mediational evidence revealed that the reason anthropomorphizing the insects had an influence on number killed was because it restricted participants' ability to perceive the act of killing as justified. Assessments of the guilt measures also supported predictions, in that humanizing the insects increased the level of guilt participants experienced post-kill. This effect was also mediated by participant's ability to morally justify their actions, such that humanizing the insects only increased the level of guilt if it impaired participants' ability to disengage. Study 3 failed to find significant differences on the dehumanization items, although the means were in the predicted direction and the effect was nearing significance.

Study 3, as well as Studies 1 and 2, utilized anthropomorphism as a mechanism for studying the inverse process of dehumanization. Given that insects are already less than human, there was good reason to study the process from the angle of anthropomorphism—it is seemingly difficult to strip qualities of humanity from an entity that does not possess these qualities in the first place. Study 4 was designed, however, to attempt a direct manipulation of dehumanization, and to see if this type of manipulation was feasible for use with the extermination paradigm. Furthermore, the present research relied on previous theorizing regarding the inverse relationship between anthropomorphism and dehumanization (e.g., Epley et al., 2007). It was therefore deemed necessary to demonstrate both sides of the “humanness coin,” so to speak, within the same paradigm to confirm this inverse argument. To accomplish this goal, participants were assigned to conditions in which attempts were made to further dehumanize (vs. not) the insects.

Study 4 was also predominantly designed to assess post-kill distress. In the previous three studies, killing was always the main dependent variable (i.e., opting-in to kill, number of insects killed), and guilt measures were included for supplemental analyses. This meant that none of the previous analyses provided a clean assessment of guilt. In Study 1, roughly 60% of participants opted-out of the extermination task and therefore never completed the guilt scales. Likewise, in Studies 2 and 3, participants who killed zero insects had uninterpretable responses to the guilt items—i.e., one cannot report feeling bad about doing something that he/she did not do. It is possible that guilt expressed on these items was for reasons other than the anthropomorphism manipulation. Participants could have felt that by refusing to complete the task they had violated normative participant behavior or negatively impacted the study's outcome.

And finally, within Studies 2 and 3, other than excluding the aforementioned participants, all participants were treated the same whether they killed a single insect or whether they killed the maximum number of insects. These differences in number killed could possibly cause differences in guilt—a participant who killed eight insects within the anthropomorphism condition may experience greater guilt than a participant in the same condition who only killed a single insect. There is also, on the other hand, reason to believe that these differences would not influence the findings. Indeed, since participants chose the number of insects to kill, the number at which they stopped could be interpreted as the point at which they crossed the line for what they perceived as acceptable. In terms of the moral dilemma these participants faced in making these decisions, one person's single kill could be as distressing for that individual, as another person's killing of eight insects. Support for this notion can be gleaned from the positive relationship between the number of insects killed and level of moral justification; as moral justification increased, so did the number of insects killed; $\beta = .48$, $t(38) = 3.39$, $p = .005$. They

killed more because they had fewer moral qualms in so doing, and stopped killing when their moral compass informed them to stop. This line of demarcation could then represent the point at which guilt started to creep in for their actions. Study 4 was designed to alleviate these problems. Participants were no longer given a choice in the number of insects they killed, and the number killed was standardized at 10 insects.

Study 4: The effect of dehumanization on post-kill guilt

Two important changes were made in Study 4. First, the anthropomorphism manipulation was replaced with a dehumanization manipulation. This manipulation was explicit in nature. Half of the participants were randomly assigned to a condition that attempted to further dehumanize the insects, and the other half were assigned to a condition where the insects were portrayed neutrally. Whereas the previous three studies compared humanized (i.e., named) and dehumanized (i.e., numbered) conditions, the present study compared a dehumanized and further dehumanized condition. Although the insects are dehumanized in both conditions, the hope was that the relative difference in dehumanization would be strong enough to elicit effects.

The second change was to the bug-killing procedure itself. As in the previous studies, participants began by familiarizing themselves with the insects and the extermination task. However, once reaching the extermination, participants did not choose how many insects they killed, but were required to kill 10 insects. In this sense, killing was no longer an outcome, but a method for testing if dehumanization would decrease the guilt experienced as a result of killing an insect. It was predicted that participants in the dehumanization condition would experience less guilt, relative to those in the neutral condition, and that this decreased guilt would be caused by an increased ability to justify the act of killing on moral grounds.

Method

Participants

Participants were 48 undergraduate students participating for partial course credit. Six participants were excluded for expressing strong suspicions that they were not actually killing bugs. The remaining 42 participants (29 women, 13 men) were included in all reported analyses ($M_{age} = 18.67$, $SD_{age} = 2.23$). There were no effects of gender. Gender was thus removed from the reported analyses.

Materials and Procedure

As in Study 2, an explicit manipulation of humanness was attempted by manipulating the information contained in the information packet given to participants prior to the extermination task (see Appendix D). This information presented the insects as a dangerous pest that, unlike other harmless species of woodlice, can wreak havoc on gardens and plant conservatories. To accomplish this feat, the insect was portrayed as primitive and un-evolved. For instance, part of the information read as follows:

Much like a bacteria, the viniferous will consume all of the available vegetation... This is why the viniferous is considered by experts to be one of the most primitive, un-evolved insects... Another example of the primitive nature of the armadillidium viniferous is their pseudotrachea, or gill-like structures they use to breathe... Thus, unlike other more advanced species, the viniferous can only thrive in damp, dark environments, such as under rocks or logs, in leaf litter or in crevices.

In the neutral condition, participants read the same scientific information packet used in all of the previous studies.

The instructions for the extermination task were also changed. Participants were required to exterminate all ten insects. By keeping this number constant, the design insured that all participants would proceed to complete the guilt measures at the end of the study, and that the experience they would be reporting on would not be variable. Thus, upon completing the extermination, participants returned to the main laboratory and completed the same guilt measures used in the previous studies. Three items that assess moral justification were included in the same packet containing the guilt measures (“After reading the information I better understood why this specific type of bug was chosen to be exterminated”; “The information provided me with justification for why this specific type of bug should be exterminated”; “Even after reading the information I felt it was wrong to exterminate the bugs” (reverse-coded)). These items were rated on a 7-point scale (1 = *strongly disagree*, 4 = *neither agree nor disagree*, 7 = *strongly agree*), and placed within the same packet of questionnaires as the guilt scales.³ Upon completion, participants were probed for suspicion and thoroughly debriefed.

Results

Effect of condition on moral justification

A mean composite score of moral justification ($\alpha = .80$) was subjected to a one-way ANOVA that revealed a significant effect of condition; $F(1, 41) = 30.82, p < .001, \eta^2 = .44$. As predicted, when the bugs were further dehumanized, participants were significantly better able to morally justify killing them ($M = 5.34, SD = .1.24$) than when the bugs were portrayed neutrally ($M = 3.21, SD = 1.25$).

Effect of condition on guilt

A one-way ANOVA conducted on the guilt composite ($\alpha = .92$) revealed a significant effect of condition; $F(1, 41) = 3.95, p = .054, \eta^2 = .09$. As predicted, when the bugs were further

dehumanized, participants experienced significantly less guilt ($M = -.20$, $SD = .67$) than when the bugs were portrayed neutrally ($M = .27$, $SD = .87$).

Mediating role of moral justification

Mediation analyses were conducted in the same manner as the previous studies. The indirect effect of condition on guilt, through moral justification was statistically significant; $CI [-1.05, -0.074]$. When moral disengagement was included in the model, it significantly predicted guilt, $t(2, 39) = -2.23$, $p = .032$, $CI [-.379, -0.019]$, and the effect of condition on guilt was reduced to non-significance, $t(2, 39) = -.10$, $p = .929$, $CI [-0.641, 0.583]$. The mediation model is depicted in Figure 6.

Moral disengagement regardless of condition

Supplemental regression analyses found that moral justification, across the boards, also predicted post-kill guilt. Moral justification was a significant predictor of guilt, $\beta = -.44$, $t(41) = -3.09$, $p = .004$, and explained a significant portion of the variance, $R^2 = .19$, $F(1, 41) = 9.54$, $p = .004$. As expected, as moral justification increased, level of guilt decreased.

Discussion

The results of Study 4 further supported the moral disengagement properties of dehumanization. Information that stripped any potential human qualities from insects increased participants' ability to justify killing the insects on moral grounds, and decreased the guilt experienced by participants post-kill. This detriment in guilt was mediated by moral justification attitudes. These findings are particularly intriguing because they mirror those reported in the previous studies employing an anthropomorphism manipulation instead of a dehumanization manipulation, and give credence to the notion that anthropomorphism and dehumanization are the inverse of each other.

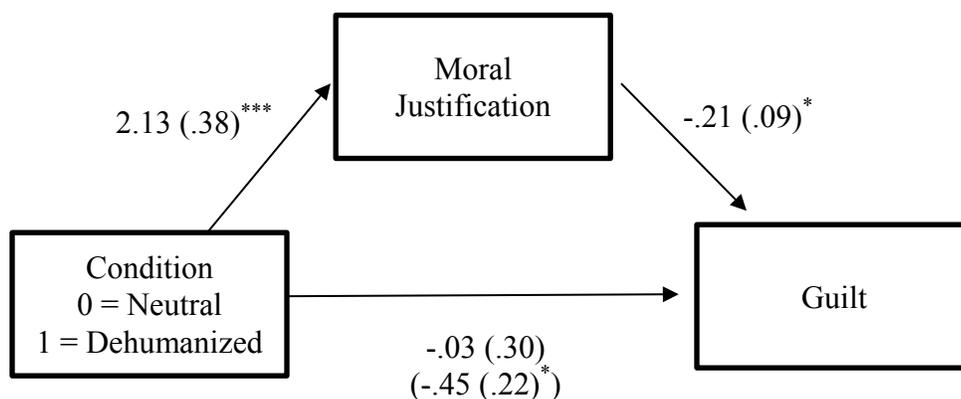


Figure 6. Mediating effect of moral justification on post-kill guilt (Study 4). As presented in the model, the previously significant pathway from condition to guilt was reduced to non-significance when moral disengagement was included in the model. Coefficients are unstandardized. SEs are presented in parentheses. * $p < .05$, *** $p < .001$.

It should be noted that the dehumanization manipulation used in Study 4 might be confounded with perceptions of threat (see Appendix E). Although the insects were dehumanized, this was accomplished by presenting the insects as an un-evolved, primitive pest that can wreak havoc on gardens if left to its own devices. Decreased guilt in response to this information could result from stripping the insects of humanness, participants' increased willingness to kill something that could pose a threat to them, or (and most likely) a combination of both qualities. Indeed, research found that perceiving one's nation under realistic threat increases support for aggressive national policies, including waging war (Huddy, Feldman, Taber, & Lahav, 2005), and punitive action against terrorist outfits (Bar-Tal & Labin, 2001).

Research on scapegoating is informative as to how these qualities may interact. Scapegoating is a process in which the frustration of individual (Staub, 1989) or collective needs

(Tajfel, 1981) or feelings of evil, vulnerability, and inferiority (Allport, 1954; Becker, 1975) are transferred into another being—be it a sacrificial goat, a virginal member of the tribe, or an antagonizing outgroup. This scapegoated being is then driven away or killed, and along with it the evil is vanquished. Group ideological narratives are used to convince individual group members that this is the appropriate action (Glick, 2005). The first step in this process is labeling some other as a threat to the ingroup's well-being. In order to actually mobilize violent action against the scapegoated other, moral disengagement strategies are utilized to, for instance, dehumanize the outgroup and construe the killing of this outgroup as moral. It could thus be that the dehumanization component is more crucial in mobilizing violent action, but the current research is unable to disentangle the two variables.

General Discussion

Across four studies, support was found for all aspects of moral disengagement or exclusion theories of dehumanization (i.e., Bandura, 1990; Bar-Tal, 1990). These theories propose that the dehumanization of an “other”—that is, stripping the other of human qualities—serves the function of excluding that other from standards of morality. This removal from moral bounds thus enables one to impart harm upon the dehumanized entity without experiencing moral qualms about one's actions, and thus also not experiencing the moral emotions of guilt and shame. The present studies found support for moral exclusion along the various steps of what may be termed the killing decision tree—one must first decide to enact harm or not, and after making that decision, decide how much harm to inflict, both of which are actions that will not be experienced as guilt-inducing. As such, participants were more willing to volunteer to kill a dehumanized (vs. an anthropomorphized) target (Study 1), engaged in greater killing of

dehumanized (vs. anthropomorphized) targets (Studies 2-3), and experienced less post-kill guilt after having killed dehumanized (vs. anthropomorphized (Study 3) or neutral (Study 4)) targets.

Studies 1, 3 and 4, provided clear evidence of process. Manipulations of humanness influenced behavior in the predicted manner through the mechanism of moral justification. An anthropomorphism manipulation that associated insects with human names impaired participants' ability to justify killing insects as moral. This impairment then reduced the likelihood that participants' decided to kill (Study 1) and the number of insects killed (Study 3), but increased the guilt experienced as a result of killing (Study 3). Likewise, a dehumanization manipulation that portrayed the insects as un-evolved creatures, increased participants' ability to justify killing, and thereby reduced post-kill guilt (Study 4).

Addressing inconsistent findings across studies

Dehumanization perceptions. Across all four studies, results were consistently found on the behavioral measures, but the manipulations never significantly influenced perceptions of humanness (as assessed with the dehumanization items in Studies 1-3). In hindsight, this null effect is not surprising. These studies (excluding Study 2, which had other flaws that likely contributed to this result) used a fairly implicit manipulation wherein the humanness of insects was increased by labeling the insect containers with names. These names did indeed make it more difficult for participants to kill and also impaired their ability to morally justify the act of killing insects. It is likely, however, that participants did not explicitly understand *why* they experienced these difficulties in killing—i.e., they may have explicitly recognized that they felt uneasy about killing, but could not verbalize or identify what made them feel this way. Indeed, this is the point of implicit manipulations—to influence behavior in a manner of which participants are unaware (e.g., Bargh et al., 1996).

An alternative explanation is that the dehumanization items were poorly conceived. For one, it may be unrealistic to expect an implicit anthropomorphism manipulation to actually convince participants to consciously perceive of insects as having qualities that make them similar to humans, or, that like humans, insects have feelings that can be hurt. Although these items were based on ones used in previous research (Bandura et al., 1996), the targets being dehumanized in these previous studies were human. Given the infrahumanization literature (i.e., reserving uniquely human characteristics for the ingroup) it might be easier to make one perceive certain humans as slightly less human than to convince one that an insect, one of the least human-like creatures, is slightly more human. Moreover, some of the dehumanization items could likely be revised. One item was double-barreled and, for instance, asked participants to agree to the idea that killing is wrong, but also agree that it is wrong because insects are similar to humans. Another item was fairly vague and did not refer specifically to insects, but the notion that “some things” don’t deserve to be treated like humans. In hindsight, these items should have been revised after their first usage, instead of retaining them throughout.

A more viable approach to measuring dehumanization may be to measure participants’ ascription of human qualities (i.e., secondary emotions) to the insects in response to the manipulation, as is commonly done in the infrahumanization literature (e.g., Castano & Giner-Sorolla, 2006; Leyens et al., 2001, Vaes, Heflick, & Goldenberg, 2010). Other research (e.g., Viki et al., 2012; 2013) has asked participants to rate the extent to which human and animal related words are rated as descriptive of one group or another. Either of these methods may be an improvement over the one used in the current research.

If the dehumanization items are treated as checks on the effectiveness of the manipulations, this lack of findings raises questions as to if the manipulations were actually

manipulating perceived humanness. The results across all four studies suggest that humanness was indeed being manipulated. Three different manipulations, two that humanized the insects through differing anthropomorphism techniques, and one that stripped the insects of any humanness, all caused effects consistent with the moral disengagement and exclusion literatures regarding dehumanization (e.g., Bandura, 1990; Bar-Tal, 1990; Opatow, 1990). The only commonality between these three manipulations is that they manipulated humanness in some manner. In the face of the lack of effects on the dehumanization items, this increases confidence in the validity of the present results.

Gender differences. Gender differences were found in Study 1, such that males were better able to justify the act of killing and were also more willing to opt-in to the killing task. Gender did not interact with the condition variable, and anthropomorphism had comparable effects on both genders. In the remaining studies (Studies 2-4), gender differences were not found. Whereas the results of Study 1 are consistent with the literature on gender differences in physical aggression (e.g., Archer, 2004) and moral justification (Bandura et al., 1996), the results of Studies 2-4 are consistent with past research using the extermination task (e.g., Martens et al., 2007, 2010; Webber et al., 2013). Earlier in the manuscript I proposed that these inconsistent gender effects across studies were simply a result of differing situational constraints in each of the designs. The expectation or demand placed on participants in Study 1 is significantly lower. Specifically, there is less pressure placed on participants that would lead them to feel obligated or required to kill as part of the study. The design of the procedure, in fact, relied on this lack of obligation, and explicitly provided participants with an alternative task through which research credit could be earned.

The remaining studies, on the other hand (as well as those in past research), placed much greater demands on participants. In Study 4 all participants were required to kill ten insects. In Studies 2 and 3, although participants had a choice in the number of insects they killed, the instructions implied that there was an expectation that insects be killed. The task instructions specifically stated that participant had to exterminate as many insects as they felt was “necessary to understand what it is like to be an exterminator.” This implies that getting into the mind of an exterminator requires that one kill at least a single insect, although there were participants that chose to kill zero insects. Past research has found that situational constraints can eliminate aggression differences between men and women (e.g., Bettencourt & Miller, 1996). The fact that gender differences were only found in the single study with the least situational demand suggests that this is a viable explanation for the pattern of results across all four studies.

Mediation. Studies 1, 3, and 4 all provided evidence for process through the use of mediation analyses. In all three of these studies, moral justification was a significant mediator of the various killing measures and post-kill guilt. Advantageous comparison and general moral disengagement were also found to mediate the above-mentioned relationships in Studies 1 and 3, respectively. This latter effect is less interesting given the overlap between the two composites (i.e., 1/3 of the moral disengagement items were the same as the moral justification items). Indeed, supplemental analyses in Study 3 suggested that moral justification might have been driving the mediation. The mediation effects were strongest when only using the moral justification items, became weaker when the other facets of moral disengagement were added in (i.e., the general composite), and became weaker still (and no longer significant for the guilt analyses) when a new disengagement composite was created that did not include moral

justification. Similarly, advantageous comparison was only found to mediate the effect on number killed, but not the effect on guilt, and dehumanization did not mediate either effect.

Nonetheless, these supplemental analyses did reveal that advantageous comparison mediated the effect on number killed, which is consistent with the effect in Study 1 where advantageous comparison mediated the effect on opting-in to kill. As such, there was evidence across two studies that the anthropomorphism manipulation acted indirectly on killing behavior through advantageous comparison. Although this effect is interesting, it is not all that surprising. According to Bandura's typology (1990), moral justification and advantageous comparison both disengage moral sanctions by acting on immoral conduct. That is, they both comprise cognitions that enable one to perceive of immoral actions as moral. Moral justification involves convincing oneself that actions are morally justifiable, for instance, by perceiving of them as servicing an important cause. Advantageous comparison, on the other hand, achieves the same goal by convincing oneself that a specific action is more moral than alternative actions, for instance, by convincing oneself that one form of killing is moral because it causes less suffering than an alternative. In fact, advantageous comparison could likely be viewed as a specific type of moral justification.

Validity of the continuous killing measure. Astute readers likely noticed that the two studies (Studies 2 and 3) that utilized the continuous number of insects killed measure revealed relatively low levels of killing. In Study 2, participants in the dehumanization condition—the very condition designed to evince high degrees of killing—only killed an average of two insects of a possible 12. Likewise, in Study 3, participants in the dehumanization condition killed an average of nearly four insects of a possible ten. In both cases, the “high” killing condition is below the midpoint. Given that the “low” killing conditions (i.e., anthropomorphism) evinced

even lower degrees of killing, these findings reveal that participants were relatively unwilling to engage in a high degree of killing.

This should not be surprising. There are clear moral prescriptions against killing. And even though participants were killing insects, such behavior is typically only deemed appropriate when the killing is engaged for legitimized reasons (i.e., ruining one's home garden, intruding into one's house and threatening the sanctity of the home, etc.; cf. Archer & Gartner, 1992). Killing insects that pose no current or justifiable threat, is instead frowned upon and vilified. Indeed, according to the DSM-V (APA, 2013), aggression against animals (i.e., the kid who relishes in killing insects with a magnifying glass) is one of the criteria for conduct disorder, a precursor to antisocial personality disorder. It could be further argued that because the killing was engaged within a context (i.e., psychological experiment) wherein participants are acutely aware that their behavior is being observed and recorded, participants consciously (or unconsciously) chose to kill fewer insects as to avoid the potential negativity of being labeled a moral transgressor.

Such a climate (i.e., floor effect), however, should only impair the ability to detect significant differences, as this meant the anthropomorphism manipulations were trying to further reduce already low levels of killing. The results, therefore speak not to the weakness of this dependent variable, but the robustness of the effects: in both studies moderate effect sizes were observed (η^2 s = .12 and .11, respectively; Cohen, 1988). Take, for instance, Study 2. Participants included in analyses (i.e., two were excluded for being outliers) could kill up to 12 insects, but only killed between 0 and 6 insects. A 1-point difference (2 vs. 1 insects killed) is thus a fairly large effect. In comparing Studies 2 and 3, this so-called floor effect is much less pronounced; even though the range that could be killed was reduced, both the mean number killed and the

standard deviations increased, indicating much greater variability. As a result, although the effect size was comparable to that found in Study 2, the mean difference was much greater (i.e., 3.85 vs. 2.15 insects killed).

Moral justification as an intermediary between dehumanization and immoral behavior

Readers familiar with moral disengagement theory (Bandura, 1990) might recognize that Bandura speaks of moral justification and dehumanization as two different techniques through which moral sanctions can be disengaged. As discussed above, moral justification enables one to disengage moral sanctions by changing the construal of the immoral *conduct* itself (i.e., construing immoral action as good, appropriate and conducted for righteous and acceptable reasons). Dehumanization, on the other hand, disengages self-sanctions on behavior by changing the construal of the *victim*. Thus, moral disengagement mechanisms have not traditionally been studied in terms of how they influence each other, but in terms of the differential influences they have on immoral conduct (i.e., moral justification might predict a specific behavior, whereas dehumanization does not). However, in the present analyses, manipulating perceptions of humanness (i.e., dehumanization) led to differences in moral justification, which then caused the various behavioral effects. This raises an important question as to why dehumanization was found to act indirectly through moral justification, when this is not how these strategies have been characterized in Bandura's model.

Bar-Tal (1990) treats dehumanization as a specific instantiation of delegitimization, which accordingly is “the categorization of a group or groups into extremely negative social categories that are excluded from the realm of acceptable norms and/or values” (p. 65). Stated bluntly, this means that standards of right and wrong no longer apply to these individuals. The intermediate consequence of this categorization is that it easily allows for the justification of

detrimental conduct. More specifically, if standards of right and wrong are no longer applicable, then behavior that would typically be perceived as wrong is no longer perceived as such. One is thus freed to behave against the dehumanized individual in a (normally) reprehensible manner. A more complete picture of dehumanization, therefore, seems to be that (1) dehumanization divests the soon to be victim from bounds of morality, which (2) subsequently enables one to justify reprehensible action against the dehumanized individual.

In fact, I think one would be hard-pressed to find situations in which dehumanization does not operate through the intermediate process of moral justification, but directly increases immoral behavior. This would mean that one construes a group or individual as deserving of harm, but does not at the same time, construe the harmful behavior as appropriate. Action should be dependent upon constraints applied to the conduct itself. This would mean that moral justification should have a direct influence on behavior, as would the other disengagement mechanisms that operate directly on detrimental conduct (i.e., advantageous comparison and euphemistic labeling) or the effects of detrimental conduct (i.e., minimizing harmful consequences). Only mechanisms that construe the victim—dehumanization and attribution of blame—should require an intermediate step to influence behavior in the moment.

On the surface, this seems divergent to Bandura's theorizing and past evidence. One must keep in mind, however, that Bandura perceived of these mechanisms as acting in concert with one another. Indeed, his moral disengagement scale (Bandura et al., 1996) included items assessing each of the different mechanisms, but factor analysis revealed that the items loaded onto a single moral disengagement factor. The implication is that when ratings of dehumanization were high, so too were ratings of moral justification, and both ratings predicted

detrimental conduct. Because they were assessed simultaneously, it was difficult to determine if both operated directly on subsequent conduct, or if one acted indirectly through the other.

The best paradigm for assessing this indirect relationship is the one employed herein, whereby a specific mechanism is singled out and manipulated, and the influence of this mechanism on others is measured. Indeed, if we look back to the only other study that employed an experimental design, we see similar results; Bandura et al. (1975) found that when participants were asked to punish a dehumanized individual, they reported a greater number of “self-disinhibiting justifications.” These justifications included construals that operated at the level of the conduct or the effects of the conduct: moral justification, displacement of responsibility, minimization of consequences, etc. The present findings are thus consistent with the early demonstrations of moral exclusion processes before they were explicitly spelled out in theory.

Similarly, it could be the disproportionate reliance on self-report and attitudinal outcome variables that disguised the above stated process, as dehumanization would only appear to have an indirect influence when behavior is directly assessed. Typical outcome variables included self-reported attitudes in support of harmful conduct (i.e., attitudinal support for war; Jackson & Gaertner, 2010) or self-reported frequencies of harmful behavior (i.e., “Have you ever hit or kicked another kid in your school?” Pornari & Wood, 2010). I advise caution, however, in interpreting the ramifications of this indirect effect until more evidence has amassed. Future research is first needed to replicate these effects in other contexts, and also systematically assess potential intermediate roles of multiple mechanisms of moral disengagement.

Framing the findings within the moral exclusion literature

The previous discussion has alluded to key features of the present research that make it unique in the moral exclusion literature. Some of these features are elaborated upon in the following section.

Anthropomorphism and dehumanization. The feature that most stands out about the present research is that it utilized both manipulations of anthropomorphism and dehumanization. As discussed throughout the manuscript, these strategies are inverse processes that influence perceptions of humanness in opposite directions; anthropomorphism involves increasing perceived humanness of non-human entities, whereas dehumanization involves decreasing perceived humanness of human entities (e.g., Epley et al., 2007). It is thus more informative to view perceptions of humanness as the feature that influences immoral action. Actions that increase or make salient this feature should reduce detrimental conduct, and actions that reduce this feature should increase detrimental conduct, as was found in the present research. This notion is entirely consistent with how dehumanization is discussed in past research (e.g., Bandura, 1990). The present research is informative in that both mechanisms were manipulated and opposite effects were found.

Causation. Second, the present research established a clear causal chain of events. The utilization of an experimental paradigm in which humanness of a target was manipulated, and immoral action subsequently measured, clearly demonstrated that perceiving a target as less than human *caused* participants to behave immorally against that target. A great deal of past research has been inconclusive on this count, given the reliance on correlation methods in which immoral action/attitudes were correlated with self-reported moral disengagement (e.g., Aquino et al., 2007, Bandura et al., 1996, 2001; McAlister et al., 2006), or quasi-experimental methods in which levels of moral disengagement were shown to differ for subjects that engage in greater

immoral action (i.e., bullies, prison guards on death row) than others (i.e., non-bullies, prison guards not on death row; e.g., Obermann, 2011; Osofsky et al., 2005).

Behavioral outcomes. Third, the present research provides assurance that the effect of dehumanization on moral exclusion is not limited to one's attitudes, but is expressed behaviorally, particularly in regards to one of the most extreme forms of violence: killing. Bandura's initial assessment of dehumanization (Bandura et al., 1975) manipulated perceptions of humanness and then assessed actual harming of these dehumanized others through shock punishment. Other studies examined self-reported frequencies of behavior, but did not directly assess behavior (Bandura et al., 1996). Moreover, studies that attempted to speak to issues of more extreme forms of aggression, such as war, killing, or genocide, instead relied on attitudinal measures, for instance, assessing one's agreement with violent military measures (McAlister et al., 2006). Thus, nearly 40 years after Bandura's study of dehumanization, the present research offers a behavioral replication using an experimental paradigm amenable to current ethical practices and standards. Moreover, this paradigm speaks to these extreme forms of aggression, as participants acted in ways that they thought were ending the lives of insects.

Real-world implications. This undertaking was important, not only for the scientific implications, but also because of the real-world implications. Studies that measure moral disengagement and correlate it with attitudes or behavior speak to instances in which an *individual* engages in dehumanization to enable them to act or think immorally. That is, they speak to circumstances such as a prison guard responsible for executing inmates convincing themselves that inmates are less than human and thus worthy of destruction, enabling prison guards to live without guilt (Osofsky et al., 2005). These current studies also speak to circumstances like animal researchers convincing themselves that the rats under study are not

wonderful beings with their own set of emotions and feelings, but a scientific tool bred for the purpose of research, thus freeing them from the guilt that would otherwise result from slaughtering rats in order to study their brains. And finally, they speak to circumstances where, upon hearing about the genocide of an ethnic group, an individual convinces herself that the members of this ethnic group must have been less than human, because it better enables her to cope with the weight of this unsavory knowledge (Castano & Giner-Sorolla, 2006). The key in all of these circumstances is that the individual employs the dehumanization strategy. It is an internal mechanism used by the individual, perhaps without explicit knowledge of doing so, that enables him or her to behave in ways required by the situation.

Manipulating dehumanization, as done in the present research, is reminiscent of situations in which dehumanization is employed *external to the individual*. Instead of speaking to a bully's internal dehumanization of a gay peer, this research speaks to the societal portrayal of homosexuality as a sin for which one must repent, and homosexual individuals as less deserving of basic human rights. Yes, the bully can increase his own willingness to harm a gay student, but his willingness to harm is likewise influenced by how gay individuals are portrayed external to him. Instead of speaking to the post-hoc internal rationalization of genocide, this research speaks to the widespread propaganda efforts employed prior to and during the genocide that painted the ethnic group as creaturely or barbaric. It speaks to the soldiers engaged in the genocide, and the training received in the military whereby they were taught to perceive the opponent as the "enemy" or "targets that need to be taken out," instead of as human beings no different from the soldiers themselves. In all of these cases, dehumanization occurs external to the individual, and is not employed by the individual to enable specific behavior, but employed by some external entity to influence masses of people. As such, the present research speaks directly to the

circumstances that moral exclusion theories were designed (at least partially) to explain (Bandura, 1999; Bar-Tal, 1990).

Conclusion

In conclusion, the present research is consistent with past moral disengagement and delegitimization literatures regarding the role of dehumanization on increasing immoral attitudes and behavior. The present analyses, however, found support for these hypotheses in a manner that corrected for methodological deficits in past findings. These features should increase confidence in the main tenets of these theories. In terms of theoretical contributions, the present findings found that dehumanization indirectly influenced killing behavior through perceptions of moral justification. This is contrary to previous literatures that conceived of these as separate mechanisms that operated directly on immoral behavior through changing how different aspects of the situation (i.e., the conduct vs. the victim) are construed. It is proposed herein that dehumanization likely has a direct influence on attitudes toward the victim, but will likely only influence behavior by relaxing constraints placed on conduct, via moral justification.

Footnotes

¹It should be noted that guilt has received more attention in research using moral disengagement in response to reminders of past ingroup transgressions, but the evidence suggests that guilt in these situations operates independent of moral disengagement (Zebel et al., 2008). As the present research is concerned with moral disengagement enacted prior to a transgression, a discussion of this was omitted to avoid confusion.

²Several other items were included within this scale that assessed if participants perceived the insects as threatening. We did not have explicit predictions for how anthropomorphism would influence these perceptions and they are unrelated to Bandura's (1990) mechanisms of moral disengagement, and are thus not discussed within this manuscript.

³Study 4 was actually conducted first in the series of studies. The moral disengagement items used in Studies 1-3 were created after Study 4 was conducted to provide a more nuanced understanding of various disengagement strategies. This is why a manipulation check on dehumanization is unfortunately absent in this study. A single item was also included that measured threat perception. Since this is secondary to the main goal of this manuscript, results are not reported or discussed on this measure.

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Appendix A: Revised Version of the Trauma-Related Guilt Inventory (TRGI)

The Guilt Cognitions Scale

Factor 1: Hindsight-Bias/Responsibility

1. I could have prevented what happened
5. I was responsible for causing what happened.
9. I knew better than to do what I did.
13. I should have known better.
17. I blame myself for what happened.
19. I blame myself for something I did, thought, or felt.
20. I hold myself responsible for what happened.

Factor 2: Distress

2. I am bothered by what happened (What happened causes me emotional pain)
6. I feel bad about what happened (I experience severe emotional distress when I think about what happened)
10. I feel upset about the outcome (What happened cause a lot of pain and suffering)
14. I feel troubled and concerned when I think about what happened (I feel grief or sorrow about the outcome)
- *When I am reminded of the event, I have strong physical sensations such as sweating, tense muscles, dry mouth, etc.
- *I am still distressed about what happened.

Factor 3: Wrongdoing- Violation of Personal Standards

3. I had some feelings that I should not have had
7. I did something that went against my values
11. What I did was inconsistent with my beliefs
15. I had some thoughts or beliefs that I should not have had
18. I should have had certain feelings that I did not have

Factor 4: Lack of Justification

4. What I did was completely justified (R)
8. What I did made sense (R)
12. If I knew today – only what I knew when the event occurred – I would do exactly the same thing (R)
16. I had good reasons for doing what I did (R)

Guilt cognition items not included in the four factors

21. What I did was unforgiveable
 22. I didn't do anything wrong
 - *What I did was not justifiable in any way
 - *I violated personal standards of right and wrong
 - *I did something that I should not have done
-

*I should have done something that I did not do

The Global Guilt Scale

*I experience intense guilt that relates to what happened

*Indicate how frequently you experience guilt that relates to what happened

*Indicate the intensity or severity of guilt that you typically experience about the event

*Overall, how guilty do you feel about the event

Note. The number next to each item indicates that item's location in the revised version of the inventory. Items that were not retained in the revised version are marked with an asterisk (*). If the wording of an item was revised, the original wording is included in parentheses. Reverse coded items are indicated with an (R).

Appendix B: Neutral manipulation in Studies 1-4

Woodlice / Pillbug Information

Scientific Classification

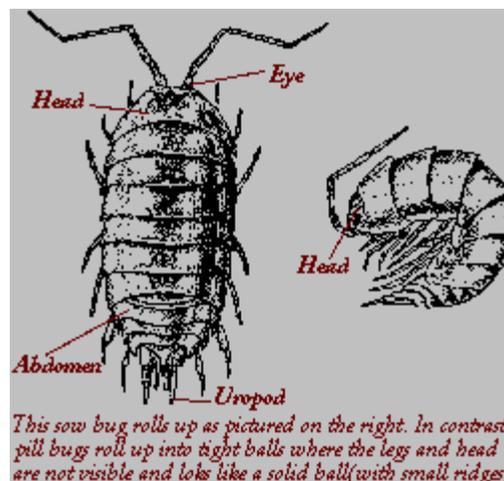
| | |
|------------|-----------------|
| Kingdom: | Animalia |
| Phylum: | Arthropoda |
| Subphylum: | Crustacea |
| Class: | Malacostraca |
| Order: | Isopoda |
| Suborder: | Oniscidea |
| Family: | Armadillidiidae |

There are over 3,000 different species of woodlice, all of which form the suborder of oniscidea. Although most people believe woodlice are insects, they are actually crustaceans.

Identifying Features

Appearance (Morphology)

- Three body parts: head, thorax, abdomen
- One prominent pair of antennae (one inconspicuous pair)
- Simple eyes
- Seven pairs of legs
- Seven separate segments on thorax
- Paired appendages at end of abdomen called uropods
- Color varies from dark gray to white with or without pattern



Adult Males and Females

On the underside, females have leaf-like growths at the base of some legs. These brood pouches hold developing eggs and embryos. The first two appendages on the male abdomen are modified as elongated copulatory organs.

Immatures (different stages)

The immature isopod molts four or five times (i.e., sheds their exoskeleton to allow them to grow). Molting occurs in two stages. First the back half molts, then two to three days later, the front half molts. Coloration of both halves may

be different at this time. They look like adults except for size, proportion, color and sexual development.

Interesting Behaviors

Some species roll up into a ball when disturbed. This is their only defensive ability and has led to their more common name of pill bug or roly-poly. Many species are also fast walkers, but can be easily observed when held in the palm of the hand.

Natural History

Food

Isopods are omnivores or scavengers feeding on dead or decaying plants or animals. Some may eat live plants.

Predators

Vertebrates and invertebrates.

Other uses

Many owners of lizards and other amphibians use the pill bug as a natural cage cleaner. They will burrow into the top level of bedding or mulch in the terrarium and keep it clean so the animal will remain healthy.

Appendix C: Anthropomorphism manipulation in Study 2

Armadillidium Vulgare

There are over 3,000 different species of woodlice, which are referred to as pill bugs by the general population. The *armadillidium vulgare* is one of these species. It is a relatively new species of woodlice that has received considerable research attention in recent years. The various species of woodlice have different behaviors and characteristics. Thus, the ability to identify this specific species is critical in determining if extermination measures are necessary.

Identifying Features

Primary distinguishing characteristic

The *armadillidium vulgare* has the defensive ability to roll up into a ball when disturbed. This makes identifying this species very easy, as it is the only woodlice species with this ability. Thus, if it can roll into a ball, it is the *armadillidium vulgare*. If it cannot roll into a ball, it is a more common variety of woodlice.



Behaviors and characteristics

Personality

Biological and zoological research conducted on the *armadillidium vulgare* has found that they differ from other types of woodlice in several crucial areas (Bergmuller & Toborsky, 2010). *Armadillidium vulgare* appear to have distinctive personality types. That is, each individual insect has a unique emotional, behavioral, and attitudinal response pattern. Indeed, researchers have identified several personality typologies by which members of the *vulgare* family can be distinguished. Just like humans are commonly separated into “Type A” or “Type B” personalities, an *armadillidium vulgare* can be classified into a type that is bold and outgoing, as opposed to cautious and shy.

Emotions

Another unique quality inherent in these insects is the ability to experience emotion (Stamps & Groothuis, 2011). They have been shown to demonstrate fear in response to potential threats in the environment, but even more interesting is that they show signs of grief when another woodlice dies or is separated from the group, and joy or pleasure when reuniting with a member of their group. These emotions allow them to regulate their social interactions. Another interesting social characteristic of this species is that it appears to be monogamous relative to the older woodlouse species. Once a male and female form a pair-bond, they will maintain this bond for the duration of their adult lives.

Habitat

Woodlice breathe with gills called pseudotrachea. As a result, they thrive in highly humid, damp, dark environments, such as under rocks or logs, in leaf litter, or in crevices.

Appendix D: Dehumanization manipulation in Study 4

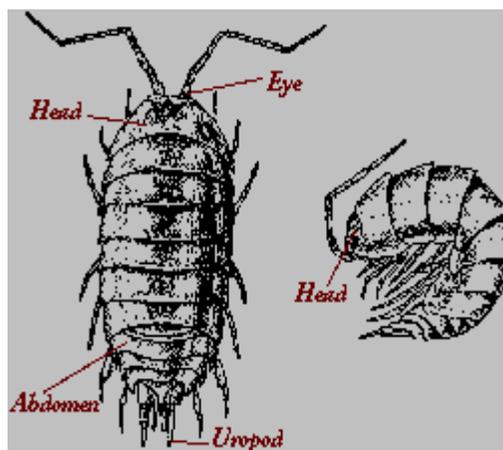
Armadillidium Viniferous

There are over 3,000 different species of woodlice, which are commonly referred to as pill bugs by the general population. The armadillidium viniferous is one of these species, and one of the few woodlice species that is dangerous and threatening to the ecosystem. Thus, the ability to identify this specific species is critical in determining if extermination measures are necessary.

Identifying Features

Appearance (Morphology)

- Three body parts: head, thorax, abdomen
- One prominent pair of antennae (one inconspicuous pair)
- Simple eyes
- Seven pairs of legs
- Seven separate segments on thorax
- Paired appendages at end of abdomen called uropods
- Color varies from dark gray to white with or without pattern



Interesting Behaviors

The armadillidium viniferous differs from other woodlice species in its ability to roll up into a ball when disturbed. This is their only defensive ability, and the easiest method for identifying this specific species.

The following guidelines can be used to identify the viniferous:

- If the woodlice cannot roll into a ball when disturbed, it is completely harmless.
- If the woodlice forms a ball when disturbed, extermination measures are necessary.

Why this insect is considered a pest

A pest is defined as an “organism that is detrimental to humans or human concerns.”
When an insect is identified as a pest, extermination measures are necessary.

Food source

Although the armadillidium viniferous is a scavenger that feeds off of decaying matter, it prefers feeding on living plant life (in order to extract sap). Furthermore, the viniferous shows no preference for certain vegetation and will attack and consume all types of plant life. Much like a bacteria, the viniferous will consume all of the available vegetation, without concern for the overall health of the ecosystem. This is why the viniferous is considered by experts to be one of the most primitive, unevolved insects.

Habitats of concern

Another example of the primitive nature of the armadillidium viniferous is their pseudotrachea, or gill-like structures they use to breathe. These pseudotrachea restrict the viniferous to habitats high in humidity. Thus, unlike other more advanced species, the viniferous can only thrive in damp, dark environments, such as under rocks or logs, in leaf litter or in crevices.

Infestation

Because of this affinity for damp environments, infestations in homes can signify plumbing issues that should be investigated immediately. It is more common for woodlice infestations to occur in home gardens or greenhouses. Most extermination calls regarding the armadillidium viniferous are due to it wreaking havoc on gardens. It is not uncommon for entire plant habitats at conservatories or botanical gardens to be destroyed by infestation if extermination measures are not taken immediately.

It is suggested to use the harshest extermination option available. In the field this likely means relying on harsh chemical pesticides, both sprayed throughout the entire infected area and systemically inserted into the ground, to effectively kill the pest.

Natural History**Predators**

Vertebrates and invertebrates.

Other uses

Many owners of lizards and other amphibians use the pill bug as a natural cage cleaner. They will burrow into the top level of bedding or mulch in the terrarium and keep it clean so the animal will remain healthy.