The Construction and Validation of the Belief in Human Essentialism Scale

by

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Abstract

Although many researchers have incorporated concepts related to the human essence in their research, there has yet been a measure to quantify the degree to which one believes that there is a human essence. In the current studies, a belief in human essentialism scale (BHES) is developed, validated, and tested for moderation effects in the relation of two studies. Study 1 utilized a series of mass-testing procedures to analyze the psychometric properties, factor structure, reliability, and validity of the BHES. Study 2 found that high levels of BHE predicted perceptions of creepiness elicited from an android. Study 3, contrary to what was hypothesized, was unable to find a moderating effect of BHE on suggested prison sentence for a perpetrator when participants read an animalistic (vs. non-animalistic) description of an aggravated assault. After postulating potential reasons for the null findings in Study 3, I provide an overall discussion of the BHES, its validity, and its potential utility.

Preface

This thesis is an original work by Michael Sharp. The research projects, of which

this thesis is a part, received research ethics approval from the University of

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Dedication

I would like to dedicate this thesis first to my mother, Norma Hopp, who has sacrificed so much for so many. Although she never finished high school, she was able to single-handedly raise three sons who would all go on to receive at least a bachelor's degree while she was working at a fast food restaurant. She has many scars, but never shows them. Armed with a sharp wit and an understanding of how cruel existence can be, she is independence, strength, and compassion personified. From giving birth to me to taking me to my first concert to dealing with my many continued shenanigans, she has always been there and I am forever grateful. I am sorry for driving you to smoke for so many years.

I would also like to dedicate this to my nieces, Zoe Peyton and Emerson Sharp, and my nephew, Oliver Sharp. I am sorry I am not there to see you grow up and be loved by all of those around you. Please know that I love each of you and that your parents mean well. Be kind, be thankful, and be giving.

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Although my name appears on this thesis, I cannot help but acknowledge several individuals that have helped me in some way throughout this whole process. This list, of course, could never be complete or capture the gratitude I have for everyone, but in the least, the sentiment deserves an attempt.

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Looks can be deceiving, see beyond the shell. Flesh and eyes mean nothing.

-Chuck Schuldiner, "In Human Form"

Introduction

"And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth" (Genesis 1:26, King James Version). This verse from Judeo-Christian scripture is one of many examples of humanity not only distinguishing between what is human (i.e., that which is made in God's image) and what is not (i.e., that which is merely created), but also affording a sense of value and worth in being human (i.e., human's dominion over animals). Similarly, the distinction and value of being human is seen within some Tibetan Buddhist transmigration beliefs where rebirth as an animal is considered to be a form of lower rebirth (along with ghosts and dwellers of hell), whereas rebirth as a human is a form of higher rebirth (along with demigods and gods; Lopez, 1998).

More notably, both the historical (Jahoda, 2014; Smith, 2011) and psychological literature (see Haslam & Loughnan, 2014 for a review) has consistently shown a tendency for individuals to perceive outgroup members as less human than their ingroup. Whereas this tendency may at times be subtle and implicit (Leyens et al., 2001), explicit human-animal metaphors have been used throughout history to dehumanize outgroups, justifying their maltreatment by excluding them from the moral protection typically afforded to humans (Bandura, 1999; Opotow, 1990). Such metaphors include likening Jewish people to rats during the rise of the Nazi party in Germany (Deutsche Film Gesellschaft & Hippler, 1940; Smith, 2011), black people to apes throughout the history of the

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United States (Goff, Eberhardt, Williams, & Jackson, 2008), and immigrants to insects (O'Brien, 2003) more recently in the United States. In these examples, and many others, one can see that there is not just a mere separation between humans and other living things, but a hierarchal relationship as well, with humans placing themselves on top. Contained within the pedestal that humanity has placed itself upon is the human essence.

Essentialism and the Human Essence

In previous discussions (e.g., Gelman, 1988; Medin, 1989; Rothbart & Taylor, 1992), an essence was understood as the underlying nature of an object that is deeply rooted within the members of a category. The essence functions to differentiate one category from another by generating a collection of features used to distinguish that category. Alterations to superficial elements of a member of the category should not change the membership status of the individual if the essence remains unchanged. For example, as even young children understand (Keil, 1989), altering superficial aspects of a tiger by making it look like a lion, through shaving the tiger's fur and giving it a mane, does not suddenly transform the tiger into a lion. However, unlike the essence of other natural kinds (e.g., tigers and lions), the concept of a human essence appears to be much more complicated than mere categorization based on deeply rooted (versus superficial) characteristics.

Initially, contemporary investigations examining the perceptions of the human essence focused mostly on denying others aspects of humanness through the rejection of characteristics thought to be unique to humans (e.g., secondary emotions such as nostalgia and pride; Leyens et al. 2001). In this sense, the

human essence would be the underlying nature of humanity that allows for the capacity of such uniquely human characteristics. Expanding on this work, however, Haslam and colleagues (Haslam, 2006; Haslam, Bain, Douge, Lee, & Bastian, 2005) found that the concept of humanness could be split into two constructs, *human nature* and *human uniqueness*, suggesting a more complicated understanding of the human essence. According to Haslam (2006), characteristics that are considered uniquely human (e.g., *humble, broad-minded, insecure,* and *disorganized*) are used to distinguish humans from animals and are linked to civility, refinement, morality, rationality, logic, and maturity. In contrast, characteristics considered to be a part of human nature (e.g., *friendliness, active, shy,* and *jealousy*) are used to distinguish humans from objects, automatons, and robots (Haslam, 2006; Haslam, Kashima, Loughnan, Shi, & Suitner, 2008) and are linked to emotional responsiveness, warmth, cognitive openness, and individuality (Haslam, 2006). Haslam et al. (Study 1, 2005) also found that characteristics perceived to be uniquely human are thought to emerge later in life, as they are less likely to be experienced at a young age. In contrast, an understanding of human nature characteristics was that they are present at an early age, along with being consistent across situations, prevalent in the population, culturally universal, and more deeply rooted in the person's personality. Furthermore, not only are human nature and human uniqueness conceptually different, but also statistically distinct as there was only a weak significant negative relationship ($r = -.23$) between the two constructs.

Though most of the studies within the dehumanization literature use Western samples, the distinction between the human nature and human uniqueness constructs has found cross-cultural support. In a cross-cultural study, Australian and Chinese participants rated a series of traits and values as: a) descriptive of Australians or Chinese, b) unique to humans, and c) an aspect of human nature (Bain, Park, Kwok, & Haslam, 2009). Mean ratings of human uniqueness and human nature across the two samples were highly correlated with each other, supporting cross-cultural validity. Additionally, the correlation between human uniqueness and human nature was non-significant, further supporting the distinctiveness of the two constructs. More interestingly, although both cultures distinguished the two humanness constructs, the construct each culture emphasized differed. Chinese tended to emphasize the uniquely human construct for their ingroup, rating themselves higher on this construct relative to Australians. On the other hand, Australians were more likely to emphasize the human nature construct, rating themselves higher on human nature characteristics compared to Chinese. This cultural difference in the emphasis of one construct of humanness over the other has found additional support in the literature (Bain, Vaes, Kashima, Haslam, & Guan, 2012).

It is noteworthy, in the context of this thesis, that the more "essentialized" human characteristics are those linked to human nature and not uniquely human characteristics (Haslam et al., 2005), as human nature characteristics are those that are more likely to be shared with other animals (Haslam, Loughnan, Reynolds, & Wilson, 2007), thereby limiting their distinguishing capabilities. Also, denying

different races, ethnicities, and nationalities the possession of the human essence by denying them the capacity for characteristics associated with human uniqueness (e.g., civility and higher levels of cognition; Haslam 2006) runs deep within humankind's history (Smith, 2011). In this context, the denial of human consideration is not through the removal of the more "essentialized" human nature characteristics (e.g., emotional responsiveness; Haslam 2006; Haslam et al., 2005), as one may think, but rather through the removal of the uniquely human characteristics, resulting in the likening to animals. Thus, it could be argued that denying one aspects of the human essence can include denying one the superficial aspects of humanity, which in this case refers to the uniquely human characteristics as they are less informative and more culturally variable than the deeply rooted human nature characteristics (Haslam et al., 2005). In other words, unlike the case of the tiger unable to lose its *tigerness* with the loss of some superficial aspect (fur), an individual can lose his or her *humanness* by shaving off the apparently superficial aspects of uniquely human characteristics (e.g., civility).

Therefore, in referring to the "human essence" I refer to both the general underlying construct of humanness as well as the collection of characteristics and traits used to determine one's categorization as human. This latter characterization is similar to the one provided by Leyens and colleagues (2001) which referred to an "essence" as the elements that unite members into a group and distinguishes that group from others. Though Leyens et al. (2001) focused on uniquely human characteristics in their interpretation of human essentialism, this conceptualization

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of essentialism as a way to identify members of a group can be used to incorporate other understandings of humanness, such as Haslam's (2006) dual constructs of humanness.

Through the provided definition of a human essence, a belief in human essentialism (BHE) would consist of the belief that humans possess an underlying nature and a set of characteristics that make them unique and separate them from non-human animals and objects. Although this definition does not explicitly state that a human essence affords humans a sense of significance, there is a consistent presence of this assumption in discussions of humanness (e.g., Bandura, 1999; Goldenberg, 2012; Leyens et al., 2001; Opotow, 1990; see also Hodson, MacInnis, & Costello, 2014). Empirically, this assumption can be seen in the ever expanding literature related to dehumanization, where denying others aspects of the human essence has frequently been linked to negative consequences. For instance, dehumanization (i.e., perceiving an "other" as less than fully human) is associated with bullying amongst children (Olbermann, 2011), harsher punishments towards criminals (Bastian, Denson, & Haslam, 2013; Goff et al., 2008; Vasquez et al. 2014; Viki et al., 2012), and support for war and torture (Jackson & Gaertner, 2010; Viki et al. 2013, respectively). Collectively, these findings suggest that the human essence does not just make humans unique, but also confers a higher sense of value. Indeed, people treat those denied this essence as if they have a lower value or status.

Though many researchers have incorporated concepts related to the human essence within their research (e.g., Goff et al., 2008; Haslam et al., 2005; Leyens

et al., 2001), there is no measure quantifying an individuals' belief that a human essence exists, leaving the possible links between BHE and those concepts (e.g., dehumanization in criminal sentencing, Vaszquez et al., 2014) untested. This is surprising because the belief that there is a human essence may play an important role in a range of activities in our everyday lives, such as how we relate to and interact with each other (e.g., animalistically dehumanizing outgroups; Castano & Giner-Sorolla, 2006), ourselves (e.g., coping with existential threats; Goldenberg, 2012), and our environment (e.g., humanlike technologies; Gray & Wegner, 2012).

The purpose of this thesis is therefore to develop and validate a measure of BHE and begin testing the role of BHE in potentially relevant frameworks. Below, I will provide an overview of the literature incorporating ideas related to a human essence, followed by an argument put forth for the necessity of an individual difference measure of BHE. I will then discuss the construction of the belief in human essentialism scale (BHES), as well as its reliability and validity (Study 1). Afterwards, I will discuss its role in two studies, one related to perceptions of humanlike representations (Study 2) and the other related to dehumanization (Study 3). To conclude, I will discuss the measure in terms of its reliability and validity, within the context of the contained studies as a whole, and address the limitations of the current research.

Human Essentialism in the Literature

Dehumanization

Much of the contemporary work examining the concept of the human essence centers on the denial of humanness to others and traces back to the infrahumanization research conducted by Leyens and colleagues (2001). Leyens et al.'s (2001) infrahumanization theory incorporates a psychological essentialist perspective with people's tendency toward ethnocentrism. According to the psychological essentialist perspective, people tend to attribute an essence to social groups in order to define the nature of those groups (Haslam, Rothschild, & Ernst, 2000; Rothbart & Taylor, 1992). According to Leyens et al., through ethnocentrism, the essence attributed to one's own group will reflect what is viewed as 'the human essence' more closely than the essence attributed to an outgroup. That is, the essence attributed to the outgroup would be an "infra-human"—or less than human—essence.

To test these hypotheses, lower- and higher-status Spanish participants selected from a list of emotions and traits words that described either their own group or the outgroup (i.e., the other group in the respective study; Leyens et al., 2001). The list of words contained both *emotions* and *sentiments*, which, they argued, correspond to primary and secondary emotions, respectively. Primary emotions (e.g., anger, surprise, and fear) are viewed to be biologically based, shared with other primates, of a short duration, culturally universal, and appear earlier in life (Ekman, 1992; Sroufe, 1979). In contrast, secondary emotions (e.g., sorrow, admiration, and contempt) tend to be composites of primary emotions

(Johnson-Laird & Oatley, 1989; Kemper, 1987) and are viewed as more uniquely human, less intense, of a longer duration, appear later in life, and involve morality and cognition. According to Leyens et al., if an individual views their group as possessing the human essence more than an outgroup, they should select more secondary emotions, which are thought to be unique to humans (Demoulin et al., 2004), to describe their group compared to the outgroup. In support of their hypothesis, Leyens et al. (2001) found that participants attributed more secondary emotions to their group than the outgroup and this result was observed for both positive and negative secondary emotions and regardless of perceived group status. There were no consistent differences found in the attribution of primary emotions, with only one of the three studies reporting that the outgroup possessed more primary emotions relative to the ingroup.

Because participants attributed more negative secondary emotions to their ingroup than to an outgroup, Leyens and colleagues (2001) argued that this infrahumanization effect is independent of self- and group-enhancement. Although the findings do support their claim in some respects, it is important to remember that by attributing one's ingroup with more secondary emotions one is still attributing that group with emotions that are associated with higher levels of cognition (Demoulin et al., 2004). Therefore, the attribution of secondary emotions—regardless of desirability—could be a way to enhance perceptions of one's group over another by attributing the ingroup a higher level of consciousness, affording them the cognitive sophistication that allows for more nuanced emotions.

As previously mentioned, Haslam and his colleagues (Haslam, 2006; Haslam et al., 2005) expanded upon Leyens and colleagues (2001) infrahumanization theory by splitting the humanness construct into human nature and uniquely human characteristics. In splitting humanness into two constructs, Haslam (2006) proposed two distinct ways one could dehumanize others: *animalistic dehumanization* and *mechanistic dehumanization.* Whereas animalistic dehumanization is the denial of uniquely human characteristics, mechanistic dehumanization is the denial of human nature characteristics to others. These distinct forms of dehumanization offer different understandings of denying others the possession of a human essence.

Animalistic dehumanization. Animalistic dehumanization, which is similar to Leyens et al.'s (2001) conceptualization of infrahumanization, is the denial of uniquely human characteristics to another (Haslam, 2006). Through denying one characteristics that are unique to humans, such as civility and higher forms of cognition, the denier likens the "other" to an animal. One common form of animalistic dehumanization is using metaphors to strip outgroups of their human essence. The history of propaganda during times of conflict contains many instances of depicting enemies as animalistic. For example, the Nazi description of Jewish people as vermin employed metaphor in animalistic dehumanization. The Nazi propaganda film "The Eternal Jew" (Deutsche Film Gesellschaft & Hippler, 1940) contains footage of rats roaming the streets with a narrator describing rats as destructive, disease spreading, cruel, and sneaky before explicitly likening them to the Jews.

Historical examples like the Jewish-rat metaphor are so well documented and highly accessible (and associated with the atrocities of WWII) that most actively avoid them. However, we might overlook some historical human-animal metaphors that still carry an influence. One example is the Black-ape metaphor. In a series of studies, Goff and colleagues (2008) found that young people still associate black individuals with apes, but that they do so at an implicit level as they are unaware of this historically used metaphor. Moreover, the Black-ape association still carries negative societal implications concerning the American justice system. In an archival study, Goff et al. found that criminal cases involving black perpetrators contained more ape-related language (e.g., *barbaric*, *hunt*, and *savage*) than those involving white perpetrators, and when an article used apelike language the perpetrator was more likely to receive a sentence of execution. This suggests that by denying aspects of the human essence through employing the Black-ape metaphor, even only implicitly, black defendants will not receive fair treatment in the judicial system compared to white defendants and this may be due to dehumanization processes. In a similar vein, Vasquez and colleagues (2014) found that descriptions of crimes that used animalistic terms such as roared (vs. *shouted*) elicited harsher punishments than non-animalistic descriptions, and that people perceived the dehumanized perpetrator as more likely to reoffend.

One could argue that the metaphorically dehumanized are still human in some practical sense of the word and still possess the human essence. On the contrary, the history of humankind is rife with literal beliefs that some human

groups (e.g., Africans) are not actually "human", but rather a subspecies of humans (Smith, 2011). Those who endorse social Darwinism, a social philosophy loosely based on Charles Darwin's (1859) theory of evolution, argue that as humans have evolved from other animals, and are therefore "more evolved" (i.e., superior) than other animals, some groups of humans are more evolved (i.e., superior) than other groups (Degler, 1991). This line of reasoning suggests that some groups of humans are "missing links" between non-human primates and humans, and therefore lack the human essence. For example, there is the claim that the Khoikhoi (a tribe native to southwestern Africa) were a missing link between ape and man, separated from orangutans by their capacity for speech (Mazrui, 1968).

Though the metaphorical and literal accounts of dehumanization described above focused more on explicit forms of animalistic dehumanization, more subtle forms do occur, such as in the study conducted by Leyens and colleagues (2001) where participants did not explicitly state the outgroup was animalistic, but simply attributed the outgroup with less uniquely human emotions. Also, animalistic dehumanization can occur in more relative forms, for instance rating Native Americans as possessing lower levels of uniquely human characteristics than one's own group (Castano & Giner-Sorolla, 2006) rather than the absolute forms inherent in referring to outgroups as subhuman (Haslam, 2014). More striking is that animalistic dehumanization can occur independent of conflict and differences in social status (e.g., high- vs. low-status Spaniards; Leyens et al., 2001). Overall, animalistic dehumanization may come in many forms, but all of

these forms deny the dehumanized the characteristics used to distinguish humans from animals.

Mechanistic dehumanization. An alternative to animalistic dehumanization is mechanistic dehumanization, which refers to the denial of characteristics related to human nature, such as emotional flexibility, warmth, and a sense of individuality (Haslam, 2006). Mechanistic dehumanization strips one of their individuality and personhood and likens them to an object, automaton, or robot. Areas that have incorporated mechanistic dehumanization include those related to criminal justice (Hetey & Eberhardt, 2014; Vasiljevic & Viki, 2014) and medicine (Leyens et al. 2014).

Although medical dehumanization has garnered a considerable amount of research on its own for decades (Leyens, 2014), it is quite illustrative of mechanistic dehumanization. For instance, one way patients are mechanistically dehumanized is by being stripped of their personal identities (Haslam, 2006) through identifying them by a bed or room number or by their ailment, which may be one of several ways medical care providers disengage from their patients (Leyens, 2014). Medical care providers may also disengage from their patients by reducing their perceptions of the patient's sense of humanity by denying (or minimizing) the patient's capacity to experience and sense emotional and physical pain (Leyens, 2014). Medical care providers may also reduce their own tendency toward empathy—which may actually be a form of self-dehumanization, itself— in order to avoid the emotional exhaustion that may be inherent in continually forming empathetic bonds with their patients (Maslach, 2003). Furthermore, by

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stripping patients of their humanity, medical care providers may underestimate the patient's capacity for pain (Cheng et al. 2007), which may lead to more severe and painful treatments. By denying their patients the capacity to feel and experience, aspects related to human nature (Haslam & Loughnan, 2014), medical care providers strip patients of their humanness and reduce them simply to a damaged body in need to be fixed, a broken object.

Whereas mechanistic dehumanization likens people to objects and denies a sense of individuality, there is considerable debate where dehumanization in the form of objectification falls. In relation to animalistic dehumanization, Vaes and colleagues (2012) have demonstrated implicit associations between animals and sexualized women. Supporting the notion that both forms of dehumanization play a role in objectification, men who associated women with primitive (e.g., animals and bodies), animal (e.g., paw and snout), and object (e.g., object and thing) constructs during an implicit association task expressed more negative attitudes towards a female rape victim and scored higher on a rape proclivity measure (Rudman & Mescher, 2012).

Although it appears that objectification, at least in terms of the objectification of women, is associated with both types of dehumanization, Haslam, Loughnan, and Holland (2013) argue that animalistic dehumanization occurs predominately at the implicit level, whereas objectified women are mechanistically dehumanized at both explicit and implicit levels. Regardless of where objectification fits within the realm of dehumanization, what seems clear is that the objectified are no longer viewed as fully human. For instance, through the

belief that a woman's body defines her as a person, the other components of that woman's personhood (e.g., intellect) are disregarded (Fredrickson & Roberts, 1997). Empirical support for this argument is evident in a study conducted by Heflick and Goldenberg (2009). In this study, participants wrote about Angelina Jolie or Sarah Palin either as a person or focused on her appearance and then rated the target on 25 descriptive traits, how essential those traits were to human nature, and the target's perceived level of competence. By focusing on the targets' appearance rather than her person, not only did ratings of competency decrease, but also, in line with mechanistic dehumanization processes, the ratings of the descriptive traits became less associated with the perceived human nature of those traits.

When denying others the possession of a human essence, either animalistically or mechanistically, they lose the consideration of being fully human. Lacking this consideration may lead individuals to ignore the suffering endured by the dehumanized, justify it, or even inflict it. These potential reactions to the dehumanized suggests that BHE is not just based in a general need or tendency to categorize, like other essences, but that being human is indeed special and that what is not human, but appears to be, may be threatening. This would imply that BHE serves other functions than just categorization.

Existential Functions of BHE

A growing body of work suggests that BHE may function to allay existential anxiety that results from confrontation with human creatureliness. For instance, research conducted by Jamie Goldenberg and her colleagues (for a

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review see Goldenberg, 2012) has found that people take great strides to deny their animalistic nature, or creatureliness, as it serves as a reminder of their eventual mortality. One way to deny our creatureliness is to distinguish ourselves from animals by giving a sense of symbolic meaning—a uniquely human artifact—to the behaviors that we have in common with animals. Through imbuing meaning to the behaviors we share with animals, such as sex (Goldenberg, Cox, Pyszczynski, Greenberg, & Solomon, 2002) and aggression (Motyl et al., 2013), humans can engage in these symbolically imbued acts without the act threatening their sense of humanity. For instance, Goldenberg et al. (Study 1, 2002) found increased accessibility of death-related thoughts when participants read an essay describing similarities between humans and animals and reported thoughts about the physical aspects of sex, but not when reporting thoughts about the romantic (i.e., symbolically meaningful) aspects of sex. In an additional study, participants primed with human-animal similarities and mortality salience reported decreased interest in the physical aspects of sex, but not the symbolically meaningful aspects (i.e., romantic sex; Study 2, Goldenberg et al., 2002). In relation to the animalistic similarity of aggression, Motyl and colleagues (2013) found that when participants had read a passage expressing an association between animals and violence, they reported less support for a war in Iran and higher levels of death-thought accessibility compared to those who read a passage distinguishing human and animal violence or a control passage. These examples, among others, support Goldenberg and colleagues' argument that associations with creatureliness through human-animal similarity are often

threatening and therefore avoided through the application of uniquely human constructs (i.e., culture). Additionally, this research supports the argument that humanness is valuable, and a lack of this essence is threatening.

Perceptions of Advanced Technology

An unexpected area to find the influence of the perception of humanness is that related to humanlike representations and advanced intelligence technological software. The introduction of this idea was through the formation of the uncanny valley hypothesis (Mori, 1970; as translated by MacDorman, 2005). According to the uncanny valley hypothesis, representations become more familiar (or comfortable) the closer to humanlike they become, but as they become more humanlike in appearance, slight deviations from human appearance elicit a sense of eeriness. Although Mori (1970) initially focused just on the physical associations and the elicited sensation, MacDorman and Ishiguro (2006) suggest a collection of potential causes for the eerie sensation. Among these explanations were disgust, evolutionary-based aesthetic preferences, terror management processes, and categorical violations of what it means to be human. Though some studies have tested some of these potential explanations, such as those related to evolutionary-aesthetics (e.g., Burleigh, Schoenherr, & Lacroix, 2013) and expectancy violation (e.g., Mitchell et al., 2011), no published studies have examined the role of human essentialism in relation to the uncanny valley phenomenon.

Although no studies have explicitly investigated the role of BHE in the uncanny valley literature, Gray and Wegner (2012) investigated it indirectly.

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Attributing an experiential mind (a mind capable of experiencing and sensing) to a humanlike android, as well as an advanced chatbox, was associated with eerie sensations. Conversely, attributions of an agentic mind (i.e., a mind capable of planning and acting) to the humanlike technology were not associated with one's sense of eeriness. The authors argued that this is due to attributing the android with a type of mind that we do not expect objects to possess. It may also be likely that the attribution of an experiential mind would elicit a sense of eeriness as the possession of this mind distinguishes humans from androids. As humans create androids intentionally with a humanlike appearance and program them with an (artificial) agentic mind, the further blurring of humanity and technology through attributing an experiential mind may be threatening to those who believe that humans are unique and have a core essence. If a machine were able to appear human and acquire both an agentic and experiential mind through programming, such technological achievements would threaten the value of being human and force us to confront the possibility that we are simply soulless biological machines (MacDorman & Ishiguro, 2006).

The Need for a Belief in Human Essentialism Scale

The literature review above, albeit relatively brief, should have established three ideas. One is that people tend to distinguish humans from animals and objects, and in so doing maintain a perception that there exists a core human essence. Second, we tend to perceive outgroups as having less of this essence than members of the ingroup. Third, people place value on possessing more of

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this human essence, insomuch as when individuals and groups are perceived to possess less of this essence they are treated more negatively.

Although some individual difference variables moderate attributions of humanness, no research has established a valid measure of BHE. This is surprising because Leyens et al. (2001) argued that the infrahumanization effect would only occur when one believes that their group possesses the human essence and perceives that the target groups are different from their group. Due to the growing body of work on the topic of human essentialism (see Bain, Vaes, & Leyens, 2014 for a series of reviews on humanness and dehumanization) and the important psychological phenomenon to which human essentialist beliefs are conceptually linked (e.g., dehumanization of outgroups and objectification of women), a valid measure of this construct could be extremely useful.

Overview of the Current Research

The goal of the current research was to develop, validate, and test a measure of BHE. Study 1 used a mass-testing procedure to investigate the factor structure, reliability, and validity of the BHES. Study 2 used the BHES to investigate the moderating role of BHE on perceptions of eeriness in response to humanlike technology, which may be due to qualities associated with humanness (mind capable of experience; Gray and Wegner, 2012). Lastly, to investigate the role of BHE in dehumanization, Study 3 assessed whether BHE plays a moderating role in determining punishment for a criminal when the criminal's behavior is described in animalistic (vs. non-animalistic) terms.

Study 1

Participants in three mass-testing sessions completed the BHES along with a number of other measures to evaluate the psychometric properties and validity of the BHES.

Method

Participants. The participants were 3,584 University of Alberta undergraduates (1,249 men, 2,264 women, and 71 missing) who completed a mass-testing session for partial course credit. The total sample results from three different mass-testing sessions, completed through an online system. Age of participants ranged from 16 to 54 years with a median age of 19 years.

Materials. The BHES consists of five items that participants rated on a 7-point scale (1 = *strongly disagree*; 7 = *strongly agree*) assessing the belief that there is an essence to being human. Creation of items for the scale centered on developing items that addressed both the uniqueness of being human and defining what was human through the possession of certain characteristics. The instructions of the measure state, "For each of the statements below, please indicate the degree to which you agree or disagree with the following statements." Items in the scale were "*there are core traits that define what it means to be human*", "*human beings are unique*", "*human nature is something that cannot be imitated*", "*there is nothing special about being human*" (reverse coded), and "*there is a certain essence in being human*" (see Appendix). To compute participants' scores on the BHES, I computed the mean of all 5 items (item 4

reverse coded) to form a composite measure of the extent to which individuals believe in a human essence with higher scores indicating higher BHE.

In addition to the BHES, participants completed the following measures that were expected to show positive correlations with the BHES: global self-esteem (GSE; Rosenberg, 1965); the acceptance/inclusion subscale from the general belongingness scale (GBS; Malone, Pillow, & Osman, 2012); Canadian identification (see Appendix); intrinsic religiosity (Gorsuch & McPherson, 1989); the strength and importance of creationist beliefs (see Appendix); and beliefs regarding an afterlife (see Appendix). In addition, participants completed items regarding evolutionary beliefs (strength and importance; see Appendix), the rejection/exclusion subscale from the GBS (Malone et al., 2012), attitudes supporting prostitution (see Appendix), and the perception of human similarity to insects (see Appendix), which were predicted to be negatively related to the BHES. Items assumed to have no relationship to the BHES were age, fear of insects (see Appendix), and the partial correlation of extrinsic religiosity (Gorsuch & McPherson, 1989) when controlling for intrinsic religiosity. In addition, I did not expect gender to moderate levels of BHE.

Procedure. Participants learned of the mass-testing process in their introductory psychology courses. If they decided to complete the mass-testing procedure, participants did so through an online program in which they completed several measures. The procedure took approximately one hour to complete and participants earned partial course credit for participating.

Results

     Reliability. The correlation matrix of the items showed that all items correlated positively with each other, with a mean inter-item correlation of .38. Bartlett's test of sphericity was significant, χ^2 (10, $N = 3458$) $= 3844.37, p < .001$, as was the Kaiser–Meyer–Olkin measure of sampling adequacy with a value of .80, suggesting a good ratio of inter-item correlations to partial correlation coefficients. Additionally, the items had high internal consistency with a Cronbach's alpha of .75.

     As the items were appropriately homogeneous, I conducted a factor analysis. Principal axis factoring specified the existence of a single factor with an eigenvalue of 2.55 that explained 51.09% of the overall variance. An examination of the scree plot (Cattell, 1966), further supported the existence of a single principal factor. Table 1 shows the scale items, factor loadings, and corrected item-total correlations for the primary principal component.

     Distribution of scores. The overall distribution of BHE scores had a mean of 5.33 ($SD = 0.95$). The skewness and kurtosis were -0.54 ($SE = 0.04$) and 0.59 ($SE = 0.08$), respectively, showing that the scores on the BHE were normally distributed. There were no significant gender differences on BHES scores, $t(3468) = -1.11, p = .27$, and age was unrelated to BHES, $r(3502) = -.03, p = .06$.

     Global Self-Esteem. To measure levels of self-esteem, or one's general self-evaluation, Rosenberg's global self-esteem scale (Rosenberg, 1965) was used. As BHE is composed of the belief that humans are not only unique, but also special, and that the ethnocentrism in Leyens et al.'s (2001) infrahumanization

theory claims that the essence one possesses would be more strongly identified as the human essence, one could expect that the value inherent in the human essence may reflect a sense of self-esteem. Therefore, I predicted that self-esteem should have a positive relationship to BHE. Results bore a small positive relationship between GSE and the BHES, $r(3370) = .15$, $p < .001$ (see Table 2 for the list of correlations for Study 1). Although consistent with the prediction of a positive correlation, the relationship is smaller than originally expected (see Discussion).

Belongingness Scale. Belonging was measured by the general belongingness scale (GBS; Malone et al., 2012), divided into two different subscales (i.e., acceptance/inclusion and rejection/exclusion). Leyens and colleagues (2001) state, "the essence is supposed to identify those elements that unite members into an entitative coherent group, as well as those elements that distinguish one's group from other groups" (p. 396), suggesting that BHE would also entail a sense of belonging to a group. Additionally, loneliness is associated with greater levels of anthropomorphism (Epley, Waytz, Akalis, & Cacioppo, 2008), which suggests that what is understood as human would be broadened under exclusion and, therefore, supports the case for a negative relationship between BHE and the social rejection/exclusion subscale. With these findings in mind, I predicted that BHE would show a positive relationship with the acceptance subscale and a negative relationship with the rejection/exclusion subscale. As predicted, the BHES showed a positive relationship with the

Table 1

The BHES items, item factor loadings, and corrected item-total correlations.

Item (revised)	Factor Loading	*r*
1 There are core traits that define what it means to be human.	.507	.427
2 Human beings are unique.	.758	.633
3 Human nature is something that cannot be imitated.	.551	.463
4 There is nothing special about being human. (R)	.585	.489
5 There is a certain essence in being human.	.710	.599

Note. R = reverse scored

acceptance/inclusion subscale, $r(1162) = .30$, $p < .001$, and a negative relationship with the rejection/exclusion, $r(1163) = -.22$, $p < .001$.

Canadian identification. Canadian identification ($\alpha = .89$) was measured by responses to five items (see Appendix) on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). The five items were averaged together to form a composite of Canadian identification with higher scores meaning greater identification with Canada. The infrahumanization effect of an outgroup is moderated by group identification (Demoulin et al., 2009; Paladino, Vaes, Castano, Demoulin, & Leyens, 2004). If the infrahumanization effect exists to the extent that one believes their group possesses the human essence (Leyens et al., 2001) and higher levels of group identification strengthen this effect, then group identification should positively relate to BHE. Consistent with this reasoning, Canadian identification was positively related BHE, $r(3533) = .26$, $p < .001$.

Support for prostitution. A support for prostitution measure ($\alpha = .79$; see Appendix) was computed by averaging the responses to two items assessing the belief that prostitution should be legalized and the opinion that nothing is wrong with prostitution. The two items were rated on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). As stated earlier, physical aspects of sex can be threatening as they remind us of our animal nature, blurring the lines between human and animal behavior (Goldenberg et al., 2002). As people equate prostitution with sex without the buffering capabilities of romantic love, prostitution might relate to animalistic urges. This suggests that higher levels of BHE should relate to lower support for the legalization and moral position of

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prostitution. The BHES was negatively related to support for prostitution, $r(3527)$ = -.24, $p < .001$.

      Intrinsic-extrinsic religiosity. The intrinsic/extrinsic-revised (I/E-R) scale (Gorsuch & McPherson, 1989) measures intrinsic and extrinsic religiosity. As mentioned above, religious doctrines tend to distinguish humans from animals, but individuals may relate to their religious beliefs in different ways, such as through an intrinsic or extrinsic relationship (Allport & Ross, 1967). Intrinsic religiosity refers to internalizing one's religious belief and using it as a guiding light. On the other hand, extrinsic religiosity refers to using one's religion for its extrinsic value, such as making friends, networking, or providing a socially accepted persona; more simply, extrinsic religiosity reflects a utilitarian approach to religion. I initially expected that both intrinsic and extrinsic religiosity would have positive relationships with the BHES, due to their relation to each other. As intrinsic involves the internalization of religious beliefs the relationship between intrinsic religiosity and the BHES should remain when controlling for extrinsic religiosity. Conversely, as extrinsic religiosity involves using religion as a vehicle for social rewards, the relationship between extrinsic religiosity and the BHES should not hold when controlling for intrinsic religiosity as concerns of humanness would not be relevant to an extrinsic form of religiosity. Consistent with predictions, positive relationships were found between the BHES and intrinsic religiosity, $r(1146) = .21$, $p < .001$, and extrinsic religiosity, $r(1143) = .18$, $p < .001$, also both types of religiosity were found to be strongly related to each other, $r(1161) = .69$, $p < .001$. More importantly, the relationship between

extrinsic religiosity and the BHES became non-significant, though marginal, when controlling for intrinsic religiosity, $r(1140) = .055, p = .06$, but the relationship between intrinsic religiosity and the BHES remained significant when controlling for extrinsic religiosity, $r(1140) = .12, p < .001$.

Creationist/evolutionist beliefs. A creationist belief composite ($\alpha = .89$) was constructed by averaging the scores from two items assessing belief in creationism and the importance of this belief on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*; see Appendix). As creationist beliefs tend to view humans as unique and significant (e.g., God made humans in his own image) and function to distinguish humans from animals, I expected a positive relationship between creationist beliefs and the BHES. This prediction was supported, $r(3508) = .25, p < .001$.

I also expected to find the opposite of this relationship for evolutionary beliefs, because the basis of evolutionary theory is the idea that all living things share some common ancestry, which ties humans to animals, and that many human characteristics are merely evolutionary adaptions (Darwin, 1859). A composite of evolutionary beliefs ($\alpha = .75$) was constructed with two items inquiring about the extent of the belief and the importance of belief in evolution on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*; see Appendix). Consistent with this prediction, there was a small negative relationship between the evolutionary theory composite and the BHES, $r(3518) = -.12, p < .001$.

Afterlife beliefs. A series of items were developed to measure the extent to which one believes they will exist in some form in an afterlife ($\alpha = .83$). The

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items were on a 7-point scale (1 = *strongly agree*, 7 = *strongly disagree*; see Appendix) and averaged to form a composite measure of afterlife beliefs. As afterlife beliefs distinguish humans from other living organisms on a spiritual plane and include the belief that the soul of humans persists after death, I expected that levels of afterlife beliefs would positively relate to the BHES. This prediction was supported by a positive relationship between afterlife beliefs and the BHES, $r(1316) = .32$, $p < .001$.

Relationship with insects. Two items were also included examining one's relationship with bugs (see Appendix). Participants reported the degree they felt that they were similar to small insects and bugs, and their fear of small insects and bugs. As the distinction between human and nonhuman is at the core of the BHES, there should be a negative relationship between the BHES and the item regarding human-insects similarity. Conversely, I did not expect a relationship with the BHES and being fearful of insects. The predicted findings for the similarity to insects item was observed, $r(3529) = -.18$, $p < .001$. There was also a positive relationship to the fearful of insect item, $r(3534) = .05$, $p < .01$, but this correlation is very weak.

Discussion

A psychometric analysis supported the reliability of the BHES with acceptable interitem reliability, and a principal axis factoring analysis supported all five items loading onto one factor. Additionally, the BHES has acceptable content and face validity. In terms of content validity, the items of the scale represent the different facets of the human essence discussed above: human

uniqueness, human nature, and the specialness of being human. As mentioned above, the definition for BHE does not explicitly incorporate the belief that humans are special, but both a theoretical foundation and the factor loading of the item mentioning humans being special suggests that specialness is an important aspect of the human essence. Regarding face validity, the items are straightforward and clear, with one explicitly stating, "There is a certain essence in being human." Though the scale is short, being only five items, it appears to have acceptable psychometrics properties, content validity, and face validity.

In terms of convergent validity, BHE was positively correlated to self-esteem, the acceptance/inclusion subscale of the GBS, Canadian identification, intrinsic religiosity, creationist beliefs, and afterlife beliefs, and negatively related to the rejection/exclusion subscale of the GBS, support for prostitution, evolutionary beliefs, and perceived similarity to bugs. Some of the correlations were smaller than originally expected (e.g., evolutionary beliefs and self-esteem). For the correlation of BHE and the evolutionary composite, although I expected that sharing common ancestry with other animals would lower BHE, social Darwinism (Degler, 1991) suggests that this is not necessarily the case. Additionally, participants may, on one hand accept evolutionary theory, but on the other believe that there remains a qualitative distinction between humans and other animals. In other words, although evolutionary theory does rest on a foundation of the common ancestry of living things, it does not necessarily prescribe the denial of a human essence.

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Table 2

Correlations with BHES.

Measure	r	N
Age	-.032	3502
Global self-esteem	.151**	3370
Acceptance/inclusion	.300**	1162
Rejection/exclusion	-.224**	1163
Canada	.257**	3533
Support of prostitution	-.241**	3527
Intrinsic Religiosity	.211**	1146
Controlling for extrinsic religiosity	.120**	1140
Extrinsic Religiosity	.182**	1143
Controlling for extrinsic religiosity	.055	1140
Creationist beliefs	.245**	3508
Evolutionary belief	-.119**	3518
Afterlife beliefs	.324**	1316
Similarity to bugs	-.175**	3529
Fearful of bugs	.045*	3534

Note. Higher scores on other scales indicate more of the trait in question. *

Correlation is significant at .05. ** Correlation is significant at .01.

In regards to the weak relationship between BHE and self-esteem, it may be that although BHE consists of a sense of value in being human, one may possess a belief that there is a human essence, yet feel that they possess less of this essence than others do. Socially excluded individuals perceive themselves to be less human than when not excluded (Bastian & Haslam, 2010). In addition, individuals may seek self-esteem through domains that are unrelated to those associated with the human essence, such as academic competence or being competitive (Crocker, Luhtanen, Cooper, & Bouvrette, 2003).

Overall, the BHES had respectable psychometric properties, reliability, content validity, and face validity. Although some aspects of convergent and discriminant validity face issues that need to be addressed with further research, other tests of convergent and discriminant validity provided initial support for the BHE construct.

Study 2

To validate the measure further, Study 2 examined the moderating role of BHE in people's reactions to stimuli that blur the distinction between human and non-human. Specifically, I measured people's reactions to humanlike technology as a function of BHE. While previous theoretical work suggested that near-humanlike representations elicit a sense of eeriness through visual perspective processes (Mori, 1970), other empirical and theoretical work has begun to look more closely at meaning-based processes (e.g., Gray & Wegner, 2012; MacDorman & Ishiguro, 2006).

To investigate the meaning-based process explanation more directly, Study 2 had participants read one of three articles. One article was about a female robotics researcher who was in the course of developing home cleaning robotics. Another article described a recently developed android (name "R25") that appeared to be humanlike, but still operated in a mechanical fashion. The other article was about a near humanlike android (named "Eve") that was capable of many human-typical social interactions. The androids depicted in the study looked incredibly close to being human, so all three conditions used the same images of the android. This strategy avoids confounding the content of the articles with different images. Participants reactions to the images would thus be based more on the meaning attributed to the images rather than visual differences. After reading the article, participants completed items about perceived traits of the target of the article, with perceived "creepiness" as the dependent variable. The administration of the BHES took place in a mass-testing session to assess its moderating role in perceptions of creepiness.

The first hypothesis is that ratings of creepiness would be higher for both android targets compared to the researcher in the control article would. If the eeriness associated with humanlike technology is due to the perceptions of the humanlike technology possessing an experiential mind, as argued by Gray and Wegner (2012), then perceptions of creepiness should be higher for an android that is capable of operating in a more advanced manner and expressing emotions more naturally. In this sense, creepiness ratings should be higher for the Eve target than the R25 target. Finally, the third hypothesis is that BHE will moderate

levels of perceived creepiness of the target in that higher levels of BHE will be associated with higher levels of perceived creepiness when rating the android compared to the researcher, whereas low levels of BHE will not be associated with perceived creepiness.

Method

Participants. The participants were 99 undergraduates at the University of Alberta who completed the study for partial course credit. Final analyses excluded seven participants; four due to suspicion, two for not following instructions, and one for having incomplete data. This left 92 participants (31 men, 59 women, and 2 missing) randomly assigned to read one of three articles.

Design. The design of the study was a two factor BHES x 3(article: control vs. R25 vs. Eve) design, with BHES scores as a subject variable and the article a between subjects factor.

Materials. *BHES.* The five-item BHES ($\alpha = .76$) was administered through a mass-testing procedure in the beginning of the term. The BHES used the same scale as in Study 1. I reversed coded the fourth item and calculated the mean score to denote BHE.

Personality measure. Participants completed Saucier's Mini-marker subset (1994) of the adjectives used in Goldberg's Big Five factor structure (1994) as a personality questionnaire in order to bolster the cover story used. In this measure, participants were asked to rate the degree to which how accurate the adjective provided was in describing based on a 9-point scale (1 = *extremely inaccurate*; 9 = *extremely accurate*).

Articles. Participants read one of three articles. One article was about a humanlike android (Eve condition) with the capability of engaging in complex social behaviors and resembled a human to a high level of detail. Another article discussed an android that appeared near humanlike, but operated rather mechanically (R25 condition). A control article discussed a robotics researcher (control condition) and her recent developments in robotic technology for use at home. As the developers, Baeg Moon-hong and KITECH, created the android model to be indistinguishable from humans visually, each of the three articles used the same two images of the EveR-1 android. During the suspicion probe, no participants mentioned that the target of the picture did not appear human, while many in the android conditions stated their astonishment at the plausibility of the android's human appearance when told that it was in fact an android.

Word fragment. Participants completed a word fragment task disguised as a distraction task. The word fragment task contained 20 different word fragments and the researcher asked participants to complete them as fast as possible with the first word that came to mind.

Quiz. To bolster the cover story, participants answered a series of 10 questions about the article that they read. The 10 questions were multiple choice and only used as a way to bolster the cover story.

Traits. Participants were asked to rate the target of the article on a number of traits, adopted from Alicke et al. (1985). Participants were asked to rate their agreement that the target of the first picture possessed a series of traits on a 7-

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point scale (1 = *strongly disagree*; 7= *strongly agree*). One of the traits on the list, "Creepy", was used as the dependent variable.

Procedure. Once present, participants were welcomed to the study and told that they would be completing a study that is investigating the relationship between personality and memory. In order to examine this relationship, the researcher told participants that they would first complete a personality measure and then engage in the memory portion of the study, which consisted of the following phases: study, distraction, and retrieval. The researcher then led participants to individual cubicles and asked to read and sign a consent form. Once participants consented, the participants completed the personality questionnaire. After completing this task, participants "began" the memory portion of the study. The first phase, referred to as the study phase, consisted of the researcher having the participant read an article and informing the participant that there will be a test on what they read later in the study. In actuality, the study phase allowed the researcher to randomly assign participants to one of the three articles that comprised the independent variable. The researcher told participants to read the article and study the pictures at their own pace and to open the cubicle door when they were ready to proceed to the next phase.

Next, the researcher told participants that it is common in memory studies to incorporate a distraction phase. For this distraction phase, participants completed a word fragment task and instructed to do so as fast they can with the first word that comes to mind. Instructions stressed that participants should work as fast as possible in order to go to the next phase. Once finished with the word

fragment completion, participants opened the cubicle door to let the researcher know they were ready to proceed.

In the final phase of the memory portion of the study, said to be the retrieval phase, participants answered questions about the article they received earlier. In the retrieval phase, participants first completed the retrieval quiz consisting of ten multiple-choice questions and then completed the trait measure of the target, which contained the dependent variable. Once all participants were finished, the researcher collected them into the main room, probed for suspicion, and fully debriefed.

Results

Participants in the R25 ($M = 4.28$, $SD = 1.78$) and Eve conditions found the target creepier ($M = 3.97$, $SD = 1.52$) than those in the control condition ($M = 1.87$, $SD = 1.43$; $F(2,90) = 20.90$, $p < .001$). No differences were found in perceived creepiness of the target between the two android conditions, $t < 1$, *ns*.

To test for a moderating effect of BHES scores on the relationship between the android articles and perceived level of creepiness, two separate regression analyses were conducted using model one in Andrew Hayes' (2012) PROCESS for SPSS, with one analysis comparing the R25 condition to the control and the other comparing the Eve condition to the control. I reverse scored the fourth item of the BHES and averaged the five items to form the BHE score. Article (control = 0, android = 1) was entered as the independent variable (X), Creepiness was entered as the dependent variable (Y), and BHE was entered as the moderator variable (M).

Results for the R25 vs. control regression analyses found that the article predicted perceived creepiness of the target, $b = 2.38$, $p <.001$. BHES scores were found to not be predictive of perceived creepiness, $t < 1$, ns. These results were qualified by the BHES x article interaction, $b = 1.24$, $p = .04$, $R^2 = .45$ (see Figure 1). To investigate the nature of the interaction, I conducted simple slope analyses at the mean level, one standard deviation above and one standard deviation below the mean of BHES scores. Whereas low levels (-1 SD; $p > .10$) of BHES did not predict perceived creepiness between the articles, mean ($b = 2.38$, $p < .001$) and high levels (+1 SD; $b = 3.60$ $p < .001$) were both found to be significant predictors.

Results for the Eve vs. control regression analyses found that the article predicted perceived creepiness of the target, $b = 2.10$, $p <.001$. BHES scores did not predict perceived creepiness, $t < 1$, ns. These results were qualified by the predicted BHES x article interaction, $b = 1.33$, $p = .01$, $R^2 = .47$ (see Figure 2). To investigate the nature of the interaction, I conducted simple slope analyses at the mean level, one standard deviation above and one standard deviation below the mean of BHES scores. While low levels (-1 SD, $p > .10$) of BHES did not predict perceived creepiness between the articles, mean ($b = 2.10$, $p < .001$) and high levels (+1 SD, $b = 3.36$, $p < .001$) were both found to be significant predictors.

Although an independent sample t-test found no significant differences in perceptions of creepiness between the R25 and Eve articles, I conducted another moderation analysis to test for any differences in the moderation of BHE between these two conditions. Results for the R25 vs. Eve regression analyses found that

the article did not predict perceived creepiness of the target, $t < 1$, *ns*, whereas

BHES scores were predictive of perceived creepiness $b = 0.60$, $p < .01$. These

results were not qualified by the BHES x article interaction, $t < 1$, *ns* (see Figure

3).

Discussion

The results from Study 2 offered mixed support for its hypotheses. In

support of the first hypothesis, participants found the android targets creepier than

the control, but inconsistent with hypothesis two, the two android conditions did

not differ in perceived creepiness. This may be due to suspicion of the content in

the Eve condition, in that participants did not necessarily believe that developers

were capable of creating an android with the type of social behavior described in

the article. Accordingly, three of the four participants excluded due to suspicion

were in the Eve condition with the other in the control condition. Interestingly,

suspicion appeared to be due to only the content of the article as no participants

mentioned they believed that the images were not human when informed, but

some were shocked to learn that the images were of an android.

In support of the third hypothesis, BHE did in fact moderate the

relationship between article target and perceived creepiness of the target. More

specifically, those with higher BHE found the androids creepier than the control,

while lower levels of BHE did not distinguish between the androids and the

control in terms of perceived creepiness. The moderation effect was present in

both regression analyses comparing the androids to control, but not in the

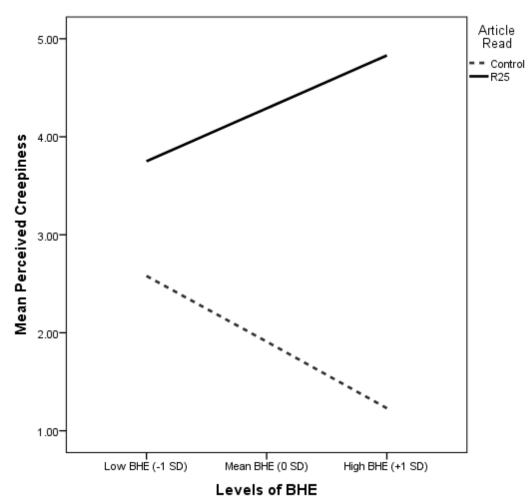regression analysis comparing both android conditions.

Figure 1. Effect of BHE and article condition on perceived creepiness for the
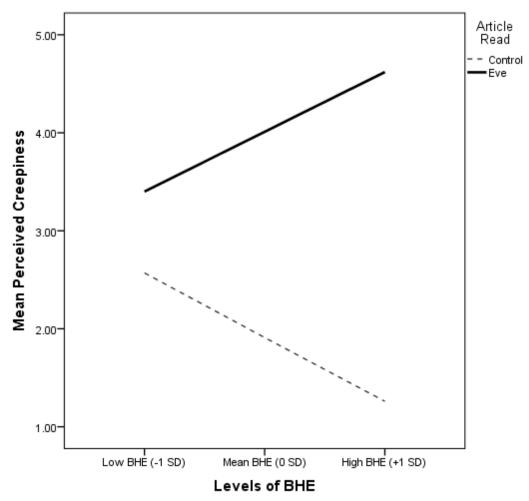
R25-control regression analyses.

Figure 2. Effect of BHE and article condition on perceived creepiness for the
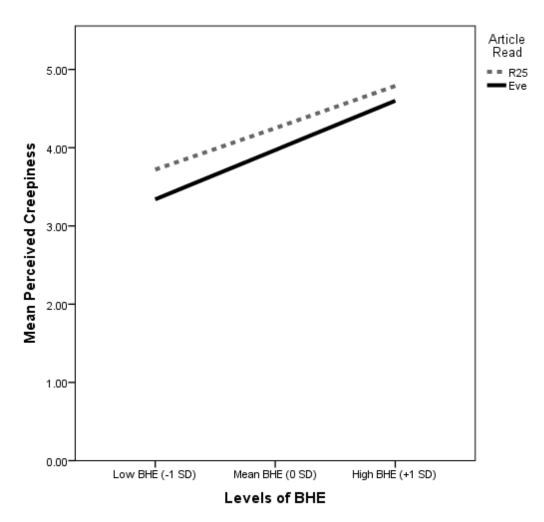
Eve-control regression analyses.

Figure 3. Effect of BHE and article condition on perceived creepiness for the

Eve-R25 regression analyses.

In an attempt to provide further support for the validity of the BHES and to examine the reach of the construct, I investigated the influence of BHES on the punishment of a dehumanized criminal. As previous research has found, people are more likely to inflict harsher punishments on an offender when the description of the crime is animalistic, thus dehumanizing the perpetrator (e.g., Goff et al., 2008; Vasquez et al., 2014). In a study conducted by Vasquez et al. (2014), they found that the harsher punishment was due to the perceptions that the perpetrator was viewed as more likely to reoffend when the crime was described with animalistic wording relative to neutral wording. Although not directly tested, the finding implies that the animalistically worded description may influence the reader to perceive that the dehumanized perpetrator lacks the uniquely human characteristics of self-control and civility, hence lacking aspects of the human essence, relative to the perpetrator from the neutrally worded description.

In addition, people will express less support or desire for an action if the description of that action highlights human-animal similarities (e.g., aggression; Motyl et al., 2013). By imbuing a sense of meaning into the behaviors we share with animals, we are widening the distinction between humans and animals. Therefore, if one believes that humans possess a unique essence that differentiates them from animals, then reading a description of a human behaving like an animal should be threatening and lead to the discouragement of that behavior. In contrast, if one does not believe that humans possess a unique essence, there should be no threat due to human-animal similarities and animalistic descriptions of a behavior

should not affect its desirability. Consequently, if one believes that there is a human essence and they perceive that the criminal is lacking this essence, then they should suggest a harsher punishment for the perpetrator than a non-dehumanized perpetrator who retains more of the human essence. Conversely, for those who do not believe that humans possess a unique essence, such as those who view humans to be similar to animals, describing an antisocial act as animalistic should not have the same influence, as it does not threaten what it means to be human.

To test this claim, I conducted a partial replication of Studies 1 and 2 from Vasquez et al. (2014). As in the original studies, participants read one of two descriptions of a case of an aggravated assault, one worded in an animalistic manner and the other non-animalistically. Participants then completed a set of questions about the case as if they were a member of a jury. One of the questions, the main dependent variable, was the suggestion of a prison sentence. Additional questions examined perceived likelihood of recidivism and the desire for retributive justice and were included for further analyses. Finally, in order to investigate the effect of the case wording on perceptions of humanness of the criminal, participants ranked the perpetrator on a series of traits adopted from Haslam et al. (2005).

The first hypothesis is that, in line with the previous findings of Vasquez et al., participants would suggest a higher prison sentence when they read a description of an aggravated assault containing animalistic wording compared to neutral wording. The second hypothesis is that this effect will be moderated by

BHE, in that higher levels of BHE (+1 SD) would predict higher suggested prison sentences in the animalistically worded condition than in the non-animalistically worded description. In terms of lower levels of BHE (-1 SD), there will be no change in the suggested prison sentence between the animalistically worded and non-animalistically worded descriptions.

Method

Participants. The participants were 89 undergraduates at the University of Alberta (25 men, 62 women, and 2 missing) who completed the study for partial course credit. In order for eligibility of the study, participants were required to complete the BHES in the mass testing session in the beginning of the academic term. Completion of the BHES was required due to its role in the moderation analysis of the main dependent variable.

Design. The design of the study was a two factor BHE x 2(Case wording: Animalistic vs. Non-animalistic) design with the case wording being a between-subjects factor and BHE being a subject variable. The main dependent measure was the severity of punishment for the convict in the description, operationalized as suggested years in prison. Secondary analyses examined the effect of case wording on the likelihood of the perpetrator reoffending, a retributive justice measure, and dehumanization through trait ratings.

Materials. *BHES.* The five-item BHES ($\alpha = .76$) was collected through a mass-testing procedure in the beginning of the term. The BHES used the same scale as in Study 1 and Study 2. I reverse scored the fourth item of the BHES and averaged the five items to form the BHE score.

Case description. Participants read one of two criminal case descriptions previously used by Vasquez et al. (2014). Both descriptions discussed the same incident of aggravated assault, but one was worded in an animalistic manner (the animalistic condition) and the other was worded non-animalistically (the neutral condition). In the animalistic condition, the description of the assault contained numerous animalistic words (e.g., roared, pounding, savage). In contrast, the non-animalistic description used neutral language describing the attack (e.g., shouted, punching, sustained). The case descriptions were worded as follows, with the non-animalistic phrasing in parentheses: "At around 9 pm, the perpetrator slunk (walked) onto the victim's premises. He crept (entered) into the house via the kitchen door. He then confronted the victim in the living room. He roared (shouted) at the victim before pounding (punching) him with his fists. The attack was savage (sustained) and the victim's blood splattered on (painted) the floor, walls, and ceiling. The perpetrator scurried (ran) away from the premises via the kitchen door."

To support the assumptions of the difference in levels of animality between the two case descriptions, Vasquez et al. conducted a pilot study that had participants read one of the two descriptions, but also told them that the incident took place near a zoo. After reading the description, participants rated to what degree they thought the offender could have been a human or chimpanzee, as well as how graphic, severe, and serious the crime was. Participants rated the animalistically worded description as being possibly more descriptive of a chimpanzee offender than the non-animalistically worded description, while the

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other ratings did not differ between the two. According to Vasquez et al., this finding supports the notion that the wording does indeed cast the offender in animalistic terms without also increasing the perceptions of the crime as more graphic and severe.

"You are the juror." After reading the case descriptions, participants completed a task called, "You are the juror". Congruent with Vasquez et al.'s (2014) methodology, the participants were informed that the offender, named Eric, was caught by law enforcement and found guilty of aggravated assault and that the participant will be asked a series of questions regarding the offender as a member of the jury. These items asked participants to recommend a prison sentence (one item), estimate the likelihood of the perpetrator reoffending (one item; Vaquez et al., 2014), and indicate the need for retributive justice (three items; Leidner, Castano, & Ginges, 2013). Finally, participants rated the perpetrator on a series of traits (Haslam et al., 2005). The first item (suggested prison sentence) was the main dependent variable, while the other measures (reoffending, the retributive justice items, and the traits) were for supplementary analyses.

Prison Sentence. After reading the case description, the participant completed an item that asked them to take the place of a juror and suggest a prison sentence for the perpetrator, which was the main dependent variable. The wording for the item was, "Eric was found guilty of aggravated assault and will be sentenced to serve time in prison. How long do you think Eric's prison sentence should be? Please circle the number below (1-6) that best represents your

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answer." Options for the item were scaled from zero years to 9-10 years across six intervals and split in 2-year increments, with anchors provided at zero years for no sentence, 3-6 years as a moderate sentence, and 9-10 years as a very high sentence as done in Vasquez et al. (2014).

Likelihood of Reoffending and Retributive Justice. Participants were then asked, "What is the likelihood that Eric will reoffend?" on a 7-point scale (1 = *definitely will not reoffend*; 7 = *definitely will reoffend*), which was also adopted from Vasquez et al. (Study 2, 2014). Finally, participants were asked to rate their agreement on a 7-point scale (1 = *strongly disagree; 7 = strongly agree*) for the three retributive justice items ("*the only way to restore justice is to punish Eric*", "*justice is served at the moment that Eric is punished*", and "*for the sake of justice, Eric has to suffer*"; Leidner et al., 2013).

Human traits. To measure the degree to which the perpetrator was dehumanized, participants rated the perpetrator on a series of traits (Haslam et al., 2005), in comparison to their self. The researcher gave the participants the following instructions, "Please indicate the degree to which you possess the following personality traits compared to Eric using the following scale." The list of 40 traits consisted of 32 traits that varied between high and low levels of desirability, as well between high and low levels of human uniqueness and human nature, independently. The additional eight traits were filler. Participants then rated each trait on a 5-point scale indicating the degree to which they possess each trait in relation to Eric (1 = *much less than Eric*; 5 = *much more than Eric*).

Procedure. Participants first completed a mass-testing session in which they completed the BHES. The completion of the BHES was required in order to be eligible to be in the study. Participants used an online research tool to enlist in the posted sessions of the study that offered up to four spots per session. At the time of the session, a single researcher welcomed the participants. The researcher informed the participants that they would be participating in a study investigating the relationship between personality characteristics and the perceptions of crime. The research used this cover story to distract the participants from the true nature of the study and to avoid possible demand characteristics. Once participants provided consent, the researcher gave them a packet containing a filler personality questionnaire to maintain the cover story. Once finished with the personality packet, participants received a packet that contained the case description and the "you are the juror" items, which included the likelihood to reoffend item, retributive justice items, and series of traits. Once the session was completed, the researcher probed the participants for suspicion and fully debriefed them in regards to the nature of the study.

Results

Suggested prison sentence. Inconsistent with the first hypothesis that the animalistically worded description would elicit harsher sentencing of the perpetrator relative to the neutrally worded description, no differences were found between conditions, $t(87) = -1.22, p = .23$. Participants in the animalistically ($M = 3.76, SD = 1.21$) and neutrally worded description ($M = 3.45, SD = 1.11$) conditions suggested similar levels of punishment for the perpetrator

To test for a moderating effect of BHES scores on the relationship between the case wording and suggested punishment, a moderation regression analyses was conducted using model one in Andrew Hayes' (2012) PROCESS for SPSS. I reverse scored the fourth item of the BHES and averaged the five items to form the BHE score. Case wording (neutral = 0, animalistic =1) was entered as the independent variable (X), suggested punishment was entered as the dependent variable (Y), and BHES scores was entered as the moderator variable (M). Results for the moderation analyses found that the case description read did not predict suggested punishment, $b = 0.30$, $t = 1.17$, $p = .39$. BHES scores were also not found to be predictive of suggest punishment, $b = -0.12$, $t < 1$, $p = .24$. Contrary to the hypothesis that BHE would moderate the effects of case wording on suggested punishment, the BHES x case wording interaction was non-significant, $b = -0.21$, $p = .46$, $R^2 = .04$ (see Figure 4).

Likelihood to reoffend and retributive justice. In attempts to understand why both hypotheses were unsupported, I conducted additional analyses between case description and the supplementary dependent variables: likelihood to reoffend and retributive justice. Perceptions that the perpetrator was likely to reoffend did not differ between the animalistically ($M = 4.80$, $SD = 0.92$) and the neutrally worded descriptions ($M = 4.80$, $SD = 0.73$; $t(89) = -0.26$, $p = .98$), but the BHES x case wording interaction was marginally significant, $b = -0.32$, $p = .07$, $R^2 = .04$. Although the interaction reached marginal significance, a simple slopes analysis found no significant effects at low (-1 SD), mean, or high (+1 SD) levels of BHE (see Figure 5).
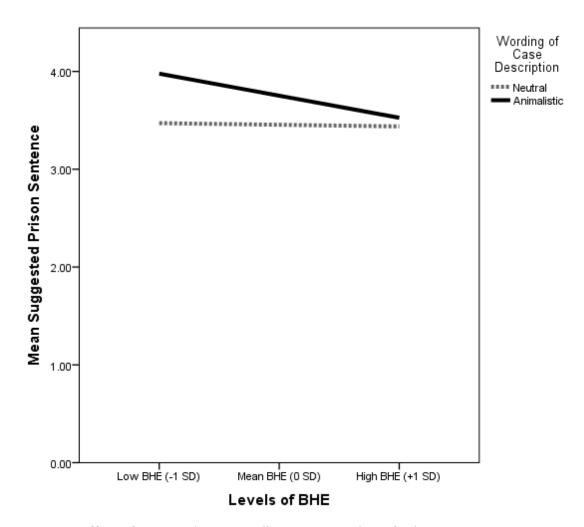
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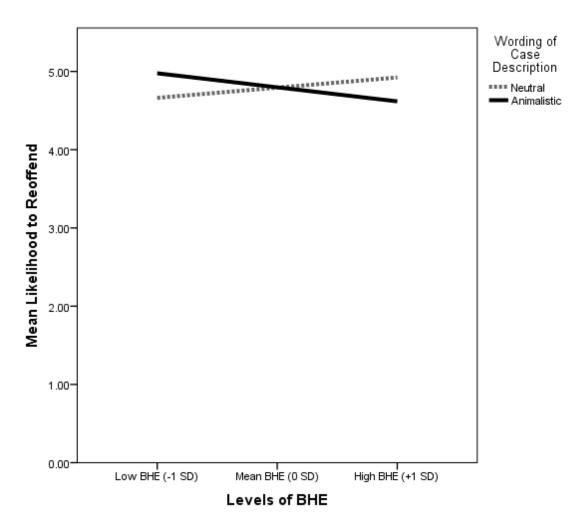*Figure 4*. Effect of BHE and case wording on suggestion of prison sentence.

Figure 5. Effect of BHE and case wording on perceptions of recidivism.

In order to assess case wording on the desire for retributive justice, the three retributive justice items were averaged to form a desire for retributive justice composite (α = .73). Similar to both suggested prison sentence and likelihood to reoffend, desire for retributive justice did not differ between the animalistically (M = 4.00, SD = 1.13) and the neutrally worded descriptions (M = 3.90, SD = 1.48; t(87) = -0.35, p = .72). In addition, the BHE x case wording interaction was not significant, b = -0.37, p = .17, R^2 = .08 (See Figure 6).

Human traits. As there were no effects of case wording on suggestion of prison sentence, perceptions of recidivism, and the need for retributive justice, it appears the manipulation may not have been effective in dehumanizing the perpetrator as it has in the studies conducted by Vasquez et al. (2014). In order to determine whether the manipulation worked in dehumanizing the animalistically described perpetrator, ratings of the traits were aggregated into a mean score for each combination of traits based on their level (high vs. low) of desirability, human uniqueness, and human nature, forming eight subsets of traits. Table 3 reports the trait categorization, mean values, and standard deviations. I conducted a set of analyses comparing the means of the eight subsets of traits between the two conditions. To correct for the familywise error rate inherent in running multiple tests, I used a Bonferroni correction. With eight analyses and the original alpha level at the standard .05, the corrected alpha was set at .006. With the new significance level, only one of the eight analyses reached significance: traits identified under the low desirability, high human uniqueness, and low human nature categorization (disorganized, ignorant, rude, and stingy). Participants in the
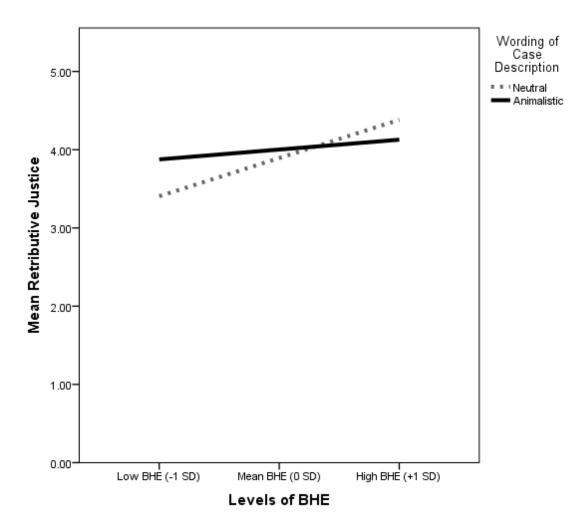
Figure 6. Effect of BHE and case wording on desire for retributive justice.

Table 3

Trait categorization, mean values, and standard deviations per condition for

Study 3.

Desirability	Uniquely human	Human nature	Traits	Traits attributed	
				Neutral M (SD)	Animalistic M (SD)
High	High	High	ambitious analytic imaginative sympathetic	3.81 (0.48)	3.71 (0.55)
		Low	broad-minded humble polite thorough	4.02 (0.51)	3.89 (0.58)
	Low	High	active curious friendly fun-loving	3.65 (0.43)	3.59 (0.45)
		Low	contented even-tempered relaxed selfless	4.13 (0.55)	4.01 (0.57)
Low	High	High	high-strung insecure irresponsible reserved	2.59 (0.49)	2.45 (0.51)
		Low	disorganized ignorant rude stingy	1.92 (0.46)	2.23 (0.51)
	Low	High	impatient impulsive jealous shy	2.28 (0.46)	2.49 (0.47)
		Low	simple timid uncooperative unemotional	2.61 (0.63)	2.52 (0.47)

neutral condition ($M = 1.92$, $SD = 0.48$) rated this category more representative of Eric than participants in the animalistic condition ($M = 2.23$, $SD = 0.51$; $t(87) = -2.95$, $p = .004$).

Discussion

Inconsistent with both hypotheses, the wording of an aggravated assault did not affect the participants' suggestion for punishment and did not interact with BHE in predicting the suggestion for a punishment. Additionally, case wording did not affect the perceptions of recidivism or need for retributive justice. In terms of not finding a moderating effect of BHE on the relationship between case wording and suggestion of prison sentence, one may argue BHE does not play a role in dehumanization processes. Although this conclusion is supported by the null findings in the moderation analyses, it may be too early to make this claim as I was unable to replicate the previously found effects of animalistic wording from Vasquez et al. (2014). As the manipulation was ineffective, it is unclear whether the hypotheses were appropriately tested.

Although others have found the effect of animalistic wording on suggestions of criminal sentencing (e.g., Vasquez et al., 2014), perhaps it was not found in the present study due to the current participants equating the aggravated assault as an animalistic act itself, regardless of wording. As both descriptions provided a graphic description, participants in either condition may have perceived the perpetrator to lack self-control and civility, both aspects of human uniqueness (Haslam, 2006). Alternatively, participants may have been aware of the animalistic wording and actively rated the perpetrator in

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the animalistic condition at the level they would have rated the perpetrator if the wording were more neutral. Although one category of traits differed between the two conditions, in that participants viewed undesirable traits that are high in human uniqueness and low on human nature to be more representative of the perpetrator in the neutrally worded condition, the other subsets did not significantly differ. This finding suggests that if the animalistic wording was effective in dehumanizing the perpetrator, it was a weak and minimal dehumanization effect and may not have been strong enough to influence the participants' responses on the items regarding the suggestion of a prison sentence, perceptions of recidivism, and need for retributive justice.

An additional potential reason that I was unable to find an effect of case wording is the difference in settings between the Vasquez et al. (2014) studies and the current study that may have influenced participants' responses. Vasquez et al. conducted their study in the field, approaching volunteers around a campus, whereas I conducted it in a laboratory. Even though a laboratory setting allows one to minimize many forms of noise that may persist within the field, it may also put participants in a different mindset than if a researcher approached them in public. According to cognitive-experiential self-theory (CEST; Epstein, 1983; Epstein, 1994), cognitive activity can occur either rationally or experientially. In a situation where participants are scheduled to complete a psychological study, informed that they would be completing personality questionnaires and answer questions about a convict, participants may employ a more rational mindset that is more deliberate and effortful (Epstein, 1994). In the current study, participants

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often claimed that it was difficult to engage in the task due to the lack of information and wished they had more information to make their decisions, suggesting that participants were in a more deliberate and rational mindset. In contrast, participants that were approached randomly on a college campus may have been caught off guard, unsure of exactly what they are doing, and apt to finish the procedure as soon as possible to get on with their day. This more informal process may have put them more in an experiential mindset that is more automatic and dependent on heuristics (Epstein, 1994), such as animalistic wording.

Another possible reason is that the relationship between BHE and animalistic language might only exist in the presence of a trigger or threat, such as mortality salience. Previous findings in the terror management literature have found support for mortality reminders serving as a trigger for moderation effects, including some incorporating essays regarding human-animal comparisons (e.g., Goldenberg et al., 2001; Goldenberg et al., 2002; Motyl, Hart, & Pyszczynski, 2010). For example, Goldenberg et al. (2001) assigned participants to first write about either their own death or dental pain and then read either an essay emphasizing human-animal similarities or differences. Participants who wrote about their own death and read the essay emphasizing human-animal differences rated their essay more favorably compared to those in the other conditions, who did not differ from each other. In addition, Goldenberg et al. (2002) found participants were less interested in the physical aspects of sex when they read the human-animal similarity (vs. difference) and wrote about their own death.

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Overall, this may suggest that in order for BHE to moderate the effects of the current study, the addition of a mortality salience condition may have been necessary. Although this does not explain why I failed to replicate the expected main effect of case wording, it may provide an additional step in future research related to BHE and dehumanization.

Overall, although I was unable to find the hypothesized effects, it is still too early to take any firm stance regarding the role of BHE in reactions to animalistically worded descriptions of others. As the manipulation failed to replicate previously found effects, it is uncertain whether I exposed participants to an adequate manipulation that would appropriately test the hypotheses. Further research should take into consideration the concerns regarding the potential need for triggers (e.g., mortality salience) and rational versus experiential mindsets of the participants when investigating whether BHE plays a role in dehumanization.

General Discussion

Though I have laid a foundation for the BHES within this thesis, further research needs to done in order to answer many questions before claiming the BHES' overall validity and utility. Although the BHES's psychometric properties, inter-item reliability, content validity, and face validity appear to be acceptable, some concerns remain regarding the convergent and discriminant validity of the measure. In terms of convergent validity, I expected the relationships between the BHES and the other constructs to be stronger and some relationships were likely only significant due to the rather large sample size ($N > 1,000$). Further tests for

reliability and validity should be conducted, such as administering a test-retest of the BHES and finding stronger forms of both convergent and divergent validity.

With respect to the utility of the BHES, the current studies only offered some mixed support. One should take into consideration that I failed to support the hypotheses in Study 3, including failing to replicate the previous findings of Vasquez et al. (2014) and conceptually replicate similar findings (e.g., Goff et al. 2008), so it is questionable whether my manipulation was effective in this study. However, I put forth some possibilities as to why I failed to replicate these findings, such as the potential effects regarding the difference in setting between the original and current study. Additional attempts to replicate the previous findings and properly test the hypothesis should consider these insights.

In contrast to the findings of Study 3, Study 2 found the moderating effect of BHE in relation to the perceptions of eeriness associated with humanlike representations in Study 2. As the role of humanness, and now BHE, in perceptions of humanlike representations and advanced intelligent technological software is a relatively new area, further research should attempt to replicate and expand on the current findings. In addition, further research should adopt previously used paradigms related to perceptions of humanlike representations in order to investigate what role BHE plays in the relationship between perceptions of humanlike representations and the sensations they elicit. For example, studies that incorporate functional androids (e.g., Bartneck, Kanda, Ishiguro, & Hagita, 2009) or image morphing software (e.g., Burleigh, Schoenherr, & Lacroix, 2013) can examine whether BHE influences the sensations elicited in all forms of

humanlike representations (e.g., a functional android vs. clips from the film Polar Express) or whether it is limited to more interactive forms of humanlike representations, such as the android described in the article used in Study 2.

Although it is unclear whether the BHES, in its current form, is an effective tool in measuring BHE, or even if BHE plays a role in the various areas of research discussed, it is hard to deny the influence of perceived humanness in the areas of research described above. Thus, the BHES, or similar analogues, should be further developed and tested.

Conclusion

The perception of what is and what is not human appears to play a large role in how we treat others. Although previous research has found that comparing others to animals or objects, and therefore denying them aspects of a human essence, may lead to aversive consequences, there has yet been an investigation into whether or not one's belief that such a human essence exists plays a role in the relationship between dehumanization and its aversive consequences. In order to initiate the research looking into this possible relationship, an instrument measuring the belief in a human essence needs to be developed. The present thesis put forth a potential measure for BHE, the BHES, which possessed acceptable reliability and received mixed validation. In a pair of studies that incorporated aspects of humanness and the human essence, there was support for a relationship between BHE and perceptions of humanlike technology, but not for the role of BHE in dehumanization processes (which may have been the result of an ineffective manipulation). Future research should continue to develop and validate

the BHES, and further assess its role in dehumanization processes, the existential

importance of being human, and our perceptions and interactions with humanlike

technologies.

References

Alicke, M. D. (1985). Global self-evaluation as determined by the desirability and controllability of trait adjectives. *Journal of Personality and Social Psychology*, *49*, 1621-1630.

Allport, G. W., & Ross, J. M. (1967). Personal religious orientation and prejudice. *Journal of Personality and Social Psychology*, *5*, 432-443.

Bain, P., Park, J., Kwok, C., & Haslam, N. (2009). Attributing human uniqueness and human nature to cultural groups: distinct forms of subtle dehumanization. *Group Processes & Intergroup Relations,12*, 789–805.

Bain, P., Vaes, J., Kashima, Y., Haslam, N., & Guan, Y. (2012). Folk conceptions of humanness: beliefs about distinctive and core human characteristics in Australia, Italy, and China. *Journal of Cross-Cultural Psychology, 43*, 53–58.

Bain, P. G., Vaes, J., & Leyens, J. (2014). *Humanness and dehumanization*. New York : Routledge, 2014.

Bandura, A. (1999). Moral disengagement in the perpetration of inhumanities. *Personality and Social Psychology Review*, *3*, 193-209.

Bartneck, C., Kanda, T., Ishiguro, H., & Hagita, N. (2009, September). My robotic doppelgänger- A critical look at the uncanny valley. In *Robot and Human Interactive Communication, 2009. RO-MAN 2009. The 18th IEEE International Symposium on Robot and Human Interactive Communication,* (pp. 269-276).

Bastian, B., Denson, T., & Haslam, N. (2013). The roles of dehumanization and

moral outrage in retributive justice. *PLOS ONE, 8*, 1-10.

Bastian, B., & Haslam, N. (2010). Excluded from humanity: The dehumanizing effects of social ostracism. *Journal of Experimental Social Psychology*, *46*, 107-113.

Burleigh, T. J., Schoenherr, J. R., & Lacroix, G. L. (2013). Does the uncanny valley exist? An empirical test of the relationship between eeriness and the human likeness of digitally created faces. *Computers in Human Behavior*, *29*, 759-771.

Castano, E., & Giner-Sorolla, R. (2006). Not quite human: Infrahumanization in response to collective responsibility for intergroup killing. *Journal of Personality and Social Psychology*, *90*, 804-818.

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, *1*, 245–276.

Cheng, Y., Lin, C. P., Liu, H. L., Hsu, Y. Y., Lim, K. E., Hung, D., & Decety, J. (2007). Expertise modulates the perception of pain in others. *Current Biology,17*, 1708-1713.

Crocker, J., Luhtanen, R. K., Cooper, M. L., & Bouvrette, A. (2003). Contingencies of self-worth in college students: Theory and measurement. *Journal of Personality and Social Psychology*, *85*, 894-908.

Darwin, C.R. (1859). *The Origin of Species*. London: John Murray.

Degler, C. N. (1991). *In search of human nature: The decline and revival of Darwinism in American social thought*. Oxford University Press.

Demoulin, S., Cortes, B. P., Viki, T. G., Rodriguez, A. P., Rodriguez, R. T.,

Paladino, M. P., & Leyens, J. P. (2009). The role of in-group identification

in infra-humanization. *International Journal of Psychology*, *44*, 4-11.

Demoulin, S., Leyens, J. P., Paladino, M. P., Rodriguez, R. T., Rodriguez, A. P.,

& Dovidio, J. F. (2004). Dimensions of "uniquely" and "nonuniquely"

human emotions. *Cognition & Emotion, 18,* 71–96.

Demoulin, S., Leyens, J. P., Rodríguez-Torres, R., Rodríguez-Pérez, A., Paladino,

P. M., & Fiske, S. T. (2005). Motivation to support a desired conclusion

versus motivation to avoid an undesirable conclusion: The case of infra-

humanization. *International Journal of Psychology*, *40*, 416-428.

Deutsche Film Gesellschaft. (Producer), & Hippler, F. (Director). (1940). The

Eternal Jew [Motion Picture]. Germany: Terra.

Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*. 6,

169-200.

Epley, N., Waytz, A., Akalis S., & Cacioppo, J. (2008). When we need a human:

Motivational determinants of anthropomorphism. *Social Cognition.*

19,114–120.

Epstein, S. (1983). The unconscious, the preconscious, and the self-concept.

Psychological Perspectives on the Self, *2*, 219-247.

Epstein, S. (1994). Integration of the cognitive and the psychodynamic

unconscious. *American Psychologist*, *49*, 709.

Fredrickson, B. L., & Roberts, T. (1997). Objectification theory: Toward

understanding women's lived experiences and mental health risks.

Psychology of Women Quarterly, 21, 173–206. doi:10.1111/j.1471-6402.1997.tb00108.x

Gelman, S. A. (1988). The development of induction within natural kind and artifact categories. *Cognitive psychology*, *20*, 65-95.

Goff, P., Eberhardt, J., Williams, M., & Jackson, M. (2008). Not yet human: Implicit knowledge, historical dehumanization, and contemporary consequences. *Journal of Personality and Social Psychology, 94*, 292–306.

Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment, 4*, 26-212.

Goldenberg, J. (2012). A body of terror: Denial of death and the creaturely body. In P. R. Shaver, & M. Mikulincer (Eds.). *Meaning, mortality, and choice: The social psychology of existential concerns* (pp. 93-110). Washington D.C.: American Psychological Association.

Goldenberg, J. L., Cox, C. R., Pyszczynski, T., Greenberg, J., & Solomon, S. (2002). Understanding human ambivalence about sex: The effects of stripping sex of meaning. *Journal of Sex Research, 39,* 310-320.

Goldenberg, J. L., Pyszczynski, T., Greenberg, J., Solomon, S., Kluck, B., & Cornwell, R. (2001). I am not an animal: mortality salience, disgust, and the denial of human creatureliness. *Journal of Experimental Psychology, General*, *130*, 427-435.

Gorsuch, R. L., & McPherson, S. E. (1989). Intrinsic/extrinsic measurement: I/E-

revised and single-item scales. *Journal for the Scientific Study of Religion*, *28*, 348-354.

Gray, K., & Wegner, D. M. (2012). Feeling robots and human zombies: Mind perception and the uncanny valley. *Cognition*, *125*, 125–130. doi:10.1016/j.cognition.2012.06.007.

Haslam, N. (2006). Dehumanization: an integrative review. *Personality and Social Psychology Review, 10*, 252–264.

Haslam, N. (2014). What is dehumanization? In P. Bain, J. Vaes, & J-P. Leyens (Eds.), *Humanness and dehumanization* (pp.34-48). New York: Psychology Press.

Haslam, N, & Bain, P. (2007). Humanizing the self: moderators of the attribution of lesser humanness to others. *Personality and Social Psychology Bulletin, 33,* 57–68.

Haslam, N., Bain, P., Douge, L., Lee, M., & Bastian, B. (2005). More human than you: attributing humanness to self and others. *Journal of Personality and Social Psychology, 89*, 937–950.

Haslam N., Kashima, Y., Loughnan, S., Shi, J., & Suitner, C. (2008). Subhuman, inhuman, and superhuman: contrasting humans with nonhumans in three cultures. *Social Cognition. 26*, 248–258.

Haslam, N., & Loughnan, S. (2014). Dehumanization and infrahumanization. *Annual Review of Psychology*, *65*, 399-423.

Haslam, N., Loughnan, S., & Holland, E. (2013). The psychology of humanness.

In S. J. Gervais (Ed.), *Objectification and (de)humanization: The 60th Nebraska Symposium on motivation* (pp. 25-51). New York: Springer.

Haslam, N., Loughnan, S., Reynolds, C., & Wilson, S. (2007). Dehumanization: A new perspective. *Social and Personality Psychology Compass*, *1*, 409-422.

Haslam, N., Rothschild, L., & Ernst, D. (2000). Essentialist beliefs about social categories. *British Journal of Social Psychology*, *39*, 113-127

Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling, from http://www.afhayes.com/public/process2012.pdf

Heflick, N., & Goldenberg, J. (2009). Objectifying Sarah Palin: evidence that objectification causes women to be perceived as less competent and less fully human. *Journal of Experimental Social Psychology, 45*, 598–601.

Hetey, R. C., & Eberhardt, J. L. (2013). Cops and Criminals . In P. Bain, J. Vaes, & J-P. Leyens (Eds.), *Humanness and dehumanization* (pp.147-166). New York: Psychology Press.

Hodson, G., MacInnis, C. C, & Costello, K. (2014). (Over)valuing "humanness" as an aggravator of intergroup prejudices and discrimination. In P. Bain, J. Vaes, & J-P. Leyens (Eds.), *Humanness and dehumanization* (pp.86-110). New York: Psychology Press.

Jackson, L., & Gaertner, L. (2010). Mechanisms of moral disengagement and their differential use by right-wing authoritarianism and social dominance orientation in support of war. *Aggressive Behavior, 36*, 238–250.

Jahoda, G. (2014). An anthropological history of dehumanization from late-18th century to mid-20th centuries. In P. Bain, J. Vaes, & J-P. Leyens (Eds.), *Humanness and dehumanization* (pp.13-33). New York: Psychology Press.

Johnson-Laird, P.N., & Oatley, K. (1989). the language of emotions: An analytics of a semantic field. *Cognition and Emotion, 3*, 1-27.

Keil, F. (1989). *Concepts, kinds, and cognitive development*. Cambridge, MA: MIT Press.

Kemper, T. D. (1987). How many emotions are there? Wedding the social and automatic components. *American Journal of Sociology*. *92,* 263-289.

Leidner, B., Castano, E., & Ginges, J. (2013). Dehumanization, retributive and restorative justice, and aggressive versus diplomatic intergroup conflict resolution strategies. *Personality and Social Psychology Bulletin, 39*,181– 192.

Leyens, J. P. (2014). Humanity Forever in Medical Dehumanization. In P. Bain, J. Vaes, & J-P. Leyens (Eds.), *Humanness and dehumanization* (pp.167- 185). New York: Psychology Press.

Leyens, J. P., Rodriguez-Torres, R., Rodriguez-Perez, A., Gaunt, R., Paladino, M., et al. (2001). Psychological essentialism and the differential attribution of uniquely human emotions to ingroups and outgroups. *European Journal of Social Psychology, 81*, 395–411.

Lopez, D. (1998). *Prisoners of Shangri-la: Tibetan Buddhism and the West*. Chicago: University of Chicago Press.

MacDorman, K. (2005, July). Androids as an experimental apparatus: Why is there an uncanny valley and can we exploit it? In *CogSci-2005 workshop: Toward social mechanisms of android science* (pp. 106–118).

MacDorman, K.F., & Ishiguro, H. (2006).The uncanny advantage of using androids in social and cognitive science research. *Interaction Studies*, *7*, 297–337. http://dx.doi.org/10.1075/is.7.3.03mac.

Malone, G. P., Pillow, D. R., & Osman, A. (2012). The general belongingness scale (GBS): Assessing achieved belongingness. *Personality and Individual Differences*, *52*, 311-316.

Maslach, C. (2003). Job burnout new directions in research and intervention. *Current Directions in Psychological Science*, *12*, 189-192.

Mazrui, A. A. (1968). From social Darwinism to current theories of modernization: A tradition of analysis. *World Politics*, *21*, 69-83.

Medin, D. L. (1989). Concepts and conceptual structure. *American Psychologist*, *44*, 1469-1481.

Mitchell, W. J., Szerszen, K., Sr., Lu, A. S., Schermerhorn, P. W., Scheutz, M., & MacDorman, K. F. (2011). A mismatch in the human realism of face and voice produces an uncanny valley. *i-Perception*, *2*, 10–12. http://dx.doi.org/10.1068/i0415.

Mori, M. (1970/2012).The uncanny valley (K. F. MacDorman & Norri Kageki, Trans.). *IEEE Robotics and Automation*,*19*, 98–100. (Original work published 1970). doi:10.1109/MRA.2012.2192811.

Motyl, M., Hart, J., Cooper, D. P., Heflick, N., Goldenberg, J., & Pyszczynski, T.

(2013). Creatureliness priming reduces aggression and support for war. *British Journal of Social Psychology*, *52*, 648-666.

Motyl, M., Hart, J., & Pyszczynski, T. (2010). When animals attack: The effects of mortality salience, infrahumanization of violence, and authoritarianism on support for war. *Journal of Experimental Social Psychology, 46,* 200-203.

Obermann, M. (2011). Moral disengagement in self-reported and peer-nominated bullying. *Aggressive Behavior, 37*, 133–44.

O'Brien, G. V. (2003). Indigestible food, conquering hordes, and waste materials: Metaphors of immigrants and the early immigration restriction debate in the United States. *Metaphor and Symbol*, *18*, 33-47.

Opotow, S. (1990). Moral exclusion and injustice: An introduction. *Journal of Social Issues, 46*, 1–20.

Paladino, M. P., Vaes, J., Castano, E., Demoulin, S., & Leyens, J. P. (2004). Emotional infrahumanization in intergroup relations: The role of national identification in the attribution of primary and secondary emotions to Italians and Germans. *Current Psychology of Cognition*, *22*, 519–536.

Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

Rothbart, M., & Taylor, M. (1992). Category labels and social reality: Do we view social categories as natural kinds? In G. R. Semin & K. Fiedler (Eds.), *Language and social cognition* (pp. 11–36). London: Sage.

Rudman, L., & Mescher, K. (2012). Of animals and objects: Men's implicit

dehumanization of women and likelihood of sexual aggression.

Personality and Social Psychology Bulletin, 38,734–46

Saucier, G. (1994). Mini-markers: A brief version of Goldberg's unipolar Big-Five markers. *Journal of Personality Assessment*, *63*3, 506-516.

Schuldiner, C. (1993). In human form [Recorded by Death]. On *Individual thought patterns* [CD]. New York City, NY: Relativity Records.

Smith, D. L. (2011). *Less than human: Why we demean, enslave, and exterminate others*. New York: St. Martin's Press, 2011.

Sroufe, L. A. (1979). The coherence of individual development: Early care, attachment, and subsequent developmental issues. *American Psychologist*, *34*, 834-841.

Vaes, J., Leyens, J. P., Paola Paladino, M., & Pires Miranda, M. (2012). We are human, they are not: Driving forces behind outgroup dehumanisation and the humanisation of the ingroup. *European Review of Social Psychology*, *23*, 64-106.

Vasquez, E. A., Loughnan, S., Gootjes-Dreesbach, E. & Weger, U. (2014), The animal in you: Animalistic descriptions of a violent crime increase punishment of perpetrator. *Aggressive Behavior*, *40*, 337–344. doi: 10.1002/ab.21525

Vasiljevic, M., & Viki, G. T. (2014). Dehumanization, moral disengagement and public attitudes to crime and punishment. In P. Bain, J. Vaes, & J-P. Leyens (Eds.), *Humanness and dehumanization* (pp.129-146). New York: Psychology Press.

Viki, G., Fullerton, I., Raggett, H., Tait, F., & Wiltshire, S. (2012). The role of

    dehumanization in attitudes toward the social exclusion and rehabilitation

    of sex offenders. *Journal of Applied Social Psychology, 42*, 2349–2367.

Viki, G., Osgood, D., & Phillips, S. (2013). Dehumanization and self-reported

    proclivity to torture prisoners of war. *Journal of Experimental Social*

    Psychology, 49, 325–328.

Appendix: The Belief in Human Essentialism Scale and Measures Used in Study 1

Belief in Human Essentialism

There are core traits that define what it means to be human.

Human beings are unique.

Human nature is something that cannot be imitated.

There is nothing special about being human. (R)

There is a certain essence in being human.

Support for Prostitution

Prostitution should be legalized.

There is nothing wrong with prostitution.

Belief in Creationism

To what extent do you believe in the Judeo-Christian account of creation (i.e.,

that God created the universe in 6 days and rested on the 7th)?

To what extent is the belief of creationism an important part of your life?

Belief in Evolution

To what extent do you believe in evolution?

To what extent is the belief of evolution an important part of your life?

Please rate how similar/different you think you are to small insects.

To what extent are you afraid of small insects or bugs.

Canadian Identification

I am proud to be Canadian.

I define myself as Canadian.

I would proudly display the Canadian flag.

Being Canadian is an important part of my self-worth.

I identify strongly as a Canadian.

Afterlife Beliefs

I am certain that my soul will exist in the afterlife.

I doubt that any part of me will continue beyond this life.

The essence of who I am will continue after the death of my physical body.