

CHEESE IT, IT'S THE FUZZ: TESTING THE BELIEF THAT GUILT PREDICTS POLICE AVOIDANCE

Joshua J. Reynolds
University of Scranton

Victoria Estrada-Reynolds
King's College

Scott Freng
Sean M. McCrea
University of Wyoming

Police officers must rely on the available information when investigating crimes. One cue police sometimes rely on is suspect movement (e.g., furtive movements and headlong flight). The courts have explicitly allowed officers to use this information to support warrantless searches. Yet, there is scant empirical evidence examining whether suspect movement is associated with guilt. Using 141 participants in an experimental design, we examined whether individuals who were made guilty (experimentally) would be more likely to avoid a police representation in a social distance paradigm. We also examined a second legal perspective, that racial minorities or individuals who have low police legitimacy would be more likely to avoid the police. Using Bayesian statistics and information criteria we found that neither guilt nor race was associated with avoidance, but feeling guilty was positively associated with avoidance.

Perhaps one of the most fundamental elements of a free state is the protection from authorities against capricious searches and seizures. However, police need some leeway in investigating crimes. Thus, the courts have allowed a variety of searches and seizures even without a warrant. However, a police officer cannot, for example, conduct a stop and frisk completely on a whim. A police officer must rely on their senses and available information, in that context, to determine if the situation is deserving of further attention. One factor that police sometimes rely on is suspect movement. In some cases, movement can be subtle, such as averting one's eyes or calmly walking in the other direction from the officer. At other times it can be more dramatic and may involve immediate and fast flight. The current dominant legal perspective is that taking avoidance as evidence of potential wrongdoing is generally reasonable, given the totality of the circumstances. Interestingly, there is scant empirical evidence examining whether or not movement away from police is associated

Joshua J. Reynolds, joshua.reynolds@scranton.edu, University of Scranton, Scranton, PA, USA
Victoria Estrada-Reynolds, victoriaestrada-reynolds@kings.edu, King's College, Wilkes-Barre, PA, USA
Scott Freng, sfreng@uwyo.edu, University of Wyoming, Laramie, WY, USA
Sean M. McCrea, smccrea@uwyo.edu, University of Wyoming, Laramie, WY, USA

with guilt. Herein, we discuss relevant case law regarding police avoidance and explore the veracity of this legal perspective, as well as a second legal perspective, that alternatively, argues race or police legitimacy can cause avoidance.

FOURTH AMENDMENT CASE LAW

In the United States, the protection against unreasonable search and seizure is found in the Fourth Amendment of the constitution and made applicable to the states through the Fourteenth Amendment. Specifically, the Fourth Amendment states that, “The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized” (U.S. Const. amend. IV). Arguably, the amendment was in part a reaction to the general warrants and writs of assistance under British rule. Yet courts recognize that police officers cannot be completely restricted when investigating crimes and may search and seize a suspect even without a warrant or probable cause. In other words, the courts are attempting to balance the individual’s protections with the legitimate goal of investigating crimes and protecting citizens.

In *Terry v. Ohio* (1968), the Court discussed striking the right balance when it allowed a search and seizure despite no probable cause. In cases of a stop and frisk (also termed a Terry stop), the stop is considered minimal and the frisk is to check for weapons. The initial stop and the potential subsequent frisk are two separate legal issues; here, we focus on the stop. The standard by which a stop is to be judged is reasonable suspicion. That is, to justify the intrusion, the police officer must have specific and articulable facts that, in combination with the inferences drawn, reasonably suggests an individual has or is about to commit a crime. This determination is made on a case-by-case basis involving factors such as the officer’s training and experience, as well as the totality of the circumstances. An officer typically relies on a combination of factors when he decides whether to approach an individual. For example, criminal activity (casing a store), nervous behavior, time, location, noncooperation, and suspect movement, such as headlong flight, are all factors that have been relied on to justify reasonable suspicion (*Adams v. Williams*, 1972; *Illinois v. Wardlow*, 2000; *United States v. Brignoni-Ponce*, 1975). One particularly interesting factor that police rely upon is suspect movement. The Supreme Court dealt with this issue in *Illinois v. Wardlow* (2000).

LEGAL PERSPECTIVE ONE: GUILT PREDICTS POLICE AVOIDANCE

In *Illinois v. Wardlow* (2000), the Supreme Court examined the issue of whether Wardlow’s fleeing from officers constituted reasonable suspicion. In this case, Wardlow was in an area known to have heavy narcotics trafficking, standing next to a building holding an opaque bag. As a caravan of police officers passed by, Wardlow looked in the direction of the caravan and then ran in a different direction (i.e., headlong flight). One of the cars in the caravan pursued Wardlow. The officers eventually stopped Wardlow, conducted a search,

and found a gun. Wardlow was then arrested. Challenging the reasonableness of the initial stop, the issue eventually made it to the Supreme Court. The Court reasoned that suspect movement, in this case, headlong flight, does not always indicate wrongdoing, but it is suggestive of wrongdoing. Given the other facts in the case (e.g., the incident took place in a high crime area) and reasonable inferences drawn by the officers, the Court found that the police were justified in suspecting Wardlow of criminal activity and thus justified in pursuing and stopping Wardlow, which may have confirmed or dispelled their suspicions.

Before Wardlow, courts have found justification for reasonable suspicion when the individual is in a high-crime area and moves away from the police (*Minnesota v. Dickerson*, 1993; see also Harris, 1994). Further, movements away from the police need not be as dramatic as immediately running away, as was the case in *Wardlow*. Sometimes police rely on behavior called “furtive movement” which might include simply changing directions or being fidgety (*Floyd v. New York City*, 2013). Not all individuals in a high-crime area or who move away from police are criminals. The Court has never made such an argument. Nonetheless, courts have de facto assumed that there is *at least some relationship* between suspect movements and guilt. Yet, this is not supported by empirical evidence, but rather the police and the courts are relying on commonsense beliefs and intuition. Indeed, there is a long history of believing that an innocent person need not run from the law. For example, Proverbs 28:1 states that, “The wicked man flees although no one pursues him; but the just man, like a lion, feels sure of himself”. In fact, this scripture was quoted in *Illinois v. Wardlow* (2000). Based on these commonsense beliefs, it is understandable that an officer might think a suspect who flees upon the officer’s presence is guilty of something. A parallel may be deception detection research, where evidence suggests that police officers and the lay public both rely on gaze aversion as a cue to infer if an individual is lying, based on the commonsense belief that nervousness indicates guilt (Delmas et al., 2019; Hartwig & Granhag, 2015). Importantly, research has indicated that anxiety is a poor cue to deception and that when people have accurate beliefs regarding deception detection, they make more accurate inferences (Bogaard et al., 2016; Forrest et al., 2004). In both avoidance and deception detection, when commonsense beliefs are used to inform police officers’ decisions, a key question is the validity of the belief.

If flight or avoidance is not linked with guilt, the officer may end up stopping and frisking an innocent citizen. The implications of such action should be clear. First, the innocent citizen may feel violated by such action, which could then potentially affect their belief in the legitimacy of the police or the criminal justice system as a whole. Second, while the officer is detaining the citizen, they are not engaged in preventing or investigating actual crimes. In other words, if suspect movement is not predictive of guilt, then there are potentially significant costs. Therefore, it behooves the police and the courts, when determining reasonable suspicion for a stop and frisk (or in any Fourth Amendment situation), to only use information that has demonstrated empirical value. Making the situation potentially worse is that, in addition to movement not being predictive of guilt, it could be the case that movement away from the police is related to other factors, such as race or an individual’s police legitimacy.

LEGAL PERSPECTIVE TWO: RACE PREDICTS POLICE AVOIDANCE

The issue of race and suspect movement was addressed in *Illinois v. Wardlow* (2000). Justice Stevens, dissenting in part, argued that not only was unprovoked flight and presence in a high crime neighborhood too generic to meet the reasonable suspicion standard, Stevens argued that suspect movement could at times be related to being a racial minority, “Among some citizens, particularly minorities and those residing in high crime areas, there is also the possibility that the fleeing person is entirely innocent, but, with or without justification, believes that contact with the police can itself be dangerous, apart from any criminal activity associated with the officer’s sudden presence.” In other words, a minority individual may not trust the police and therefore in the presence of the police their behavior is affected. This could be a vicious cycle whereby minorities avoid the police, which then arouses police action. This action further reinforces the belief that the police should be avoided, and this continued avoidance once again cues police to action. This may have the effect of disproportionately targeting minority individuals.

In *Floyd v. New York City* (2013), a stop and frisk policy was challenged for violating Fourth and Fourteenth Amendments to the United States Constitution, Title VI of the Civil Rights Act of 1964, and the Constitution and laws of the State of New York. The court found that the stop and frisk procedures carried out by officers were indeed done in a racially discriminatory manner. Harris (1994) argued that Terry stops are applied disproportionately to poor, African American, and Hispanic individuals. It is important to consider however, that just because police may disproportionately approach minorities, disparate contact does not *by itself* signify discrimination or that the contact was unjustified. Evidence indicates that African Americans are more likely to be arrested. Some evidence indicates it is caused by their differential involvement in crime, rather than purely a product of a selection bias by police (i.e., differential treatment; Bonczar & Beck, 1997; D’Alessio & Stolzenber, 2003; Farrington et al., 1996; Federal Bureau of Investigation, 2016; Pope & Snyder, 2003). Making matters even more complicated is that minority individuals are more likely to live in high-crime neighborhoods (Sampson & Wilson, 1995). Therefore, some of the factors that the Court considers relevant to support reasonable suspicion are not independent and may covary with race specifically.

Although Stevens did not use the term “legitimacy” explicitly, he argued that an individual may at times avoid the police because they do not trust law enforcement, which is part of the legitimacy construct. Legitimacy is the belief that an authority figure is trustworthy, fair, and is concerned with citizens’ best interests (Tyler, 1990; Tyler, 2006). More specifically, police legitimacy is approving of police theory because of who they are and how they act (Reynolds et al., 2018). Someone who has high police legitimacy would, for example, believe that the police are trustworthy, unbiased, motivated to help, treat people with respect, have integrity, have similar values as they do, and view them as part of the community. Research has shown that legitimacy can predict a variety of behaviors, including criminal behavior (negatively related), cooperation with police (positively related), and justification of police shootings (positively related; Paternoster et al., 1997; Reynolds et al., 2018; Tyler & Jackson, 2014). If an individual who has high police legitimacy sees

a police officer on the streets, it could be that they move closer to the officer or that their movement is unchanged because they trust the police and therefore feel safe. Conversely, if an individual who has low police legitimacy sees a police officer on the streets, it could be that they move farther away from the officer because they do not trust police or believe the police to be biased. As suggested by Justice Stevens, legitimacy and race have been related in past research. Research has shown that minorities, compared to Whites, tend to have lower police legitimacy (Renauer & Covelli, 2011; Taylor et al., 2015; Sargeant et al., 2014). This brings us to the current research.

CURRENT RESEARCH

In our discussion of this important Fourth Amendment issue, we have laid out two legal perspectives/explanations for why an individual may avoid a police officer. One explanation is that a suspect's guilt prior to or after committing a crime predicts that they will avoid the police. A second explanation is that an individual's racial minority status or their police legitimacy may predict their avoidance. The purpose of this research was to explore the predictions of these two legal perspectives and test if one view better explains variation in movement away from a police representation.

There are variety of ways to test these explanations. For example, one could observe a busy street and measure the distance that people walked in relation to a police officer. While this would enable testing the race and avoidance relationship, it would be difficult to test the effects of guilt or police legitimacy. Because our goal is to directly compare these two explanations, this methodology would be inadequate. One could also use survey methodology and ask individuals if they have been stopped by police because of avoidance. Here the issue is likely inaccuracy in reporting. To be able to explore the predictions from both perspectives simultaneously and accurately measure police avoidance, experimental methodology is advantageous.

In the current research, we investigated these competing explanations using paradigms to manipulate guilt and measure police avoidance. First, we used a cheating paradigm to experimentally manipulate who is guilty and who is innocent (Russano et al., 2005). Specifically, participants are made guilty or innocent by breaking an experimental rule not to talk or help each other, which would be cheating. This paradigm was developed in the context of false confession research but can be modified to simply make some participants guilty. The other paradigm is a social distance measure (Goff et al., 2008; Macrae et al., 1994). Social distance paradigms have been used primarily in the racial bias literature, but intergroup distancing can arise from more than just prejudiced attitudes (Goff et al., 2008). In Macrae et al. (1994) participants entered a room, thinking they were to meet a skinhead, and had a row of eight empty chairs. The belongings of the skinhead were placed at seat position one, and thus when participants sat down at one of the empty chairs, the experimenter could precisely measure the distance the participant created. This social distance paradigm can be easily adapted to the current research. The fundamental question with suspect movement is distance and timing. If a representation of a police officer is placed at one end of a row of chairs, and participants are asked to sit down, the position

they choose can be taken as a measure of avoidance, with some participants sitting near the police representation and others distancing themselves. Using these two paradigms we investigated the two legal perspectives. Legal perspective one argues that people who are guilty should be more likely to avoid the police representation. An extension of this argument is that people who have engaged in antisocial behavior in the past would be more likely to avoid the police. That is, past wrongdoing, in addition to current wrongdoing, may predict avoidance. Similarly, an extension of actual guilt predicting avoidance is the emotional experience of guilt. In fact, feeling guilty as a consequence of wrongdoing, might lead to police avoidance. There may also be interactions; for example, it could be that only individuals who are guilty and feel guilty, avoid the police. Therefore, we explored how actual guilt, past antisocial behavior, and guilty feelings, might predict police avoidance, based on legal perspective one. An alternative legal perspective holds that race, and by extension, police legitimacy, predicts avoidance.

METHOD

Participants

Participants initially consisted of 154 students from a northeastern university who completed part 1 of the study; however, 3 had to be excluded due to experimenter error and 10 participants did not finish part 2. The final data consisted of 141 individuals (23.4% male and 76.6% female; $M_{age} = 21.12$, $SD = 4.83$). Participants' described themselves as White (70.2%), Black (9.2%), Hispanic (8.5%), Asian (7.1%), Pacific Islander (.7%), and Other (4.3%); with 21.3% identifying themselves as part of a racial minority. Participants were recruited through Student Research Participation (SONA) and given course/extra credit as compensation as well as a chance to win a \$50 Amazon gift card.

Materials

Materials consisted of a brief demographic form, the Attitudes Towards Police Legitimacy Scale, the Positive and Negative Affect Schedule, and the Delinquency Short Form.

Attitudes Towards Police Legitimacy Scale (APLS)

The APLS measures beliefs regarding police legitimacy (Reynolds et al., 2018). It is a 34-item scale that asks people to agree/disagree on a 7-point Likert scale, with items like "Police do their best to be fair to everyone." Items were added and averaged, with higher scores indicating higher police legitimacy beliefs. The scale has so far demonstrated a single factor structure with sufficient reliability (Cronbach's $\alpha = .98$) and predictive validity.

Positive and Negative Affect Schedule (PANAS-X)

The PANAS-X assesses distinguishable emotional states (Watson & Clark, 1994). In addition to being able to measure general affect (positive vs. negative affect), the PANAS-X can measure eleven specific affective states: fear, sadness, guilt, hostility, shyness, fatigue, surprise, joviality, self-assurance, attentiveness, and serenity. The scale contains 60 words/phrases and participants rate on a 5-point scale, to what extent they feel that

way at the present moment. Six items were summed to assess guilty feelings, with higher scores indicating higher feelings of guilt (Cronbach's $\alpha = .88$).

Delinquency Short Form (D-20)

The D-20 is a measure of delinquency that asks participants to indicate the frequency (from 0 = *Never* to 3 = *Very often*) with which they have engaged in a variety of behavior such as "Using a weapon" and "Fighting in the street" (Charles & Egan, 2005; Cronbach's $\alpha = .82$). The 20 items were averaged, with higher scores indicating higher participation in delinquent acts.

Procedure

Participants began by meeting the research assistant and the other participant, who was a confederate. The cover story was that we were interested in how testing relates to stress. After providing informed consent, participants were given five minutes to complete a one item intelligence test, that was in fact a very difficult logic problem. Participants who correctly answered the problem had their names entered in a drawing for a \$50 Amazon gift card. Participants were randomly assigned to either the guilty or innocent condition.

In the guilty condition, participants were told, "Since this is a test, it is important that you don't talk or help each other. We do take cheating seriously, so please make sure you don't help each other." In the "innocent" condition, participants were told, "If you want to work together then that is fine, but you don't have to." After the research assistant left, the confederate talked to the participant and confidently told them the answer. Thus, participants in the guilty condition violated the experimental rule. At no point was the research assistant alerted to cheating by the confederate, which could have alleviated their guilt.

After completing the logic puzzle, participants were led to a room with eight identical chairs against the far wall, between two file cabinets. At one end of the chairs (approximately one foot from seat position 1), there was a police cardboard cutout. This police representation was custom created from a public domain image of a real police officer in uniform and wearing a gun. The cutout stood six feet tall. Directly adjacent to the cutout was a box with the name "Officer Cooper" on it. When participants entered the room, they were directly across from the police representation. As participants were led into the room, the research assistant apologized for the clutter in the room and explained that the police were doing events on campus and they sometimes used the room. This remark served two purposes: First, to make the cutout salient, and second, to have a reasonable explanation for the cutout's presence. The police were in fact holding events on campus throughout the study, and advertisements for their events were within 50 yards of the lab room. Therefore, the presence of the cutout was plausible.

The participants were told to sit wherever they wanted. Participants then completed the PANAS-X, while the research assistant surreptitiously recorded where the participant sat. This seat position (1-8) was the main dependent variable for the study with higher numbers reflecting that they sat farther away. Participants were then led in a 1-minute mindfulness exercise as part of the cover story (Williams & Penman, 2011). This completed the lab portion of the study. Lastly, participants completed an online survey, approximately one

day to a week later, which included demographics (e.g., race), the APLS, the D-20, and finally, a suspicion probe.

RESULTS

Data Analytic Strategy

To explore the veracity of the two legal perspectives we used Bayesian statistics. In frequentist statistics, a single point estimate is compared to a null hypothesis and p -values are used to interpret coefficients. In Bayesian statistics, the target of interest is an entire distribution (i.e., the posterior), and there is no reliance on sampling distributions or p -values to interpret coefficients. Simply, Bayesian estimation is reallocation of credibility toward parameter values consistent with the data, and allocation of credibility away from parameter values inconsistent with the data (Kruschke, 2013). Since our goal was to understand the relationships that each variable might hold with police avoidance, including their uncertainty, a Bayesian analysis is advantageous (for further advantages of Bayesian statistics see Dienes, 2011; Kruschke & Liddell, 2018; Lindley, 1993). Additionally, we used information criteria to compare and evaluate the performance of candidate models (Gelman et al., 2014; McElreath, 2016a). Information criteria include the Widely Applicable Information Criterion (WAIC), which is calculated by taking averages of log-likelihood over the posterior distribution. This provides an estimate of the out-of-sample deviance. Deviance, a measure of divergence, is the log predictive density of the data, given a point estimate from that particular model, multiplied by -2. In-sample deviance provides an estimate of how well the model does at predicting the given data. Out-of-sample deviance provides an estimate of the future predictive accuracy of the model. In general, lower out-of-sample deviance is more desirable (thus lower divergence). WAIC is the most generalizable approach and allows models with varying number of parameters to be compared. The relative performance of candidate models can then be examined, and inferences can be made as to *why* some models perform better. Information criteria combined with use of regularizing priors provides an effective solution to the problem of overfitting (McElreath, 2016a). In simple terms, overfitting is when the model fits too closely to idiosyncrasies and random noise. When this happens, the model performs poorly with new data. As overfitting is a serious problem in scientific research, we used regularizing priors and information criteria to address this. All data were analyzed in R and relevant packages are cited (R Core Team, 2018).

Condition, Delinquency, and Guilty Feelings Predicting Avoidance

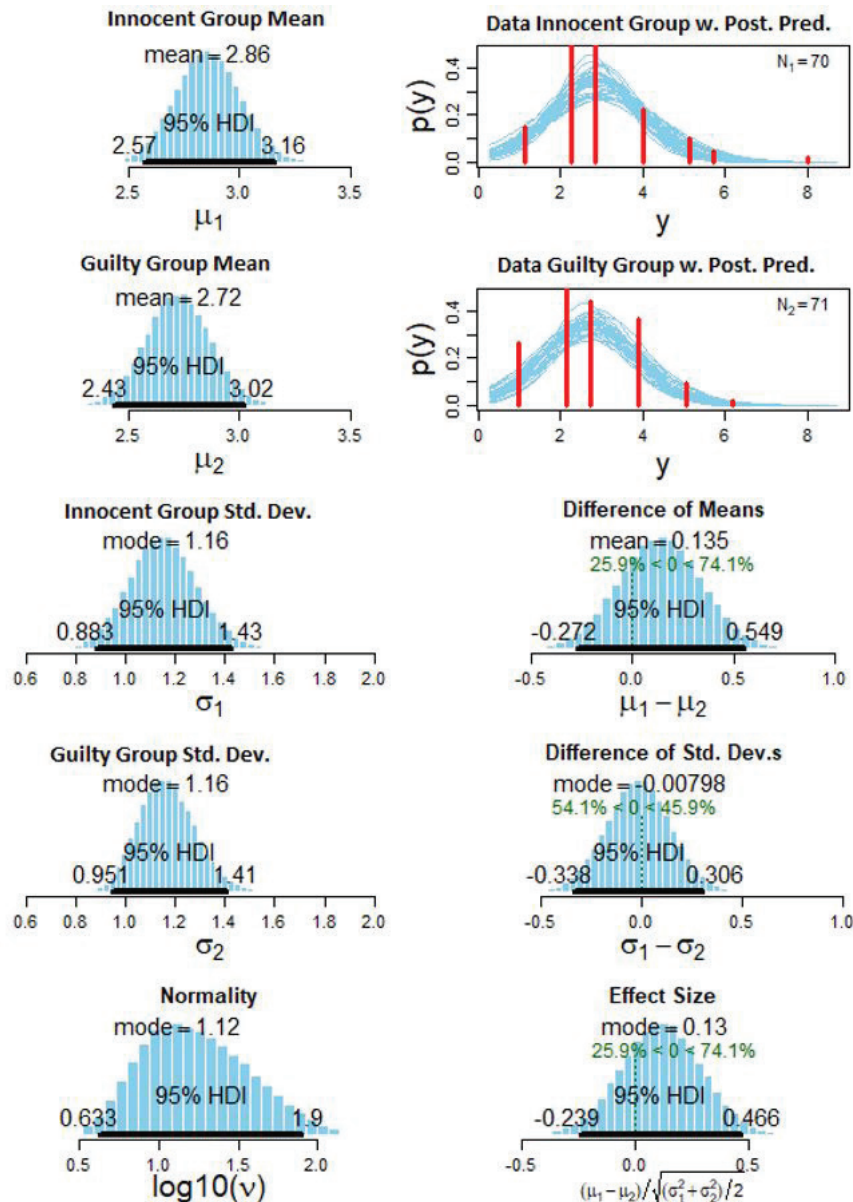
Condition

Our main interest was testing whether being guilty predicted avoidance, and thus we used multiple analytic methods. First, we used the Kruschke (2013) Bayesian estimation for two groups, BEST (Bayesian Estimation Supersedes the t Test). The outcome variable was seat position ($M = 2.84$, $SD = 1.24$, $Mode = 3$) and condition was the group variable. The R package used was BEST (Kruschke & Meredith, 2018). BEST uses broad priors (i.e., uninformative) and a t distribution, which can better account for potential outliers (the t distribution is not used as a sampling distribution). In BEST, the posterior distribution is approximated using Markov chain Monte Carlo (MCMC) methods implemented

in JAGS. BEST generates 100,000 credible parameter-value combinations, given the data. In addition to estimating the means, standard deviations, and effect size for the groups, 95% highest density intervals (HDI) are provided, which mark where most of the credible values are.

As can be seen in Figure 1, innocent participants (control group) tended to sit slightly farther away from the police representation than guilty participants (experimental group). However, as seen in the difference of the means, effect size, and HDIs on those estimates, there are many credible values that fall above zero and below, owing to the uncertainty in those estimates. Therefore, evidence suggests that guilty participants did not tend to sit farther away than innocent participants.

Figure 1. Plot from BEST i



For the remainder of the analyses, we used quadratic approximation. To examine the robustness of the BEST analysis, we also analyzed the condition effect using quadratic approximation. It should be noted some of the analyses from the quadratic approximation were also analyzed using a Hamiltonian Monte Carlo approach (a type of MCMC) in Stan. As the estimates from the two methods tended to be identical, we present the simpler quadratic approximation results.

We used Maximum a Posteriori (MAP) in R (McElreath, 2016b). As the peak of the posterior distribution will be at the maximum a posteriori estimate, the shape of the distribution can be found with a quadratic approximation from this peak. Seat position was standardized to aid in setting priors and condition was treated as an index variable, such that both conditions were given the same prior (this would not be the case for a dummy variable). The condition effect was tested using the following model.

$$\begin{aligned} \text{Seat position}_i &\sim \text{Normal}(\mu_j, \sigma) \\ \mu &= \alpha_{\text{condition}[j]} \\ \alpha_j &\sim \text{Normal}(0, .5), \text{ for } j=1..2 \\ \sigma &\sim \text{Exponential}(1) \end{aligned}$$

For brevity, only the model for the condition effect is shown in full, but each model is summarized in-text and all priors are the same as the above model. As can be seen above, seat position is assumed to follow a normal distribution with parameters μ and σ , where μ is an index variable for the condition effect. Regularizing priors were chosen, where the standard deviation, for example, was constrained to positive values. See also choice of prior section below.

The coefficients are presented in Table 1. The numbers are Gaussian approximations of each parameter's marginal distribution. To estimate the differences between the two conditions, 10,000 samples were drawn from the posterior and the difference in the posterior for the control group estimate was subtracted from the experimental group estimate. The average of the difference was 0.14 ($SD = 0.16$) with the lower 89% HDI at -0.12 and the upper 89% HDI at 0.39. This corresponds to the results from BEST, that while the innocent participants sat farther away on average, the difference was extremely small and not credible.

Delinquency

As can be seen in Table 1, the relationship between delinquency and seat position was positive, but close to zero. Thus, there is no evidence that people with a delinquent past tended to sit farther from the police representation.

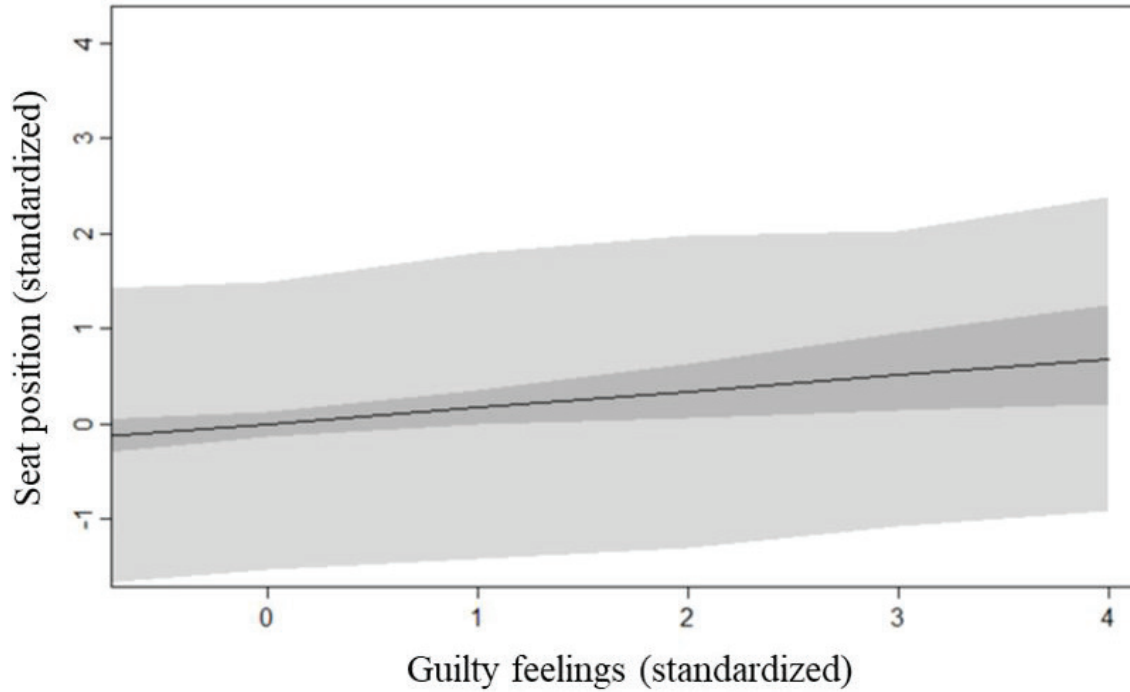
Table 1. Coefficients for the Condition Model, Delinquency Model, Guilty Feelings Model, and All Main Effects Model (Standardized)

		Mean	SD	Lower 89 percentile interval	Upper 89 percentile interval
Guilt	Control (innocent)	.07	.12	-.11	.25
	Experimental (guilty)	-.07	.11	-.25	.11
Delinquency	Intercept	.00	.08	-.13	.13
	Slope	.03	.08	-.10	.16
Guilty feelings	Intercept	.00	.08	-.13	.13
	Slope	.17	.08	.04	.30
All main effects model	Control (innocent)	.07	.11	-.11	.26
	Experimental (guilty)	-.07	.11	-.25	.11
	Delinquency slope	-.01	.08	-.14	.12
	Guilty feelings slope	.17	.08	.04	.30

Guilty Feelings

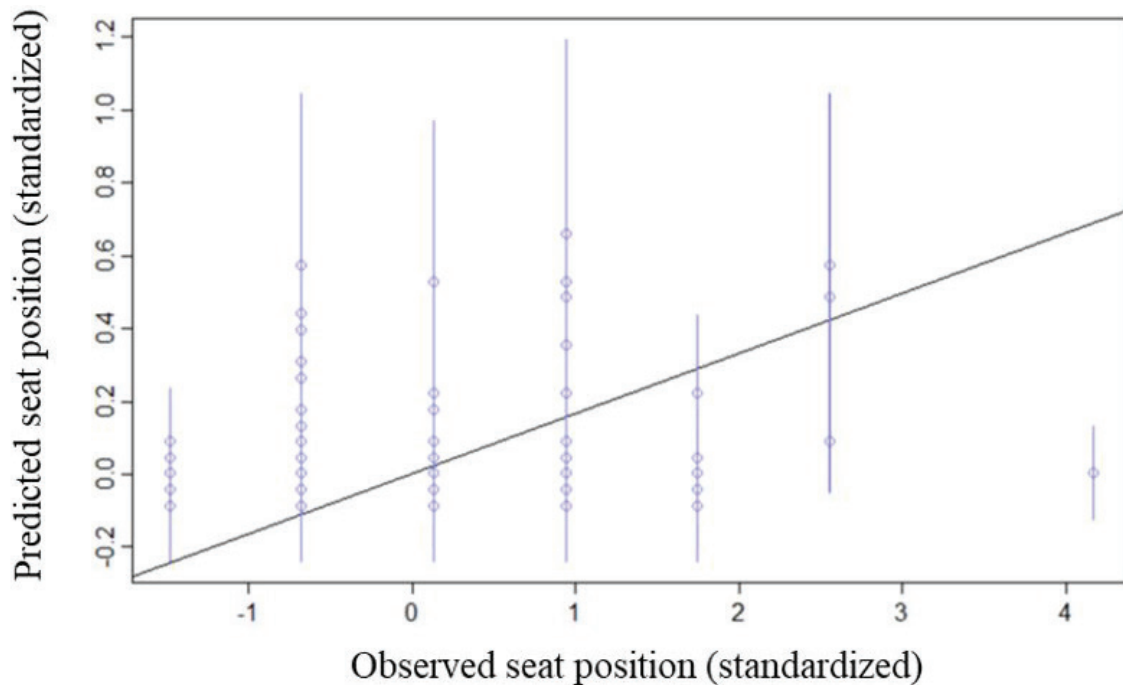
As can be seen in Table 1, as feeling guilty increased by one standard deviation, seat position increased by 0.17 standard deviations. As people felt guiltier, they tended to sit farther away. To understand this relationship, we present two plots. Figure 2 shows the implied predictions of the model, what is sometimes called a counterfactual plot (McElreath, 2016a). Counterfactual plots can aid in understanding of what the model expects, for any value of the predictor variable. Meaning, the point is not to see how well the model explains the data, but for a given level of the predictor, what is the implied prediction. We can see that there is less uncertainty in seat position when both seat position and guilty feelings are around average. However, the uncertainty increases beyond one standard deviation. Figure 3 is a posterior prediction plot. This plots the observed seat positions against those predicted from the model. It is clear that the model did fit correctly, however, the model does a poor job of predicting the observed seat positions. The model did predict observed values better when seat position is near or just above the average.

Figure 2. Counterfactual Plot for the Guilty Feelings Model



Note. Plot shows the change in predicted mean across values of the other, according to the model. The dark shade is the 89 percentile intervals of the mean. The light shade is the 89% prediction intervals (i.e., SD).

Figure 3. Posterior Prediction Plot for the Guilty Feelings Model



Note. 89% intervals.

All Main Effects Model

Table 1 shows the coefficients for a model in which condition, delinquency, and guilty feelings were estimated in the same model. Very little changes in the estimates of these coefficients compared to estimating the three effects individually. It is important to note that including the condition effect with the feeling guilty variable could be considered problematic. This is because guilt condition should affect feeling guilty, thus including feeling guilty would be conditioning on a post-treatment variable and bias the condition effect. However, as we detail below, there did not appear to be a credible difference between the conditions on guilty feelings. As the condition effect was not associated with guilt, we proceeded to model guilty feelings with the condition variable, and next to explore potential interactions.

Interactions

It is reasonable that there may be an interaction with guilt and avoidance, such that only guilty individuals who feel guilty, avoid the police. Thus, we explored interactions of condition, delinquency, and guilty feelings, including the three-way interaction. The estimates for this model are presented in Table 2. Interestingly, the condition effects are now more credibly different than zero. However, this was qualified by a three-way interaction, that also credibly differed from zero. Exploring this interaction, we found that condition only predicted distance from the police representation when individuals were low in delinquency and felt guilty; specifically, it was individuals in the control condition that tended to sit farther away when they were low in delinquency and felt guilty.

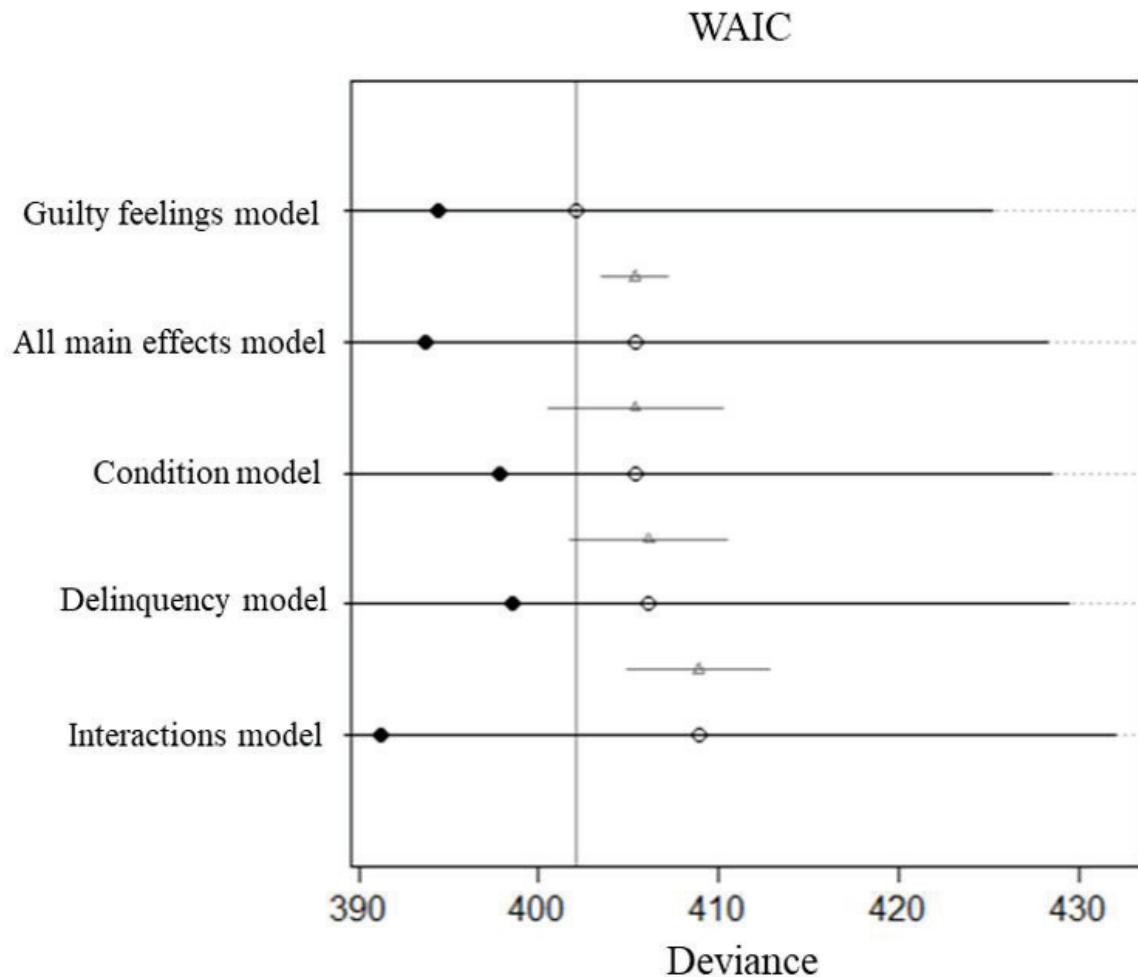
Table 2. Coefficients for the Condition, Delinquency, and Guilty Feelings Interaction Model

	Mean	SD	Lower 89 percentile interval	Upper 89 percentile interval
Control (innocent)	.15	.11	-.03	.33
Experimental (guilty)	-.15	.12	-.33	.04
Delinquency slope	-.02	.08	-.15	.12
Feeling guilty slope	.18	.08	.04	.31
Delinquency X condition	-.01	.38	-.61	.59
Delinquency X guilty feelings	-.01	.09	-.15	.14
Guilty feelings X condition	.09	.37	-.51	.69
Three-way interaction	-.59	.39	-1.21	.03

There may be a reliable three-way interaction; however, it is also possible that this is the result of overfitting. To investigate this, information criteria was used, including WAIC values. As seen in the forest plot of Figure 4, the model with the least out-of-sample deviance is the model with only the effect of guilty feelings (Akaike weight = .57). The interactions model has the lowest in-sample deviance, but it has the largest out-of-sample deviance, and very little of the model weight (Akaike weight = .06). This suggests that the

three-way interaction is likely a result of overfitting. For this reason, we do not present any plots of the interaction. In Figure 4, we can see that models with the guilty feelings variable tended to outperform the others (i.e., lower out-of-sample deviance). This is further evidence that there is a credible relationship between guilty feelings and seat position.

Figure 4. Information Criteria for the Race, Police Legitimacy, All Main Effects, and Interaction Model



Note. Solid black dots represent in-sample deviance. Open circles represent out-of-sample deviance (i.e., WAIC values). The dark line segment is the standard error for each WAIC value. The grey triangles are the differences between that model and the top ranked model, with the grey line segments being the standard deviation of the difference. Models are ranked by WAIC value.

Race and Police Legitimacy Predicting Avoidance

Race

Race was treated as an index variable. Coefficients can be found in Table 3. Due to the majority of the sample being White, Black, or Hispanic, we focus on those effects here. White participants tended to sit closest to the mean, with Hispanic participants sitting

closer to the police representation, and Black participants sitting furthest away. However, likely due to low sample size for Black and Hispanic participants, there was a wide range of credible values. To determine if there was a credible difference between White and Hispanic, and White and Black individuals, 10,000 samples were drawn from the posterior and the differences were estimated. The White-Hispanic difference was very small ($M = 0.16$, 89% HDI = $[-0.26, 0.58]$, $SD = 0.26$) as was the White-Black difference ($M = -0.20$, 89% HDI = $[-0.61, 0.21]$, $SD = 0.26$). Also, for both estimates, a large portion of the 89% HDI is negative and positive. This suggests that Black, as compared to White participants, as well as Hispanic, as compared to White participants, did not tend to sit farther away.

Police legitimacy

As can be seen in Table 3, the relationship between police legitimacy and seat position was negative, but close to zero, with the 89 percentile intervals substantially crossing both sides of zero. Thus, there is no evidence that police legitimacy predicts avoidance.

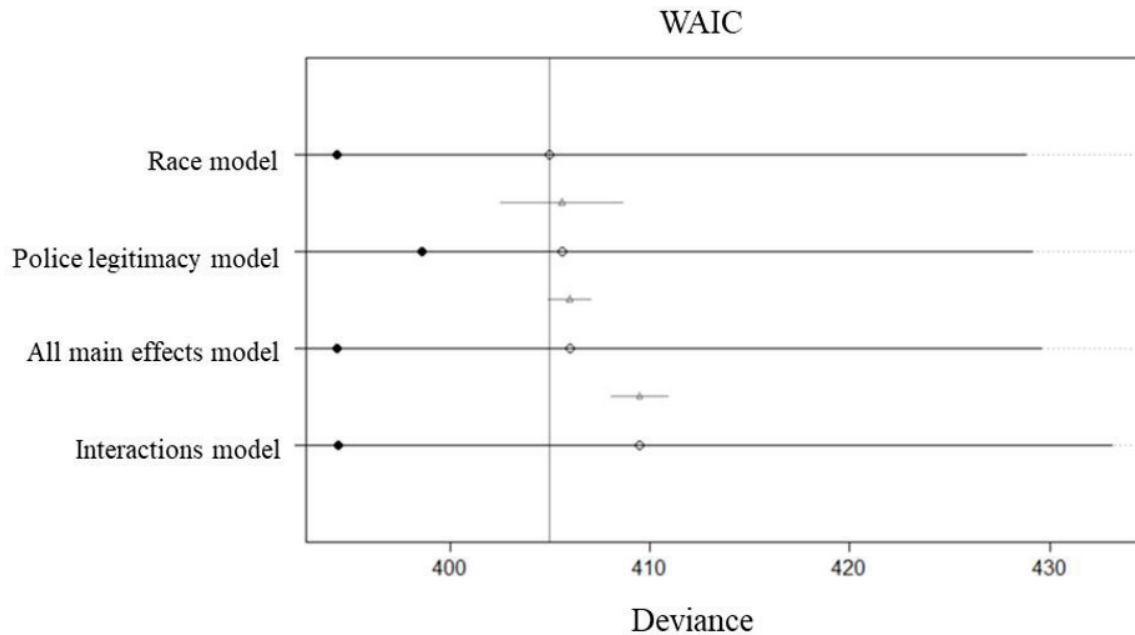
Table 3. Coefficients for the Race and Police Legitimacy Models

		Mean	SD	Lower 89 percentile interval	Upper 89 percentile interval
Race	White	.05	.10	-.11	.20
	Hispanic	-.10	.25	-.50	.29
	Black	.25	.24	-.13	.63
	Pacific Islander	-.14	.45	-.85	.57
	Asian	-.20	.26	-.62	.22
	Other	-.41	.31	-.91	.09
Police legitimacy	Intercept	.00	.08	-.13	.13
	Slope	-.04	.08	-.18	.09

Main Effects and Interactions

Like the preceding analysis, we tested the relationship between race and seat position, while accounting for the effect of police legitimacy, as well as the two-way interaction. The coefficients changed little and there was no evidence of an interaction, thus we omit those results. As before, we compared each model using information criteria (see Figure 5). The model with the lowest out-of-sample deviance was the model containing only race (Akaike weight = .50). However, this was not credibly better than the next best performing model, containing only police legitimacy (Akaike weight = .27). As earlier, the lowest ranked model (according to WAIC values), was the model containing interactions.

Figure 5. Information Criteria for the Race, Police Legitimacy, All Main Effects, and Interaction Model



Note. Solid black dots represent in-sample deviance. Open circles represent out-of-sample deviance (i.e., WAIC values). The dark line segment is the standard error for each WAIC value. The grey triangles are the differences between that model and the top ranked model, with the grey line segments being the standard deviation of the difference. Models are ranked by WAIC value.

Model Comparison

Using information criteria, we compared the top ranked models from each legal perspective: the model containing only the effect of guilty feelings and the model containing only race. Although both models have nearly identical in-sample deviance, the guilty feelings model (WAIC = 402.40) had lower out-of-sample deviance compared to the race model (WAIC = 405.10). Most of the model weight (Akaike weight = .79) was given to the guilty feelings model. However, the WAIC values were very close and the standard deviation of the difference between models suggests that they perform similarly. In other words, there is little evidence that the guilty feelings model has substantially better out-of-sample deviance compared to the race model.

Additional Analyses

As a manipulation check, we tested if condition was associated with guilty feelings. Using condition as an index variable, participants who were actually guilty ($M = 0.02$, 89 percentile intervals = $[-0.16, 0.21]$, $SD = 0.11$), on average, felt guiltier than innocent participants ($M = -0.02$, 89 percentile intervals = $[-0.21, 0.16]$, $SD = 0.12$). As before, samples were drawn from the posterior to estimate the difference. There did not appear to be a credible difference between the conditions on guilty feelings ($M = -0.04$, 89% HDI = $[-0.30, 0.21]$, $SD = 0.16$).

Lastly, we tested if race was associated with police legitimacy. Examining the differences between White and minority participants, we found a credible difference between White and Hispanic participants ($M = 0.43$, 89% HDI = [0.02, 0.85], $SD = 0.26$), as well as White and Black participants ($M = 0.73$, 89% HDI = [0.34, 1.14], $SD = 0.25$). In other words, White participants tended to have higher police legitimacy than either Hispanic or Black participants.

Choice of Priors

For all models using quadratic approximation, for the effect of interest, we used a regularizing prior that assumed a normal distribution centered at the mean with standard deviation of .5 (i.e., 0, .5). Alternative priors were investigated (e.g., 0, 1) but they did not have an impact on the coefficients. This suggests the models were robust to these priors, as the data overwhelmed them.

DISCUSSION

Police and the courts have accepted that given certain circumstances, suspect movement is a valid cue that may indicate suspect guilt, and therefore can support reasonable inference for a warrantless search. However, there has been concern from some judges and social scientists that other factors, such as race, could also affect suspect movement. We sought to explore which of these explanations better accounted for variability in participant's movement by experimentally manipulating guilt and recording the distance that people sat from a police representation.

The results of BEST and the quadratic approximation pointed to the same answer, that being guilty did not tend to be associated with movement away from the police representation. If anything, it was the innocent participants that tended to sit farther away. Interestingly, while actual guilt was not associated with movement, feelings of guilt were. We found consistent evidence that feeling guilty was associated with movement away from the police representation. In the model comparisons, the model containing only the guilty feelings variable consistently had the lowest out-of-sample deviance. This evidence potentially supports the commonsense belief that guilt and avoidance are related. On the other hand, neither actual guilt nor past delinquency was associated strongly with avoidance. We did find evidence of a potential three-way interaction. However, this effect was potentially due to overfitting, as its out-of-sample deviance was the lowest and there was wide uncertainty around the estimate. Furthermore, the evidence in the three-way suggested that it was innocent participants who sat farther away when low in delinquency and feeling guilty.

In regard to feeling guilty, if this association is reliable, it could potentially be the reason there is a commonsense belief that "The wicked man flees although no one pursues him." However, because neither actual guilt nor delinquency was strongly associated with avoidance in the expected direction, we do not find empirical support for the Supreme Court's argument that avoidance can support reasonable suspicion. That only guilty feelings were associated with avoidance is of little consolation. In fact, it is potentially problematic. Among both student and criminal samples, individuals who score

greater on dispositional guilt measures report lower antisocial attitudes and behaviors (Robinson et al., 2007; Tibbetts, 2003). Therefore, if police respond to feelings of guilt, then that would make them more likely to approach an innocent suspect, rather than a guilty one. This places the innocent suspect in a difficult position reminiscent of the situation in false confessions.

Kassin (2005) argued that a suspect's innocence may leave them especially vulnerable to false confessions. Specifically, innocent suspects are more likely to waive their right to remain silent or have an attorney present because they assume everything will work out. In addition, Kassin et al. (2003) found that when investigators presume a suspect's guilt, they dedicate more effort toward eliciting confessions from innocent, compared to guilty, suspects. Therefore, being innocent of a crime may result in a series of behaviors by both the suspect and investigators which evokes a false confession. In our case, if guilty feelings but not actual guilt are associated with avoidance, this too may cause an innocent suspect to come under greater police scrutiny. While we did find consistent evidence for some relationship between guilty feelings and avoidance, guilty feelings did a poor job of accounting for the observed seat positions. This can be seen clearly in the posterior prediction plot. Therefore, while guilty feelings and avoidance appear associated, and the guilty feelings model fared relatively better than the other examined models, in absolute terms, guilty feelings could not account for most observed seat positions.

The second legal perspective we explored asserted that race may play a role in police avoidance. Along these lines, we also investigated police legitimacy. Results indicated that racial minorities did not tend to avoid the police representation. While Black participants tended to sit somewhat farther away, because of the low sample size, there was a wide range of plausible values. It is possible that with a greater sample size of Black participants, the uncertainty in those estimates could be reduced, revealing a difference between White and Black participants. As of now however, we see little evidence of race relating to avoidance. Likewise, people who had low police legitimacy did not tend to avoid the police representation. However, as expected, race was related to police legitimacy, whereby Black participants, for example, had lower police legitimacy than White participants. In previous research, legitimacy predicted cooperation with the police (Tyler & Jackson, 2014), however, in these studies they tend to use self-report measures of cooperation and not actual behavior (see also Tyler & Fagan, 2008). In other words, it could be that while legitimacy predicts attitudes and beliefs, as well as some behaviors, it does not predict suspect movement. It could be that some people who have low police legitimacy will avoid the police because they are being cautious of the officer, but others who have low police legitimacy will approach the officer or not change their behavior because they do not want to seem suspicious. Thus, on average, there would be little relationship.

Limitations and Future Directions

Limitations to the current study include the sample, lack of a no police comparison group, the guilt manipulation, and the validity of the avoidance measure. First, the sample was comprised solely of students who have relatively low degrees of criminal behavior. In the future, it would be beneficial to replicate these effects with community individuals;

particularly with those who live in areas of high crime, as it is in those areas where these types of police-citizen encounters are concentrated.

Second, there was no comparison condition where the police representation was removed or replaced by some other non-police cutout. This was due to power issues. Including another condition would have reduced the ability to detect the difference between guilty and not guilty, and as our upper limit of what could reasonably be collected was approximately 150 participants, we did not include the additional comparison. However, in the future it would be advantageous to include this comparison.

Third, the guilt manipulation involved creating a situation where participants violated an experimental rule. However, participants were not guilty because they decided to cheat the experimenter of their own volition, as would be the case in most criminal actions; they were *put* in a cheating situation. This could explain why individuals in the guilty condition did not tend to feel guiltier than innocent participants, at least as measured by the PANAS-X. Therefore, it would be beneficial to replicate these effects with people who have cheated of their own accord. We probed for suspicion on the guilt manipulation at the end of part 2 of the study. While most participants thought the study was about stress, some participants did indicate they thought the study concerned cheating or questioned the confederate. Excluding those who were suspicious did not drastically alter the results and therefore the conclusions, but unsurprisingly some estimates did change. We again highlight the tentative nature of these results and suggest that using a more naturalistic cheating method may be advantageous. Another issue in the guilt manipulation is that it is not a criminal behavior. Since it is a cheating task rather than a crime, and the avoidance target is a police representation, there may be a mismatch, which could explain the null findings. However, the commonsense belief is that the guilty have no need to flee, and some participants were guilty. Therefore, in the future it may be advantageous for the guilt manipulation to be closer to actual criminal behavior, rather than academic deviant behavior, however, the study was nonetheless a valid test of the commonsense belief.

Fourth, the validity of the avoidance measure is potentially limited. As discussed previously, courts have considered many types of suspect movement, from furtive movements to headlong flight. It is not possible to capture all types of suspect movement in a single measure. The courts appear to make stronger arguments about the relationship between suspect movement and guilt in cases of headlong flight (e.g., in *Wardlow*). Therefore, headlong flight may be the most relevant movement type in testing the commonsense belief. However, headlong flight is also the most difficult to measure for practical and ethical reasons. We used a measure of suspect movement that is arguably closer to furtive movements. Nonetheless, furtive movements and headlong flight are both types of behaviors that involve avoidance. We do not assert to have captured the full range of suspect movements, merely general avoidance. Similarly, sitting down near a police representation may not be the same as walking past a police representation or having the opportunity to move completely away. It is important however, to understand there are trade-offs in such measures, such as precision of measurement. In this research, we prioritized interval validity in the design and reliability in measuring avoidance.

Relatedly, we might also consider the ecological validity of the avoidance measure. Although we went to great lengths to make the police representation as life-like and noticeable as possible, because it was necessarily artificial, it is unclear how having an actual police officer would change people's behavior. In our experimental situation, the police representation can potentially impact participants, but participants cannot impact the police representation. This is unlike the real-world context where two individuals interact and one's behavior affects the other. Similarly, it is difficult to replicate the nuances of police suspect interactions and the totality of the circumstances, that might lead an officer to approach a suspect. However, while the avoidance measure may not capture all relevant aspects of real encounters, two points are worth noting. First, as mentioned above, this research prioritized internal validity and reliability in measurement. We believe this is a reasonable approach given the lack of research in this area. Further, a more ecologically valid measure would not necessarily be better at capturing a guilt avoidance relationship, as it might be less reliable. As the unreliability of a measure increases, relationships are attenuated. Thus, a more ecologically valid, but less reliable measure, may yield the same results. Second, it is not clear at this time how to construct a highly ecologically valid measure of suspect movement that would also allow a researcher to measure guilt and police legitimacy. One could survey officers, asking them about specific cases and then correlate that with convictions of the suspect to measure guilt. However, that would reduce internal validity and measurement reliability of the avoidance construct, as it would rely on memory. We stress that these results require significant replication and extension. In the future, it may be complementary to use a field experiment or other methodology to test some of the effects.

Another future direction is to examine the effects of shame. Many theorists argue that shame and guilt are separate emotions and elicit different motivations (Tangney et al., 1996). Interestingly in this literature, shame is argued to motivate avoidance and guilt is argued to motivate approach tendencies. Guilt is argued to be associated with an approach motivation because it motivates us to consider others and repair the harm we caused (Baumeister et al., 1994). While some studies find little or no difference in the emotions of shame and guilt (e.g., Scherer & Wallbott, 1994), others find context dependent effects. For example, Schmader and Lickel (2006) found that shame and guilt are correlated with self-caused wrongdoings (i.e., similar results), but for other-caused wrongdoings, shame was associated with avoidance and guilt was associated with approach. In our study, the primary concern was actual guilt rather than an emotional response, as it is actual guilt with which the courts are concerned. Similarly, our goal was not to test hypotheses from the shame/guilt literature, but rather explore two legal perspectives. Given our results and the potentially different effects of shame and guilt, this would be an interesting area for future research.

CONCLUSIONS

The courts have claimed that avoidance can be indicative, though not dispositive, of guilt. To support the argument, courts have relied explicitly on commonsense beliefs and not empirical evidence. The reliance on commonsense beliefs is problematic, insofar

as intuition and commonsense are poor at distinguishing fact from fiction. Our research empirically tested the commonsense belief and could not find support for the guilt avoidance association. Race and police legitimacy also did not predict avoidance. However, with a larger sample of Black and Hispanic participants this may change. This is only a single study, there were numerous limitations, and this is only the first of studies to come. Nonetheless, we encourage the courts and police officers to examine their commonsense beliefs and more heavily rely on empirical findings when available. By relying on empirical evidence, our inferences regarding the information for supporting reasonable suspicion will be more accurate, and therefore the balance of interests between the individual and society that the courts seek, can be achieved more effectively.

REFERENCES

- Adams v. Williams, 407 U.S. 143 (1972)
- Baumeister, R. F., Stillwell, A. M., & Heatherton, T. F. (1994). Guilt: An interpersonal approach. *Psychological Bulletin*, *115*(2), 243-267. <https://doi.org/10.1037/0033-2909.115.2.243>
- Bogaard, G., Meijer, E. H., Vrij, A., & Merckelbach, H. (2016). Strong, but wrong: Lay people's and police officers' beliefs about verbal and nonverbal cues to deception. *PLoS ONE*, *11*(6), e0156615. <http://doi.org/10.1371/journal.pone.0156615>
- Bonzar, T. P., & Beck, A. J. (1997). *Lifetime likelihood of going to state or federal prison*. Washington, DC: Bureau of Justice Statistics.
- Charles, K., & Egan, V. (2005). Mating effort correlates with self-reported delinquency in a normal adolescent sample. *Personality and Individual Differences*, *38*(5), 1035-1045. <http://doi.org/10.1016/j.paid.2004.06.021>
- D'Alessio, S. J., & Stolzenberg, L. (2003). Race and the probability of arrest. *Social Forces*, *81*(4), 1381-1397. <http://doi.org/10.1353/sof.2003.0051>
- Delmas, H., Elissalde, B., Rochat, N., Demarchi, S., Tijus, C., & Urdapilleta, I. (2019). Policemen's and civilians' beliefs about facial cues of deception. *Journal of Nonverbal Behavior*, *43*(1), 59-90. <https://doi.org/10.1007/s10919-018-0285-4>
- Dienes, Z. (2011). Bayesian versus orthodox statistics: Which side are you on? *Perspectives on Psychological Science*, *6*(3), 274-290. <http://doi.org/10.1177/1745691611406920>
- Farrington, D. P., Loeber, R., Stouthamer-Loeber, M., Van-Kammen, W. B., & Schmidt, L. (1996). Self-reported delinquency and a combined delinquency seriousness scale based on boys, mothers, and teachers: Concurrent and predictive validity for African-Americans and Caucasians. *Criminology*, *34*(4), 493-518. <http://doi.org/10.1111/j.1745-9125.1996.tb01217.x>
- Federal Bureau of Investigation (2016). National Incident-Based Reporting System. Washington, DC.
- Floyd v. City of New York, 959 F. Supp. 2d 540 (2013)
- Forrest, J. A., Feldman, R. S., & Tyler, J. M. (2004). When accurate beliefs lead to better lie detection. *Journal of Applied Social Psychology*, *34*(4), 764-780. <http://doi.org/10.1111/j.1559-1816.2004.tb02569.x>
- Gelman, A., Hwang, J., & Vehtari, A. (2014). Understanding predictive information criteria for Bayesian models. *Statistics and Computing*, *24*(6), 997-1016. <http://doi.org/10.1007/s11222-013-9416-2>
- Goff, P. A., Steele, C. M., & Davies, P. G. (2008). The space between us: Stereotype threat and distance in interracial contexts. *Journal of Personality and Social Psychology*, *94*(1), 91-107. <http://doi.org/10.1037/0022-3514.94.1.91>
- Harris, D. A. (1994). Factors for reasonable suspicion: When Black and poor means stopped and frisked. *Indiana Law Journal*, *69*, 659-688.
- Hartwig, M., & Granhag, P. A. (2015). Exploring the nature and origin of beliefs about deception: Implicit and explicit knowledge among lay people and presumed experts. In P. A. Granhag, A. Vrij, & B. Verschuere (Eds.), *Detecting deception: Current challenges and cognitive approaches* (pp. 125-154). Wiley.

- Illinois v. Wardlow, 528 U.S. 119 (2000)
- Kassin, S. M. (2005). On the psychology of confessions: Does innocence put innocents at risk? *American Psychologist*, *60*(3), 215-228.
- Kassin, S. M., Goldstein, C. C., & Savitsky, K. (2003). Behavioral confirmation in the interrogation room: On the dangers of presuming guilt. *Law and Human Behavior*, *27*(2), 187-203. <http://doi.org/10.1023/A:1022599230598>
- Kruschke, J. (2013). Bayesian Estimation Supersedes the t Test. *Journal of Experimental Psychology: General*, *142*(2), 573–603. <http://doi.org/10.1037/a0029146>
- Kruschke, J., & Liddell, T. (2018). The Bayesian New Statistics: Hypothesis testing, estimation, meta-analysis, and power analysis from a Bayesian perspective. *Psychonomic Bulletin & Review*, *25*(1), 178–206. <http://doi.org/10.3758/s13423-016-1221-4>
- Kruschke, J.K., & Meredith, M. (2018). BEST: Bayesian Estimation Supersedes the t-Test. R package version 0.5.1. Retrieved from <https://CRAN.R-project.org/package=BEST>
- Lindley, D. V. (1993). The analysis of experimental data: The appreciation of tea and wine. *Teaching Statistics*, *15*(1), 22–25. <http://doi.org/10.1111/j.1467-9639.1993.tb00252.x>
- Macrae, C. N., Bodenhausen, G. V., Milne, A. B., & Jetten, P. A. G. (1994). Out of mind but back in sight: Stereotypes on the rebound. *Journal of Personality and Social Psychology*, *67*(5), 808-817. <http://doi.org/10.1037/0022-3514.67.5.808>
- McElreath, R. (2016a). *Statistical rethinking: A Bayesian course with examples in R and Stan*. Boca Raton: CRC Press/Taylor & Francis Group.
- McElreath, R. (2016b). Rethinking: Statistical Rethinking book package. R package version 1.59.
- Minnesota v. Dickerson, 508 U.S. 366 (1993)
- Paternoster, R., Brame, R., Bachman, R., & Sherman, L. W. (1997). Do fair procedures matter? The effect of procedural justice on spouse assault. *Law & Society Review*, *31*, 163-204. <http://doi.org/10.2307/3054098>
- Pope, C., & Snyder, H. (2003). Race as a factor in juvenile arrests. *Juvenile Justice Bulletin*, Washington, DC: Department of Justice.
- R Core Team (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. Retrieved from <https://www.R-project.org/>.
- Renauer, B., & Covelli, E. (2011). Examining the relationship between police experiences and perceptions of police bias. *Policing*, *34*(3), 497–514. <http://doi.org/10.1108/13639511111157537>
- Reynolds, J. J., Estrada-Reynolds, V., & Nunez, N. (2018). Development and validation of the attitudes towards police legitimacy scale. *Law and Human Behavior*, *42*(2), 119-134. <http://doi.org/10.1037/lhb0000281>
- Robinson, R., Roberts, W., Strayer, J., & Koopman, R. (2007). Empathy and emotional responsiveness in delinquent and non-delinquent adolescents. *Social Development*, *16*(3), 555–579. <http://doi.org/10.1111/j.1467-9507.2007.00396.x>
- Russano, M. B., Meissner, C. A., Narchet, F. M., & Kassin, S. M. (2005). Investigating true and false confessions within a novel experimental paradigm. *Psychological Science*, *16*(6), 481-486. <http://doi.org/10.1111/j.0956-7976.2005.01560.x>
- Sampson, R. J., & Wilson, W. J. (1995). Toward a theory of race, crime, and urban inequality. In Hagan, J., Peterson, R. D. (Eds.), *Crime and inequality* (pp. 37–56) Stanford University Press.
- Sargeant, E., Murphy, K., & Cherney, A. (2014). Ethnicity, trust and cooperation with police: Testing the dominance of the process-based model. *European Journal of Criminology*, *11*(4), 500–524. <http://doi.org/10.1177/1477370813511386>
- Scherer, K. R., & Wallbott, H. G. (1994). Evidence for universality and cultural variation of differential emotion response patterning. *Journal of Personality and Social Psychology*, *66*(2), 310–328. <http://doi.org/10.1037/0022-3514.66.2.310>
- Schmader, T., & Lickel, B. (2006). The approach and avoidance function of guilt and shame emotions: Comparing reactions to self-caused and other-caused wrongdoing. *Motivation and Emotion*, *30*(1), 42-55. <http://doi.org/10.1007/s11031-006-9006-0>

- Tangney, J. P., Miller, R. S., Flicker, L., & Barlow, D. H. (1996). Are shame, guilt, and embarrassment distinct emotions? *Journal of Personality and Social Psychology*, *70*(6), 1256-1269. <http://doi.org/10.1037/0022-3514.70.6.1256>
- Taylor, R., Wyant, B., & Lockwood, B. (2015). Variable links within perceived police legitimacy?: Fairness and effectiveness across races and places. *Social Science Research*, *49*, 234-248. <http://doi.org/10.1016/j.ssresearch.2014.08.004>
- Tibbetts, S. (2003). Self-conscious emotions and criminal offending. *Psychological Reports*, *93*(1), 101-126. <http://doi.org/10.2466/pr0.2003.93.1.101>
- Tyler, T. R. (1990). *Why people obey the law*. New Haven, CT: Yale University Press.
- Terry v. Ohio, 392 U.S. 1 (1968)
- Tyler, T. R. (2006). Psychological perspectives on legitimacy and legitimation. *Annual Review of Psychology*, *57*, 375-400. <http://doi.org/10.1146/annurev.psych.57.102904.190038>
- Tyler, T. R., & Fagan, J. (2008). Legitimacy and cooperation: Why do people help the police fight crime in their communities? *Ohio State Journal of Criminal Law*, *6*, 231-275.
- Tyler, T. R., & Jackson, J. (2014). Popular legitimacy and the exercise of legal authority: Motivating compliance, cooperation, and engagement. *Psychology, Public Policy, and Law*, *20*(1), 78-95. <http://doi.org/10.1037/a0034514>
- United States v. Brignoni-Ponce, 422 U.S. 873 (1975)
- U.S. Const. amend. IV.
- Watson, D., & Clark, L. A. (1994). *The PANAS-X: Manual for the Positive and Negative Affect Schedule-Expanded Form*. Ames: The University of Iowa.
- Williams, M., & Penman, D. (2011). *Mindfulness: The eight-week meditation programme for a frantic world*. New York, NY: Rodale Books.

Date Received: 04/2020

Date Accepted: 11/2020

Suggested citation: Reynolds J. J., Reynolds V.E., Freng S., & McCrea S.M., (2021). Cheese it, it's the Fuzz: Testing the Belief that Guilt Predicts Police Avoidance. [Electronic Version]. *Applied Psychology in Criminal Justice*, *16*(1), 84-106.