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# Burdens of the Body Weigh More than We Know: How Weight Impacts Judgments of a Simulated Vehicular Pursuit

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## Abstract

The purpose of this project was to replicate research on embodied cognition and extend it to the judgments related to law enforcement, specifically decisions associated with the use of force. Excessive use of force by police officers is often characterized as an act driven by racism and ethnic and social biases. However, decisions are far more complex and are shaped by many psychological and environmental factors. The current study examined how one of these factors, the perception of physical or metaphorical weight, may influence judgments about suspect dangerousness and incident severity. Participants were randomly assigned to one of four conditions in which the experience of weight was manipulated by holding a heavy clipboard, wearing a mock police duty belt, or pinning on a police badge. They watched a video of a police vehicular pursuit, assessed the dangerousness of the event and made judgments about the behavior of the

officers and driver. Results showed that Caucasians rated the use of force in the video as more appropriate and tended to have more positive police perceptions than other race and ethnic groups combined. Participants in the police badge and duty belt condition were more correct about the details of the vehicular pursuit and perceived the driver as significantly more dangerous.

## Introduction

Each of us makes countless consequential and inconsequential decisions every day, many of which require nearly instantaneous response and are evaluated for their rationality only if the outcomes are sub-optimal. Most of the thousands of decisions we make every day are born more from our immediate abstract and intuitive understanding of the world than from contemplative verbal logic. Much research indicates that behaviors are strongly influenced by environmental information that is perceived and processed implicitly, or without conscious awareness (Bargh, Chen, & Burrows, 1996; Doyen, Klein, Pichon, & Cleeremans, 2012; Huang, Sedlovskaya, Ackerman, & Bargh, 2011; Yee & Bailenson, 2009). The term psychological researchers use to describe the implicit effects of environmental conditions, including physical and sensory experiences, is embodied cognition, which is also sometimes called the “body brain” (Claxton, 2003). Embodied cognition is a type of heuristic, or rule of thumb widely used for decision-making under time constraints, when attentional resources are strained, when personal investment or efficacy is low, and in conditions of uncertainty (Tversky & Kahneman, 1974).

Police officers, who are arguably called upon to make consequential judgments more quickly and immediate-

ly than most decision-makers, are also among the most criticized for using heuristics over reflective, thoughtful processes. Accusations of racism and ethnic and social biases are common when police use-of-force decisions are routinely subject to post hoc evaluations by experts and laypersons with very different experiences and understandings of the world, particularly when all or part of the incident appears on social media for public scrutiny. However, thoughts, decisions, and behaviors are influenced by far more than individual differences in attitudes. The relevance of heuristics to police officer decision-making has been examined, but there is no literature to date on the effects of embodied cognition on use of force, which is the focus of the current study.

### **Literature Review**

That humans make most decisions and perform many behaviors automatically and without conscious awareness was persuasively demonstrated by Bargh, Chen, and Burrows (1996) who found that peripheral cues and unrelated tasks were sufficient to automatically activate subsequent behaviors. For example, those exposed to rude words (e.g., interrupt, bother, intrude, etc.) during a sentence completion task were later more likely to interrupt a researcher's conversation and rate the researcher as rude and impolite. Similarly, those with sentences that included words stereotypical of the elderly (e.g., Florida, gray, retired, etc.) later walked more slowly to an elevator. The same authors also found that subliminal exposure to a black-and-white photograph of an African American face (versus a Caucasian face) prompted a more hostile response to a fictitious computer crash. The effect was found regardless of explicit racial attitudes; those who consciously expressed no racial prejudices were just as likely to be hostile as par-

ticipants who scored high in racism.

To study the effects of the types of non-conscious biases demonstrated by Bargh, Chen and Burrows (1996) on police officer decisions, Payne (2001) designed a video game in which a photo of a face (African American or Caucasian) would be a signal to pay attention to the second picture, which was to be classified as either a gun or a tool by pressing the appropriate key. The 31 Caucasian undergraduate participants more accurately and quickly identified guns preceded by an African American face and tools preceded by a white face. In a follow-up study with the addition of a time constraint, participant errors revealed biases. The 32 Caucasian undergraduates were more likely to mistake a tool for a gun when they had seen a black face prior to making their classification.

Correll et al. (2002) replicated and extended Payne's 2001 study by adding a decision to "shoot" the target in a video game that depicted Caucasian and African American models who stood in front of various backgrounds holding either a gun or some other object. Participants made decisions to shoot African American targets more quickly, regardless of the presence of a gun, and were less likely to shoot armed and unarmed Caucasian targets. In a series of three follow up studies, the time to respond was reduced, individual difference scales to assess prejudice were added, and a more diverse population was solicited. When participants had less time to respond, they more accurately identified African Americans as armed and chose to shoot with greater frequency, and the effect was stronger for those who associated African Americans with violence and aggression.

In a later study, Correll (2007) measured the effects of racial cues in a shoot/don't shoot video game that simulated the split-second decisions that a police officer might make. In the first two studies, participants were racially diverse police officers and civilians who saw an armed or unarmed African American or Caucasian men in various natural surroundings. Police officers were significantly less likely to hit the "shoot" button than civilians, and were more accurate in the identification of a weapon. Only the community group showed significant racial bias in the decision to shoot. There was no relationship between explicitly measured racial biases (survey responses) and accuracy or response speed.

Stereotypes are heuristics, or rules of thumb that allow us to make quick decisions with little cognitive effort (Chaiken, 1980). They lead to judgments about category membership based on superficial qualities over statistical frequencies (Tversky & Kahneman, 1977; 1983). In an example of how stereotyping may influence police work, Kahn, Goff, Lee, and Motamed (2016) asked naïve participants to rate the booking photos from 177 randomly selected cases on the following traits: age, injury severity, racial stereotypicality, and racial classification. Racial stereotypicality was predictive of less use of force in arrests of Caucasian suspects, but was not predictive in arrests of African American suspects, a finding the authors suggest may reflect a pro-white bias and police concern with protecting stereotypically representative Caucasians. Reisig, McCluskey, Mastroski, and Terrill (2004) found evidence that suspects also engaged in heuristic thinking that may ultimately influence police use of force. The authors studied twelve police beats with similar qualities located in Indianapolis, Indiana and St. Petersburg, Florida. They found that

disrespectful reactions to officers from African American suspects were more likely in the presence of an audience and in low-income neighborhoods, suggesting to the authors that African American suspects may react according to their own stereotypes about police.

While it is tempting to suggest that heuristics are an example of lazy thinking or decision makers' disregard for accuracy, it is important to recognize that heuristics are a form of world knowledge gained from experience and observations (Higgins, 1989; Smith, 1984), including information from bodily sensations and movement (Alban & Kelley, 2013). Many researchers have found evidence that concrete experiences of the body act as heuristics by activating knowledge structures that shape cognition (memory, attention, emotion, perception, judgment, decision-making), behaviors, and body movements (Zhong & Leonardelli, 2008; IJzerman & Semin, 2009; Zhong, Bohns, & Gino, 2010; Lee & Schwarz, 2010; Proffitt, 2005; Jostmann, 2005). One of the most frequently cited and well-known examples is the "facial feedback hypothesis" (Laird, 1984; Tourangeau & Ellsworth, 1979), or the influence of facial expression on responses and evaluations. For example, activation of smile muscles (by holding a pencil between the teeth) or frown muscles (by holding a pencil between the lips), reliably predicts the "funniness" ratings of comics (Flack, 2006; Schallhorn & Lunde, 1999, among others).

Recent studies of heuristics related to feedback from the body to the mind, or embodiment, includes work on the effects of temperature cues on social judgments. Participants who held a warm drink have been found to rate their own relationships as more intimate

(IJzerman & Semin, 2009), regard others as having a warmer personality (i.e., generous, caring) (Williams & Bargh, 2008), and more inclined to choose a gift for a friend instead of for themselves (Williams & Bargh, 2008) than those who held a cold drink. In other studies, manipulations of arm movements have been found to influence evaluations. For example, those who pulled something toward themselves (arm contraction) later reported greater liking for the object than those who had pushed it away (arm extension) from them (Cacioppo, Priester, & Berntson, 1993). Chen and Bargh (1999) found that arm contraction improved subsequent reaction times to positive stimuli, while arm extension facilitated responses to negative stimuli.

More relevant to the current study is research on the effects of weight on thoughts and decisions, and extending embodied cognition on weight to law enforcement. Researchers have argued that over time we learn that lifting and moving heavier objects requires more physical effort, and most adults use and understand weight as a metaphor for both cognitive effort (something can weigh on our mind, can be a weight on our shoulders) and for value or importance (issues can be weighty). For example, Proffitt and colleagues (1999; 2005) assigned some participants to wear a heavy backpack when they rated the distance and steepness of a hill. The hypothesis that the estimates would be a function of geometric properties, actual distance, and the amount of effort required to travel up the hill, was supported. Participants who wore a heavy backpack perceived hills to be steeper and distances to be longer than the actual measurements. Jostmann, et al. (2009) also found that carrying physical weight impacted assessments. In a series of studies the authors asked participants to stand

while completing a survey attached to a heavy or light clipboard. In the first study, participants estimated the value of foreign money by indicating how many of a domestic currency would be needed to purchase each stated quantity of foreign currency. Those who held the heavy clipboard rated the value of foreign currency more highly than those who held a lighter clipboard. In a followup study, undergraduate participants assigned to the heavy clipboard condition rated student opinions as more important in contributing to university policy decisions. In the third study, students first provided judgments of their satisfaction with the city's mayor (i.e., competent, likeable, trustworthy) and then rated the city in which their university was located. City attitudes were positively correlated mayor evaluations, but only in the heavy clipboard condition. In Study 4, participants rated the extent to which they agreed with strong and weak arguments in favor of a controversial subway that was under construction in their city and then rated how confident they were in their own opinion regarding the subway. While all participants agreed more with the strong arguments, those who held the heavy clipboard showed greater agreement with strong arguments, less agreement with weak arguments, and were more confident in their own opinions about the subway project.

The embodied effect of clothing, including its color, has also been investigated. For example, Frank and Gilovich (1988) found that undergraduates asked to wear a black sports jersey subsequently chose to engage in more violent and aggressive activities than those given a white sports jersey. In a field study on police uniform color, Johnson (2013) measured police aggression and aggression between police officers and citizens using

data from the Federal Bureau of Investigation and the U.S. Bureau of Justice, as well as U.S. Census Bureau statistics for 250 medium- to large-city police departments (cities of 100,000 to over 8 million people, with police departments of 87 to 38,000 officers). The rate of assaults on police officers (per 100 officers) for each city, the rate (per 100 officers) at which police officers shot and killed citizens, substantiated complaint rate (per 100 officers), and unsubstantiated complaints were compared. Police departments with dark uniforms collectively had lower levels of aggression on all four dependent measures than police departments with lighter uniforms, but only the higher mean rate for the killing of citizens by dark-uniformed police departments was statistically significant.

Adams and Galinsky (2012) introduced the term “enclothed cognition” to describe the form of embodied cognition specifically related to the “systematic influence of clothes on the wearer’s psychological processes and behavioral tendencies” (p. 919). In three studies, the authors found support for their hypothesis that the symbolic meaning and the physical experience of wearing a lab coat would influence task attention and reduce errors. In Study 1, participants who wore a lab coat condition made about half as many errors in an implicit associations task. In Studies 2 and 3, participants examined pairs of pictures and, as quickly as possible, found as many of the four differences between them. Those who wore a lab coat described as a “doctor’s coat” found more differences than participants who wore the same lab coat described as a “painter’s coat” or those who simply saw or described the special meaning of a “doctor’s coat.” Fredrickson, Roberts, Noll, Quinn and Twenge (1998) also found support for enclothed

cognition. The authors found that women assigned to wear a bikini reported feeling more ashamed, ate less, and performed worse on a math test.

The current study was designed to replicate and extend the above research on the embodiment of weight and clothing and to answer Johnson’s (2013) call for research into the influence of clothing and color within the criminal justice system, which “is currently lacking and strongly encouraged” (p. 242). Johnson specifically noted the need for experimental research on police uniform and citizen behavior that controls for situational factors, including offense severity and the behaviors and demeanors of the officers and citizens involved. We expected to replicate findings on the effects of physical weight on judgments of the physical environment, and value and importance of abstract concepts (Jostman, 2009; Proffit, 1999). We also expected to replicate the effect of uniform on attention to detail (Adams & Galinsky, 2012). We extended prior research by experimentally manipulating the experience of physical weight and uniform clothing on participant’s judgments of police officer use of force.

Participants judged an ambiguous (no predetermination of guilt) vehicle pursuit (filmed from an officer’s body camera) while they experienced levels of physical weight and metaphorical weight while responding to the stimuli. Physical weight was manipulated in two ways. To test the effect of physical weight alone, and to replicate Jostmann, et al. (2009), some participants held a heavy clipboard. Others wore a heavy-duty belt similar to what is worn by police officers in the field, who carry about 20 pounds of equipment (flashlight, radio, weapon, baton, gloves, and pepper spray;



Kozlowski, 2010) as part of their uniform. Officers also wear a badge which is an emblem of their status and is metaphorically, but not physically, weighty. In the current study, a police badge was worn to stimulate thoughts related to the metaphorical weight (authority, importance, and responsibility) of law enforcement. In one condition, participants wore both the duty belt and the badge, the combined weight of which was meant to represent the physical and metaphorical weight typical of police work.

The dependent variables were judgments of the event's (vehicle pursuit) dangerousness, evaluations of police, and accuracy of memory for event details. It was expected that responses would increase incrementally as follows: control condition (no added weight, lowest evaluations), metaphorical weight (wearing a police badge), physical weight (holding a heavy clipboard) and both metaphorical and physical weight simultaneously (wearing a badge and gear similar in weight to a police uniform, highest evaluations).

## **Method**

### **Participants**

Seventy-one (21 males, 50 females) introductory psychology students, aged 18 to 44 ( $M = 20$ ), were recruited from the Psychology Department subject pool in the Fall 2016 semester. All reviewed consent materials before they began and were thoroughly debriefed at the end of the study. Participants were randomly assigned to one of four conditions: Control condition (no added weight), Condition 2 (metaphorical weight, wearing a police badge), Condition 3 (physical weight, holding a heavy clipboard) and Condition 4 (both metaphorical and physical weight simultaneously, wearing a badge

and gear similar in weight to a police uniform).

### **Materials**

The materials were a weighted clipboard, a badge, and a mock duty belt. Although a police officer's duty belt typically weighs 20 lbs, the belt that the participant wore weighed 12lbs to avoid any strain or injury of the participant. There was a flashlight, radio, gloves, and (fake, but realistic) weapons, including a gun, baton and pepper spray. The clipboard weighed almost 1lb. The badge was a heavy-gauge metal, 6-point sheriff's badge. The sheriff badge condition was included to measure the metaphorical weight of police work and distinguish it from the metaphorical weight prompted by wearing a police duty belt. The visual stimulus was a three minute video obtained from the website, Youtube (RawLeak, 2015). This video showed a high speed vehicular pursuit from the perspective of an officers' body camera. The survey packet included factual and opinion questions about the video and perceptions of police behavior. There were four questions related to driver dangerousness (i.e., "the citizen's car hit a police car"), two about police fairness (i.e., "the officer made decisions about what to do in fair ways"), four about police use of force (i.e., "the officers were excessively violent here"), five global attributions about police behavior (i.e., "the officer should be reprimanded or punished in some way"), and 13 factual questions (i.e., "an officer allowed the driver to stop before making decisions").

### **Procedure**

Participants completed the study individually. In an attempt to minimize effects of experimenter gender, race, dialect or appearance, participants did not personally interact with the researcher. A receptionist (who

appeared to be separate from the entire study) showed the participant to the experimental room, which was equipped with a large screen television. The researcher spoke with the participants through an intercom and could view them through the one-way mirror. Participants began by sitting at a table to review consent materials and to complete a brief demographic survey. All participants stood while responding to the video. Participants were randomly assigned to condition ( $n = 18$  for all conditions). Those in the Control Condition were instructed to stand at a small table placed in front of a large screen television. In Condition 2, participants were told to pick up the weighted clipboard and stand facing the television screen. In Condition 3, participants were instructed to pin on the police badge and then stand at the table. In Condition 4, participants were asked to pin on a police badge, put on the mock duty belt, and stand at the small table. Next, the experimenter displayed the vehicle pursuit video, after which participants responded to the subjective and factual questions.

## Results

Subjective video survey items related to driver dangerousness (4), police fairness (2), use of force (4), global attributions of positive police behavior (5) and facts recalled in favor of police (13), were combined into single measures for each category. The 13 factual items were also scored for correctness and combined into a single measure of accuracy. The subjective measures were positively correlated with each other. Only one measure, facts recalled in favor of police, was significantly correlated with accuracy, and that relationship was negative. The more participants interpreted the facts in a manner favorable to the officers involved, the less likely they were to be correct (see Table 1 for in-

tercorrelations).

There were no gender differences in subjective or factual scores; however, Caucasians ( $n = 45$ ) were significantly more likely to judge the use of force depicted in the video as appropriate ( $M = 5.5$ ,  $SD = .1$ ) than those of other ( $n = 24$ ) race and ethnic groups combined ( $M = 4.8$ ,  $SD = .2$ ;  $F(1, 67) = 6.12$ ,  $p = .01$ ). Participants did not demonstrate racial bias in rating the race of the driver; participants in all conditions indicated that it was equally likely that the driver was Caucasian, African American, Hispanic or "Other."

There was no support for the hypothesis that judgments of the event's dangerousness, evaluations of police behaviors, and accuracy of memory for event details would increase incrementally as metaphorical and physical weight increased, so the control (no added weight), metaphorical weight (wearing a police badge), and physical weight (holding a heavy clipboard) conditions were collapsed and compared to the badge and duty belt condition for subsequent analyses.

Participants in the police badge and duty belt condition judged the driver to be significantly more dangerous ( $M = 5.6$ ,  $SD = 1.1$ ) than those in the other conditions ( $M = 4.8$ ,  $SD = 1.6$ ;  $F(1, 69) = 4.12$ ,  $p = .04$ ); however, there were no significant between group differences in subjective evaluations of police or interpretation of facts. The expected differences in factual accuracy also did not materialize, with one exception. In an open-ended question, participants were asked to estimate the length of the car chase. Participants in the police badge and duty belt condition estimated the elapsed time as significantly shorter ( $M = 4.5$  min,  $SD = 5.4$ ) than those in



the other three conditions ( $M = 11.2$  min,  $SD = 13.6$ ). The video lasted 3minutes, 12seconds (3.2minutes). The estimate made by those in the police badge and duty belt condition was more accurate and was not significantly different from 3.2 ( $t(16) = .98, p = .34$ ), while the mean time estimates were significantly less accurate and different from the actual time in the other 3 conditions ( $t(52) = 4.25, p < .001$ ).

## Discussion

The positive relationships between subjective measures of the behaviors depicted on the video are indicative of the biased nature of perception. Those who judged the driver to be more dangerous also made other judgments in favor of police. The negative correlation between subjective interpretation of the facts and factual accuracy is not surprising, given the strong effects of stereotypes and heuristics, which are widely used under conditions similar to those required in the study: decisions made under time constraints, when attentional resources are limited, when personal investment or efficacy is low, and in conditions of uncertainty (Tversky & Kahneman, 1974). The video was chosen specifically because of its ambiguity and it appeared that those who used the representativeness heuristic, by judging the likelihood the driver belonged to the group “criminal” based on the population stereotype (evading police), extended that judgment to negative evaluations of the driver’s intent and positive evaluations of police responses and behaviors.

The implicit racial biases found by Correll et al. (2002) and Payne (2001) in their studies of decisions related to criminal behavior were not found. There was no suggestion that participants applied a racial stereotype to

the driver, as most assigned equal likelihood to the possibility that the driver was Caucasian, African American, Hispanic or Other. Biases were evident in subjective evaluations of the use of force shown in the video, however. That Caucasians were significantly more likely to judge the use of force depicted in the video as more appropriate than those of other race and ethnic groups combined was not surprising and may have affected our ability to find more significant between groups effects. Unfortunately, there were not enough participants to analyze the data by both condition and participant race and ethnicity.

The experimental results suggested only partial support for our embodied cognition hypotheses. The effects were demonstrated in those who wore both the police badge and duty belt, but the effect was limited to evaluations of event dangerousness. Those in the combined badge and belt condition judged the driver to be significantly more dangerous. This finding supports Proffitt (1999) and Jostmann’s (2009) results on the effects of physical weight on environmental and value judgments, and extends it to evaluations relevant to police officer decisions. In addition, those who only wore a police badge or held a clipboard did not give incrementally increased ratings for event dangerousness or more positive evaluations of police behaviors. There were just 18 participants in each condition, not enough to include individual differences in preexisting attitudes, or race, in the analyses. This limitation may have hindered our ability to find other effects.

We had expected to find support for Adams and Galinsky’s (2012) encloded cognition hypothesis that wearing a uniform associated with attention to detail would

improve factual memory. We did find partial support in that participants in the police badge and duty belt were significantly more accurate in their estimates of elapsed time. The other groups guessed that the chase had lasted almost three times as long as the actual 3.2 minute duration, and over twice as long as those in the badge and belt condition. There were no other significant between group differences in subjective evaluations of police or interpretation of facts or in factual accuracy. Perhaps a stronger manipulation, such as asking participants to put on a police uniform shirt, would have resulted in a more persuasive replication and extension of previous enclothed cognition research.

This study and other embodiment research has only begun to reveal the complex nature of embodied cognition as it applies to the criminal justice field. While the wearing of a police badge and duty belt appeared to influence some cognitions, the effects were not as strong as predicted. By extending embodied cognition to judgments related to everyday police officer decisions we have set the stage for more future studies and answered Johnson's (2013) call for more controlled experimental research on the influence of clothing and color within the criminal justice system. If, as the current study suggests, police officers could be implicitly influenced by the physical and metaphorical weight of their uniforms, society, the legal system, and police officers themselves should be educated about the effect. Given the current socio-political climate surrounding police use of force, much more research is still needed.

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## About the Author

Holly Lonergan is a graduating senior majoring in Psychology and Criminal Justice. Her research project was completed in the summer of 2016 under the mentorship of Dr. Elizabeth Spievak (Psychology) and made possible with funding provided by the Adrian Tinsley Program Summer Research Grant. Holly presented this project in November at the 2016 Annual Meeting of the American Society of Criminology in New Orleans, Louisiana. She plans to continue this line of research while pursuing graduate studies in Criminal Justice.

**Table 1**

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	1	2	3	4	5
1.Dangerousness of Driver	--				
2.Appropriate Use of Force by Police	.549**	--			
3.Police Fairness	.283*	.475**	--		
4.Positive Attributions toward Police Behavior	.334**	.723**	.400**	--	
5.Facts Recalled in Favor of Police	.044	.337**	.429**	.265*	--
6.Video Facts Chosen Correctly	-.015	-.039	-.105	.171	-.623**

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Note: N = 71

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).