

Contextual Determinants of Observed Negative Emotional States in Police-Community Interactions

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### Abstract

Researchers universally agree that interactions between police and community members have the propensity to be emotionally charged. However, to date, there is limited research investigating situational and dynamic factors that make an interaction between a police officer and citizen more or less emotionally charged. Analyzing unedited police body-worn camera footage, associated with 287 criminal code violations, this research explores the individual, behavioral, and environmental factors that affect police officers' and citizens' emotional states during a police-citizen interaction. Results show clear variations at the situational, organizational, and environmental levels influencing the observed emotional state of the suspect and police officer.

*Keywords:* Observed Negative Emotional States; Body-Worn Cameras; Quantitative Content Analysis; Event Modeling; Police-Community Interactions

## Introduction

It is broadly accepted that policing is an emotionally demanding and stressful profession (Patterson, Chung, & Swan, 2014; Toch, 2002; Terry, 1981). This high level of emotionality has the potential to spill over into individual police-citizen interactions, which are known to typically be stressful for community members, with research suggesting that citizens often feel apprehensive when they encounter a police officer, particularly when the officer initiates the stop (Brunson & Weitzer, 2011). On the police officer's side, research suggests that many acts of police use of force are directly related to the elevated levels of emotionality associated with a given interaction (Collins, 2009; Holmes & Smith, 2008). Indeed, other research argues that promoting police-citizen encounters with lower levels of negative emotionality is central to improving public compliance (Barkworth & Murphy, 2015; Murphy & Tyler, 2008).

The importance of managing negative emotions for police-citizen encounters follows from a broad body of research suggesting that emotions can affect decisions (Schwarz, 2000), which in the context of police work, can be exacerbated by shift work and overtime (Dembe, Erickson, Delbos, & Banks, 2005). Yet, even though negative emotions are often implicated in police-citizen encounters that go wrong, research has largely failed to identify the factors that make a given interaction more or less negative emotionally charged. Instead, much of the work on emotions in the policing literature explores the consequences of emotionally demanding work as it relates to burnout (Kop, Euwema, & Schaufeli, 1999; Fishkin, 1987), attitudes or actions towards others (Burke & Mikkelsen, 2005; Kop, et al., 1999), and individual and organizational performance (Schaufeli, Maslach, & Marek, 2017). Additionally, this research is methodologically limited, as it primarily relies upon personal inventories, which ask respondents to rate their general experiences and sources of stress. While this research shows a clear

relationship between emotionally demanding work and negative outcomes (Bakker & Heuven, 2006), this research offers limited to no insights into the determinants of negative emotionality within police-citizen interactions.

The current study seeks to address this gap in the literature by directly examining the determinants of observed negative emotionality in police-citizen interactions. Using body-worn camera footage, as recorded observational data, and a rigorous coding scheme, the current study examines the observed emotional states of police officers and suspects, with a specific focus on identifying key contextual correlates. Specifically, this study analyzes 287 recorded police interactions between June and October in 2016, showing the influence of individual, behavioral, and environmental factors on suspect and officer negative observed emotional states.

### **Literature Review**

Ample research shows the importance of emotional states on interactions and decision-making (Barkworth & Murphy, 2015; Collins, 2009; Grecucci & Sanfey, 2014; Holmes and Smith, 2008; Lerner et al., 2015). For example, general strain theory (GST) argues that stress (or strain) leads to negative emotions, which make deviant criminal behavior more likely (Agnew, 1992). Similarly, control balance theory contends provocation can produce feelings of humiliation and inadequacy, causing the strained individual to pursue deviant behavior as a way to alleviate their internal imbalance (Tittle, 2004). A similar argument underlies both situational action theory (Wikström, Oberwittler, Treiber, & Hardie, 2012) and even some contemporary extensions of rational choice theory (Van Gelder, 2013), suggesting negative emotions not only predict behavioral outcomes but are at the core of our understanding of criminal behavior.

While several prominent scholars have linked police violence with intense emotional responses by police officers (Collins, 2009; Holmes & Smith, 2008), more recent work has

focused on how emotions influence everyday police-citizen encounters. For example, Barkworth and Murphy (2015) found, using both field surveys and an experiment, that citizens were most likely to report negative emotions and, subsequently, less likely to comply when interacting with police who felt they received treatment that was unjust. Similarly, Murphy and Tyler (2008) provide evidence that emotional responses have the potential to mediate the relationship between perceptions of procedural justice and legal compliance. Research outside of policing reports equivalent results: when individuals feel they are treated poorly, they are more likely to report negative emotions (Chebat & Slusarczyk, 2005; Weiss, Suckow, & Cropanzano, 1999), especially if done in the context of an authority-subordinate relationship (De Cremer & Den Ouden, 2009; Van Yperen, Hagedoorn, Zweers, & Postma, 2000). That negative emotions are linked to compliance is extremely important from a police-citizen interaction, as non-compliance can directly escalate the level of hostility and aggression in police-citizen encounters (Klinger, 1995). Indeed, noncompliance can be perceived as resistance or disrespect, both of which have been linked to escalated police use of force (Terrill, 2003).

Even though emotions may not be the primary cause of negative police-citizen interactions, more research is needed to better understand their importance. For example, if negative emotions increase the misuse or perceived misuse of force, it is likely that police-community relations are negatively affected by the emotional state of officers (Littlejohn, Smitherman, & Quick, 1984). This absence of a cooperative community may further affect police performance (Murphy, Hinds, & Fleming, 2008; Ren et al., 2005), especially for police departments serving minority communities (Viki et al., 2006; Weitzer, Tuch, & Skogan, 2008). Regardless, there are many reasons that are internal (e.g., use of force) and external (police-

community relations) to a given police-citizen encounter for us to explore the importance of emotion.

### **Predictors of Emotionality in Police-Citizen Interactions**

Fortunately, a wide range of literature exists offering guidance on which factors are likely to generate negative emotions in police-citizen encounters. Here, we draw on the psychological, sociological, and criminological literatures to identify key factors that might predict the level of observed negative emotionality for police officers and suspects in a given encounter. Our approach is well-grounded in both the strain (Agnew, 1992) and justice (Hegtvedt, 2006) frameworks, suggesting negative emotions are more likely when people are treated in a way they dislike, especially when they feel as though they have been treated unjustly.

Terrill and Mastrofski (2002) argue that the components of a given police-citizen interaction can be broken down into two types: sociological components and psychological components. While the psychological components deal with individual experiences, characteristics, thoughts, and beliefs that influence officer and citizen behavior, the sociological components deal directly with who the citizen is and what the citizen does. The present study considers these latter sociological components, though we acknowledge the importance of the former.

First, we focus on what people are doing within an interaction and how that relates to situational emotionality. The small literature on emotions and police-citizen encounters argues that procedurally just interactions result in fewer negative emotions (Barkworth & Murphy, 2015; Murphy & Tyler, 2008). Therefore, when encounters are less procedurally just, negative emotional states are more likely to result. Though the procedural justice literature focuses on how officers treat and interact with citizens (Sunshine & Tyler, 2003; Tyler & Wakslak, 2000), it

is reasonable to infer that officers likely exhibit negative emotional states when they feel that they are treated unjustly. Agnew (2001) argues that the experience of injustice is central to understanding emotional responses to stressful situations. Though much of the policing literature focuses on procedural justice, the justice literature shows that interactional injustice can also affect behavioral outcomes (Scheuerman, 2013). Research suggests that both forms of injustice are likely to lead to negative emotional responses (Chebat & Slusarczyk, 2005; Murphy and Tyler, 2008; Stecher & Rosse, 2005) and that situations involving both forms of injustice are likely to result in even higher levels of negative emotionality (Van Yperen et al., 2000).

In addition to the studies showing that citizens are more likely to comply and less likely to exhibit negative emotions when treated justly (Barkworth & Murphy, 2015; Murphy and Tyler, 2008), indirect evidence suggests that officer behaviors are also affected by how they are treated by citizens. A range of studies shows that when officers view suspects as engaging in disrespectful behavior they are more likely to use heightened forms of coercion (Friedrich, 1977; Garner, Maxwell, & Heraux, 2002; Reiss, 1968, etc.). Therefore, we argue that behaviors associated with procedural and interactional injustice are more likely to generate negative emotions in officer-citizen encounters. The specific form of these behaviors may vary depending on whether you are examining officer or citizen emotions. For example, for citizens, they may be less likely to experience negative emotions if the officer explains to them why they were stopped and allows the citizen a chance to respond. Conversely, if the citizen adopts an adversarial tone the officer may be more likely to grow angry or frustrated. Further, there are some forms of injustice that may be more likely to generate negative emotions for both officers and suspects. Interruptions, for example, can be viewed as a violation of interactional justice norms (LaFrance, 1992) and could produce anger for both officers and citizens. Additionally, research in the nexus

between public health and safety shows the complexity of interacting with, and managing, those under the influence of intoxicants, including the frustration experienced by those attempting to offer assistance (Dolan & Holt, 2013).

In addition to what the officer and citizen are doing, there is also reason to expect the officer and citizen identities to influence the emotionality of a given situation. Holmes & Smith (2008) argue that police are more likely to view minorities as threatening and thus may respond more negatively to certain demographic groups. In these instances, the police and suspects use heuristics to interpret the actions of the others, which may lead police and suspects to view each other's actions as more aggressive and threatening. Indeed, there is broad evidence that police are more likely to use force against minorities than Whites (Fryer, 2016; Gau, Mosher, & Pratt, 2010) and typically resort to force more quickly against minorities (Kahn et al., 2016; Author & Author, 2017). Moreover, there is evidence that police are faster to use force against males (Terrill, 2005; Author & Author, 2017), though it is somewhat difficult to determine whether this is due to perceived threat or the gendered nature of the interaction.

Lastly, there is also evidence that the broader environment also affects emotional responses. For example, according to Zajonc's (1965) drive theory of social facilitation, the presence of other individuals in the environment increases arousal. Indeed, research suggests when onlookers are present conflict is more likely to produce violence (Collins, 2009; Kim, Smith, & Brighman, 1998, Author, 2015) due to the increased status costs associated with losing the confrontation (Miller, 2001). Additionally, organizational factors may impart a quasi-environmental influence by way of shift work, compounding factors like time of day, lack of sleep, and potentially weather. For example, research suggests a link between sleep and emotional regulation (Gruber & Cassoff, 2014; Pisaniello, Winefield, & Delfabbro, 2012)

To date, only a small body of literature has examined the role of emotions in police-citizen interactions (for exceptions, see Barkworth & Murphy, 2015; Murphy & Tyler, 2008). Unlike these previous studies, we analyze suspect and officer observed emotional responses using recorded observational data and including measures of what the officer and suspect are actually doing, as well as characteristics of the suspect and the environment. This not only moves the study of emotion outside the laboratory, but it also centers the discussion on police-citizen encounters captured in body-worn camera data which is becoming nearly synonymous with modern policing.

## **Methods and Data**

### *Data*

The data for this research uses unredacted video data from 287 recorded police-citizen interactions acquired from a police agency that has less than 100 officers serving a smaller community (under 100,000 residents). The sample includes 101 criminal code violations in which the police officer initiated contact and 186 criminal code violations with an officer dispatched to the scene. The memorandum of understanding and data use agreement provides access to BWC footage, though at this time we are unable to connect videos to individual officers and their specific demographics, nor control for the specific criminal complaint. The officers in this agency are primarily white and male.

Despite the wide proliferation of body-worn cameras across American police agencies (Author, 2017; Nowacki & Author, 2016), little research has made use of BWC footage as a data source with the only exception being the research conducted by Author & Author (2017). Additionally, while the footage may capture the interaction, what is captured may miss the entirety of the interaction, which may be further complicated by viewing angles, camera settings,

and other technical and environmental factors. Overcoming these issues required developing a new coding scheme, which we base on event modeling and media content analysis principles (Macnamara, 2005). Early iterations of media content analysis focused on if events occurred. For example, how often a political advertisement featured a flag. Improvements on the methodology have come to exceed, if something occurs, by including when, the duration, and the context of the display.

To capture the complexity of interactions occurring throughout an incident, we developed an annotation software system allowing us to track events using a three-tiered structure and a multi-stage verification process. Within our three-tiered annotating structure, Tier 1 marks the time when the events occur, Tier 2 identifies the duration and other associated information of those events, and Tier 3 identifies information associated with the end of those events. Collectively, the information provided by these three tiers creates a temporal sequence of events, which allows us to account for when and how changes occur throughout an interaction.

Recognizing the sensitive nature of this data and the intensive annotating system implemented, adherence to strict confidentiality and training protocols were necessary. Before annotation can begin, annotators are required to pass background checks for each agency that is participating in the study, complete CITI Human Subjects training, and sign confidentiality agreements. Our training protocol involves an onboarding session and independent training sessions. The onboarding session is intended to ensure annotators understand confidentiality requirements and briefly introduce the annotation software system. During the independent training sessions, annotators are trained on how to use the software in which they are provided with video examples of each event that may occur in an interaction and provided opportunities to practice annotating a video that was fully annotated by the lab manager beforehand. Annotations

for the video are then compared and discussed. If questions arise at any point during the annotation process, the software allows the annotator to flag the video for review by the lab manager.

The following narrative describes the annotation and verification process. Each month of footage is screened by the lab manager to ensure it meets the agencies MOU and IRB protocol requirements. Videos meeting protocol requirements are then divided and assigned by the lab manager to pairs of annotators. For example, if annotator 1 and 3 are both assigned to video S-16348, they would independently open the annotation software and video on their lab computer. After reviewing the video at least once, the annotators would review the video again and identify what specific events occurred and mark the time point of each event associated in tier 1. The software then flags the event as occurring and the minute and second (MM:SS) associated with the event. Once tier 1 annotations are completed for all assigned videos, the event logs are compared for inter-rater reliability. In tier 2, a new annotator is assigned video S-16348. After the annotator uses the search function to pull up video S-16348 in tier 2, the software presents the time associated with events marked as occurring in tier 1. As the entire codebook is not presented to the annotator, implementing our three-tiered structure improves efficiency and provides multiple opportunities for cross-validation. For example, if in tier 1, two annotators marked a bystander being present at time stamp 5:03, an annotator at tier 2 would verify if that is correct and make changes if necessary. If changes are made, the system flags the video as being changed which then initiates the verification process again by a new annotator. In addition to verifying event information in tier 1, an annotators role in tier 2 is also to indicate the endpoint (MM:SS) associated with the event and provide additional contextual information. For example, if tier 1 marked a bystander present at 5:03, tier 2 captures if there was interaction with the

bystander and if the bystander left the incident. Tier 3 identifies changes occurring at the end of the identified event. For example, concerning an observed emotional state for the suspect, tier 1 would indicate that it was observed and the time point, tier 2 captures the intensity and end point of that observed emotional state, and tier 3 captures the intensity of the observed emotional state at the end of that specific event. If there are no changes in the intensity of the suspect's observed emotional state at the endpoint provided from tier 2, tier 3 will not apply to that specific event. However, if there is a change in the intensity of the suspect's observed emotional state at the endpoint provided from tier 2, annotators will continue to identify each change in intensity until no additional changes are identified, or the interaction ends. Capturing each change allows us to measure the dynamic nature of events occurring throughout an interaction.

In addition to this three-tiered and multi-stage verification process, we also account for situations that involve multiple officer perspectives associated with a specific incident. The videos are flagged as ancillary to the primary officer's perspective associated with that incident and are annotated using the same process previously described. After the videos are fully annotated, they are compared to determine if unidentified events are captured from this new angle. If new events are identified, they are flagged and incorporated into the modeling. As a result, all data collected will have been validated across multiple stages to ensure reliability. The inter-rater reliability is extremely high (>99%) for our objective coding structure. Disagreements for subjective items occurring at tier 2 and tier 3 are resolved using a consensus approach. After a consensus is reached, annotators provide notes to the lab manager describing how an agreement was made, which are then reviewed and verified to ensure reliability. In total, the research coders annotated 4,339 hours of BWC footage for this project.

## **Measures**

*Dependent Variables.* The primary outcome variables for this study are the suspect and officers *observed* negative emotional states and the intensity of that state. We base our decision to use negative emotionality based on prior studies grouping emotional states on a positive and negative continuum. For example, Coombes & colleagues (2008) used a dichotomous variable of pleasant or unpleasant (see Coombes et al., 2008). Additionally, recognizing emotional states may be pleiotropic (see Vigil, 2009) and the sample size of the present study, we believe it is necessary to understand the degree to which police-community interactions reflect negative emotionality. Therefore, we do not examine positive emotional states. To measure emotional states, research coders used a 4-point ordinal scale where 0 indicated no negative emotionality, 1 indicated an interaction with low negative emotionality, 2 indicated interactions associated with medium negative emotionality, and 3 indicated an interaction displayed a high negative emotional state. We merge the medium and high emotional states for this analysis, given the low frequency with which both officers and suspects were coded as having high emotional states. The final emotional states were as follows: 0 = No Visible Emotional Response, 1 = Low Emotional Response, and 2 = Medium and High Emotional Response.

As situational emotionality is central to our analysis, we focused heavily on generating reliable measures of the observed negative emotional states. Coders were given reference videos showing examples of each negative emotional state and a set of detailed instructions on the emotional cues and behaviors to search for when determining how to code a given incident. An individual coded as displaying no negative emotionality would be associated with a benign interaction. Individuals in these interactions display audio properties where there is no detection of increases in the vocal tone beyond what would be necessary to ensure they were heard, no visual properties reflecting agitation or other visible signs of negative emotionality, and would be

considered an interaction that would not draw the attention of an onlooker. These individuals would receive a “0”. A low emotional state would reflect audio and video properties associated with a relatively calm interaction where there were no signs of agitation, yelling, or screaming. Individuals coded as having a low emotional state would show signs of low levels of emotionality, though these emotional states were infrequent and would not draw the attention of onlookers. A medium emotional state includes signs of agitation or distress, and irritability that once occurring was maintained over the period of the interaction and would be considered to draw the attention of onlookers. High emotional states (which were merged with medium) included rage, terror, panic, or fear that would be more likely to draw the attention of onlookers. Furthermore, we instruct coders to take into account a variety of other emotional cues like facial expressions, hand gestures, and body posture when determining the appropriate emotional state for the suspect and officer. For non-verbal cues, we draw video examples reflecting predominate nonverbal behavior associated with agitated states (see DePaulo 1992). The frequency distribution of the dependent variables is displayed in Table 1.

-Insert Table 1 Here-

*Independent Variables.* The independent variables include measures of suspect characteristics, officer and suspect behaviors, and general contextual factors. Specifically, we include measures of the suspects gender, race, and whether or not they appear to be under the influence of alcohol or drugs. Regarding behaviors, we include measures of verbal interruptions reflecting specific moments when either the officer or suspect interjects to talk over the other person. We include this specific measure as a way to determine to what extent interruptions are associated with negative emotionality, as interruptions contribute to poor interactions (Chant et al., 2002). Additionally, we include measures of whether the suspect agreed with the stop, if the

suspect was adversarial, as well as indicator variables noting whether the officer indicated that the BWC was recording, provided a reason for the stop, and whether this was a proactive or dispatch driven stop. Lastly, we control for a variety of environmental factors, including the presence and behavior of bystanders, whether or not school was in session (important, as this is a college community), and which shift the officer was working on. Table 2 provides a description of each variable with each hypothesized influence on the observed emotional states.

-Insert Table 2 Here-

Our descriptive analysis shows that certain environmental, behavioral, and individual characteristics have a significant relationship with suspect and officer emotional states. Table 1 gives the bivariate relationships, along with the descriptive statistics for the independent variables.

### **Generalized Ordered Logit Models**

Given the ordinal nature of our primary dependent variables, we report coefficients from an ordered logistic regression. We assume parallel-lines, meaning the effect of each independent variable does not vary across the ordered categories (Long & Freese, 2004; Long, 1997; Williams, 2016). A series of simple Brant tests indicated that our initial assumption did not hold, suggesting the relationship between each independent variable and the dependent variable was not constant across the categories of the dependent variables.

Therefore, we decided to implement the more complex Generalized Ordered Logit Model, which is robust to violations of the parallel lines assumption. This model was estimated using the `gologit2` STATA command originally written by Williams (2006; 2016). In order to relax the parallel-lines assumption, the coefficients are estimated using a series of binary logistic regressions which are then collapsed into the final model. Unlike non-ordinal alternatives (like

multinomial logit), these models are relatively easy to interpret. For example, in the present study, the coefficients represent a comparison between no emotional state versus low and medium/high and no and low emotional states versus medium/high. Thus, these models can be interpreted the same as a standard logistic regression.

Since some variables may meet the parallel lines assumption while others may not, a generalized ordered logistic regression allows researchers to set the levels of constraint for the parameters or create models with no constraints and use stepwise regression to relax the modeling constraints until all variables meet the parallel-lines assumption (Williams, 2006). However, using the stepwise approach (also called autofit) is not without limitations, as imposing constraints could introduce error at the .05 level, producing results which are by chance (Williams, 2016, p.19). While there are several potential alternatives to using autofit, recognizing the overall sample size and within cell sample size issues we decided to use a stepwise approach with a more stringent statistical cutoff. Thus, similar to Williams (2006), we reduced the level of significance to .025 (see p.66). As a robustness check, we also collapsed the dependent variables and re-estimated the models using simple logistic regression. These models yielded the same substantive results.

## **Results**

We develop separate models for the observed emotional states of the officer and suspect. Within each model, we test the effects of demographics, behavior, and environmental (contextual) factors on the observed negative emotional state of the officer and suspect. Outside of a few necessary differences, the officer and suspect models are the same. The only exception to this is when we test for specific behaviors associated with an officer. For example, while the dialogic model of Bottoms and Tankebe (2012) would support including principles of procedural

justice as a factor (i.e. telling the officer for the reason of the stop), we would not expect the community member to tell the officer the reason for the stop. However, we do measure if the community member disagreed with the reason for the stop or if they ignored the statement made by the officer.

#### *Observed Negative Emotional State of the Suspect*

To help interpret the results, we use a dash (---) when coefficients are identical across categories. As described in the methods section, we were unable to test the influence of officer demographics on the observed emotional state of the suspect. The officers in our sample were predominately male, with very few incidents involving a female officer, and all our officers were white. Therefore, we were only able to examine the influence of suspect characteristics.

Table 2 reports the results from a series of generalized logistic regressions. Interactions with male suspects are associated with lower odds of escalating to an elevated negative emotional state. Interactions with nonwhite suspect and those under the influence of drugs or alcohol were not associated with the observation of a negative emotional state. As expected, interactions where the officer interrupts the suspect were about three to five times more likely to result in negative emotions than interactions without interruptions by the officer, depending on the number of interruptions made by the officer.

Also, as expected, the negative emotional state of the officer influences the observed negative emotional state of the suspect. The coefficient suggests that low and medium/high observed negative emotional states are associated with an increase in the likelihood the emotional state of the suspect increases to a low or medium emotional state are 10 and 11 times more likely ( $p < .01$  &  $p < .001$ ).

-Insert Table 2 Here-

*Observed Negative Emotional State of the Officer*

Next, we examine the predictors of officer emotional states. Table 2 presents the generalized ordered outcome models testing the influence of suspect demographics, behavior, and contextual factors on the observed emotional state of the officer. Unlike prior research suggesting race (Holmes & Smith, 2008) and gender have an influence on the observed emotional state of the officer, we do not find that these interactions are, on their own, associated with a change in the observed emotional state of the officer. This is consistent with the research suggesting who a person is has less of an influence than the behaviors the person engages (Klinger, 1995). Interestingly, interacting with individuals under the influence of drugs or alcohol is not associated with changes in the observed emotional state of the officer. Rather, suspects using an adversarial tone increased the odds the observed emotional state of the officer changed by over 3 times. Interestingly, suspect interruptions occurring when the officer is not emotionally charged decreases the odds that it escalates (OR = .34). Even at higher levels of interruptions, when the officer was not experiencing a negative emotional state, the odds of escalating remained lower ( $p < .05$ ). However, if the officer is already emotionally charged, the odds increase by nearly six times ( $p < .05$ ). Bystander interaction displays a statistically significant influence on the odds of increasing the observed negative emotional state of the officer (OR = 10.19) when the officer is not emotionally charged. Additionally, when compared to interactions occurring when the university is not in-session, the odds of increasing the observed emotional state was more than 3 times greater when the school was in session. Incidents occurring during a shift overlap reduce the odds the observed emotional state of the officer increases (OR = .44).

Introducing the observed emotional state of the suspect on the observed emotional state of the officer shows a profound influence supporting prior findings that escalating emotional states have a reciprocal influence (Collins, 2009). The coefficients suggest that low and medium observed emotional states are associated with an increase in the likelihood the emotional state of the officer. Increases to a low or medium emotional state are 12 and 13 times more likely ( $p < .001$ ).

#### *Mediation and Decomposition Analysis*

Recognizing the influence of the observed emotional state on both the suspect and officer, we perform a decomposition and mediation analysis using Stata 13. We use the method developed by Karlson, Breen, and Holm (2013). The KHB method estimates all effects, while also rescaling the coefficients to isolate the direct and indirect effects of selected variables. This allows researchers to explore the influence of mediators and quantify their contribution to the overall total effect. As the KHB method is in the experimental stage for generalized ordered outcome models, we use the ordered logistic regression method for the mediation analysis. Because the results of the ordered and generalized ordered logistic regressions were similar in terms of sign, direction, and significance, this decomposition and mediation analysis offers a reasonable estimate of these effects.

Table 3 presents the results of both associated procedures using the observed emotional state of the officer to predict the observed emotional state of the suspect (controlling for suspect demographics, officer behavior, and environmental factors). The reduced model (total effect) does not include the controls in the model and shows that the officers emotional state influences the observed emotional state of the suspect with a coefficient of 1.80 (OR = 6.0). However, when the controls are introduced, the full model (direct effect) shows that the effect of the officers

observed emotional state decreases to 1.57 (OR = 4.82). The difference in the size of effect between the reduced and full model (.23) shows the mediating influence of the controls.

However, the mediating effects were not statistically significant. This suggests that while suspect demographics, officer behavior and environmental factors have an influence on the observed emotional state of the suspect, these situational and contextual factors are not as strong as the observed emotional state of the officer.

-Insert Table 3 Here-

Table 3 displays the mediation analysis testing and decomposition results for the influence of the observed emotional state of the suspect on the observed emotional state of the officer (controlling for suspect demographics, suspect behavior, and environmental factors). The influence of the suspects emotional state on the officer's emotional state is more profound with the reduced model producing a coefficient of 1.71 (OR = 5.57). Including the controls in the model shows that the effect of the suspects observed emotional state on the emotional state of the officer decreases to 1.36 (OR = 3.90). As with the prior model, the difference in the size of the effect between the reduced and full models (.35) is not statistically significant. Again, this suggests that while social context and incident characteristics matter, the observed emotional state of the suspect accounts for a significant part of the influence.

## **Discussion**

The results show that some situational and environmental factors influence officer and suspect emotional states. These factors vary in size of influence, though they come to influence the creation of a heightened observed negative emotional state and for some factors decrease the odds of escalating significantly. As is expected, we see considerably higher observed emotional states for suspects. Recognizing our data set includes criminal code violations; our sample is

primed for interactions that have the potential to display higher negative emotional states.

Concerning officer emotional states, as van Gelderen Heuven and colleagues (2007) offer, police officers are expected to regulate their emotions and the lack of high observed negative emotional states may be a result of this expectation compounded by potential emotional dissonance, which we discuss below. It was encouraging to see that the observed emotional states of officers in our study did not change based on the gender, race, or ethnicity of the suspect. Rather, for both the suspect and officer, we see changes in the observed emotional state based on behaviors and environmental factors.

#### *Officer Emotional State*

Concerning the observed emotional state for officers, we want to be clear that police work, by the nature of the mandate, is emotionally demanding. The variations we see are important, as we would not expect officers to display no negative emotions or to be unaffected by situational and environment factors. In fact, officers primarily displaying no negative emotions would be alarming (Grandev, Rupp, & Brice, 2015). Moreover, if we measured disproportionately high-observed states, it would be likewise alarming. The lack of high-observed negative emotional states among the officer sample is expected. As prior research shows, there are greater demands placed on officers to regulate their emotional states (Bakker & Heuven, 2006; Daus & Brown, 2012; Toch, 2002; van Gelderen et al., 2011). Moreover, the nature of police work sees officers experiencing a variety of emotional states with limitations on what is appropriate for display depending on the context (Rafaeli & Sutton, 1991; van Gelderen et al., 2007). In many ways, officers are engaging in “emotional code switching”: trying to decide on what is the most appropriate emotional response when engaging with suspects, victims, and bystanders, which will then vary based on the call type and sociodemographic

context of the aforementioned interactions. Additionally, there is a prohibitive cost officers may pay when not regulating their emotions, producing psychological strain, emotional burnout, and a state of emotional dissonance (van Gelderen et al., 2007). Additionally, overregulation of those emotions is detrimental to individuals (Rafaeli & Sutton, 1991; van Gelderen et al., 2007).

While we do not measure high observed emotional states for officers, it does not discount the likelihood that internally the officer may be experiencing this high emotional state. It is for this reason, it is important to consider carefully what factors are associated with the likelihood of the observed emotional state of the officer increasing.

Effective interpersonal communication remains a vital skill set for any service related profession and police work is no different. Reformers have consistently called for improvements in skill acquisition and on-going training in all areas relating to interpersonal communication (Rosenbaum and Lawrence, 2017). One important part of effective verbal communication is the creation of a mutual communication framework (Crowley & Ivey, 1976; O'Toole, 2016; Spitzberg & Cupach, 2012). However, it is important to highlight this mutual communication does not equate to equal speaking by both parties. Rather, this mutual communication is commensurate with meaningful contributions, active listening, and the visible presence of posturing associated with engagement. When we examine the situational factors associated with changes in the observed emotional state of the officer, we did not observe any direct influence based on gender, race, or the presence of drug or alcohol intoxication. This is consistent with prior research suggesting suspect behavior has more of an influence on officer behavior than the demographics of the person (Terrill & Mastrofski, 2002).

We expected that interruptions would cause the observed negative emotional state of the officer to increase. However, when the officer was not in an observed negative emotional state,

the odds decreased. The psychological strain and emotional regulation research would suggest that officers have a surplus of psychological energy for emotional regulation and interruptions at this stage may be attributed to a normal interaction. That is, officers have come to expect some level of interruption. At this emotional level, these interruptions may not be perceived as interruptions. However, when the officer was in a heightened observed emotional state, interruptions were associated with higher odds of increasing the observed emotional state of the officer. Prior research would suggest that as the nature of the interaction becomes more psychologically demanding, there is not as much energy to regulate the emotional state (Rafaeli & Sutton, 1991; van Gelderen et al., 2007). Subsequently, interruptions occurring in a heightened emotional state need more energy to maintain, resulting in an increased odds the observed emotional state changes. Suspects using an adversarial tone displayed higher odds of increasing the probability the observed emotional state of the officer increased. This is again consistent with prior research suggesting that suspect behavior is one of the primary factors which influences officer behavior (Klinger, 1995; Terrill & Mastrofski, 2002).

Concerning bystanders, we examined their presence and interaction (directly communicating or physically approaching the officer). Interestingly, the presence of bystanders does not appear to influence changes in the observed emotional state of the officer. Rather, bystanders interacting with the officer were associated with changes in the odds the officer's emotional state increased. This would be consistent with the body of research suggesting a stress-induced threat appraisal response (see Grandey, Dickter, & Sin, 2004; Anderson & Bushman, 2002), which in our research would be associated with changes in the odds the negative emotional state changes. This body of research would suggest this increased strain places more psychological demand on the officer's emotional regulation. As the emotional

regulation literature would suggest, this added psychological strain reduces the capacity for emotional regulation, influencing the odds the officers' negative emotional state changes officer (van Gelderen et al., 2007).

We also found shift overlap reduced the odds that the observed emotional state increased, which we associate with an excess in available resources. As Aspinwall and Taylor (1997) suggest, when people experience exhaustion, they are less able to regulate their emotions. When a shift overlap occurs, there are more organizational resources available to manage the call volume, more officers able to be called to a scene, and there may be less pressure to speed up clearing a call. Officers may be better able to regulate their emotional states because of this excess of resources, though our data cannot state if this shift overlap means an actual increase in available resources or a change in the perception of officers during these times. It could be hypothesized that the nature of the calls for service could be different during these overlaps, which could explain why there is decreased odds of the observed emotional state increasing. However, as these shift overlaps occur over different time periods, it is less likely the nature of the calls has changed during these overlap periods, though it would be important to control for crime type in future research.

Our results also show changes in the observed emotional state of officers when the university is in session. Police departments in "college towns" often experience dramatic shifts in call volumes due to seasonal population fluctuations. The qualitative and quantitative nature of these incidents is therefore quite different. A start of the fall semester may be associated with higher levels of personal and organizational stress. Specifically, as the frequency of calls and number of disputes increase, greater expectations are placed on the agency and officers to "maintain order", and the marked increase in calls for services relating to drugs and alcohol. As

our results show, incidents taking place during this period are associated with greater odds of increasing the emotional state of the officer. However, we do not see this effect for the observed emotional state of the suspect. This may suggest that this period is more emotionally demanding on the part of the officer, and these interactions make it more difficult to regulate their emotional state. Alternatively, officers may be primed for a heightened emotional state because past experiences have encoded negative emotional states (Berkowitz, 1989) for this period, increasing the odds incidents in this period are associated with higher observed emotional states.

#### *Suspect Emotional State*

Results show that female suspects are significantly more likely to result in higher levels of negative emotional states than incidents with male suspects. Though we might intuitively expect confrontations between officers and male suspects to be more emotionally charged, a wide body of research suggests that women experience as much, if not more, anger in response to stress than men (Broidy & Agnew, 1997; Campbell, 1993; DeCoster & Zito, 2010; Kopper & Epperson, 1991) and that women are less likely to suppress emotions than men (Flynn, Hollenstein, & Mackey, 2010; Gross & John, 2002). Interestingly, the gender of the suspect does not predict officer emotional states, indicating that officer's emotional states are driven more by the context of the interaction than by suspect characteristics.

Officer behavior, like suspect behavior, appears to have a greater influence on the suspect's observed emotional state. No greater is this seen than within failures to apply effective interpersonal communication. For example, when officers interrupted the suspect, it increased the odds of the observed negative emotional state of the suspect escalating. For this project, we did not analyze the nature of the conversation, though we believe this is a critical area of future research. More specifically, scholars should explore what is said during these interactions to

better understand the effect of procedural justice, verbal de-escalation, and other similar trainings on reducing the likelihood of the emotional state of the suspect increasing.

### **Limitations and Future Research**

While the results presented introduce an important and alternative way to study individual, situational, and environmental factors shaping police interactions, this study is not without its limitations. Centrally, our dependent variables are *observed* negative emotional states. This study does not measure the experienced emotions felt by either party, nor do we make claim these observed states reflect those experienced states. Rather, our coding procedure looks to the presence of negative emotionality. Future research should try to validate and understand when observed emotional states and individual experienced emotional states align or are divergent. Recognizing the complexity and impossibility of retroactively determining experienced emotional states, analysis of the audio properties could prove important to validate the properties associated with an intense negative emotional interaction. Specifically, if analysis can isolate the officer and suspect while accounting for technical and environmental factors, then we could significantly advance our understanding of how emotion influences police-citizen encounters.

Another limitation of this study is the grouping of negative observed emotional states. As Vigil (2009) discusses, expressed emotions exist on a continuum and are dynamic. People experience a range of emotions, with some more readily detected through body language, facial cues, and voice (Aviezer, Trope, & Todorov, 2012) and some, which are very difficult to readily see. As concerns both, BWC by design make it difficult to assess body cues and facial expressions from the point-of-view of the officer. As Aviezer, Trope, & Todorov (2012) show body cues are one primary way we interpret intense negative emotions, it is possible one of the reasons we do not detect high observed emotional states from officers is that we are limited by

the point-of-view, which may be compounded by individual and organizational factors regulating the expression of specific emotions. While this is a limitation, we believe it is important to consider that as these videos are released to the public, be they through the agency or onlookers, assessments will be made as to the observed emotional states within and decisions made. It is imperative that future researchers attempt to validate these observed emotional states.

As it concerns emotional states, we believe grouping negative observed emotional states is a limitation, though necessary for modeling purposes. A larger sample size will allow for the disaggregation of negative emotional states into specific emotions (anger, rage, disgust, etc.). Additionally, we believe it is important to model for positive emotional states. Police interactions are most often studied through a lens of negative emotion, though we readily observe in our data interactions with positive observed emotional states.

From a modeling perspective, we treat emotional states as static, which is consistent with prior research studies. However, emotional states are dynamic and may be expressed at various levels and as different emotions. For example, as we observed in several incidents, a suspect would transition from relatively calm and slight frustration with behavioral signs of agitation to rage with the presence of violence directed at the officer. As Vigil (2009) explains, many emotive gestures are pleiotropic (simultaneous displays of multiple emotions) and should be modeled dynamically. The current modeling uses a static dependent variable for the highest observed emotional state and does not account for a change in that state. Future research should annotate BWC footage for each specific observed emotional state in an interaction and the intensity and duration of that state. We do recognize this will be resource intensive, though it will be important to test existing theories.

Additionally, our inclusion of interruptions in our modeling, while important as a behavioral indicator are potentially confounded with the emotional state. As there is a relationship between interruptions and emotional states, it could be that interruptions are more likely to occur during emotionally intense interactions and that interruptions increase the emotional intensity of the interaction. Future research should collect the time points associated with each interruption and any changes in the emotional state.

### **Conclusion**

The present study finds both significant and substantively meaningful results. Certain individual, situational, and environmental factors are associated with changes in observed negative emotional states, though the prominence of the reciprocal relationship between the officer and community members' emotional state reasserts the importance of emotional regulation on the part of officers. Not only did suspects consistently display higher levels of emotions, but officers also tended to refrain from mirroring suspect behavior. Police-citizen encounters, in our sample, rarely get out of hand precisely because officers stayed calm even when involved in tense situations. Rather than matching fire with fire, officers appear to regulate their emotions. This does not mean officers do not express emotion. Rather, the officers in our study do so in ways that are not immediately apparent to the casual observer.

From a policy perspective, treating BWC footage as empirical data offers important data points that can inform the development and evaluation of police training and interventions. Additionally, as Author (2016) highlighted in his study exploring how police officers adapted to body-worn cameras, some officers discussed the practice of reviewing their prior footage, in what Author (2016) identified as a global theme relating to Self-Correcting Behavior (p.139). Police administrators and individual officers should take advantage of this valuable data to

understand how best to interact with the community, to deconstruct their prior emotionally charged interactions. If officers learn best from highlighting best practices within the agency, this footage offers an important opportunity to transform institutional culture from a punitive use of the footage to a focus on best practices. As our research demonstrates, there are considerable opportunities to explore strategies and tactics individual officers deploy in situations that by all accounts should have escalated and did not. Why they did not escalate become an opportunity for officers, supervisors, and trainers to explore.

Undoubtedly, as the analysis of body camera footage becomes more advanced, future scholars will yield important insights into these subtler forms of emotional expression and how they can be used to de-escalate a situation. Police agencies are at a pivotal moment, where they may embrace this technology to learn or they can continue to treat it merely as an accountability tool. We hope the present study offers an important foundation for this and other related research.

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**Table 1: Descriptive statistics**

Variable	Mean (SD)	Description
<i>Dependent Variables</i>		
Officer Emotional State	.79 (.40) <sup>b</sup>	0 = No Observed Negative Emotion, 1 = Low, 2 = Medium/High
Suspect Emotional State	1.09 (.53) <sup>a</sup>	0 = No Observed Negative Emotion, 1 = Low, 2 = Medium/High
<i>Suspect Characteristics</i>		
Male	.68 (.47) <sup>b</sup>	0 = Female, 1 = Male
Nonwhite	.23 (.42)	0 = White, 1 = Nonwhite
Drug/Alcohol	.35 (.48)	0 = No evidence of intoxication, 1 = Suspect appears intoxicated
<i>General Behaviors</i>		
Suspect Interrupts	.31 (.63) <sup>b</sup>	0 = No interruptions, 1 = 1-2 interruptions, 2 = 3+ interruptions
Officer Interrupts	.34 (.67) <sup>b</sup>	0 = No interruptions, 1 = 1-2 interruptions, 2 = 3+ interruptions
<i>Unique Suspect Behaviors</i>		
Disagreed with Reason	.18 (.38)	0 = Did not disagree, 1 = disagreed with reason for stop
Adversarial Tone	.18 (.38) <sup>ab</sup>	0 = Regular Conversation, 1 = Combative Tone
<i>Unique Officer Behaviors</i>		
Statement of Recording	.09 (.28)	0 = No statement, 1 = Officer stated the BWC was active
Procedural Justice	.67 (.47)	0 = Reason not given, 1 = Gave suspect reason for stop
Proactive	.35 (.47)	0 = Dispatch initiated stop, 1 = Officer initiated stop
<i>Environmental Factors</i>		
Bystanders Present	.53 (.49) <sup>a</sup>	0 = No bystanders present, 1 = 1+ bystanders present
Bystander Interaction	.41 (.49) <sup>a</sup>	0 = Bystanders passive, 1 = Bystanders interacted
University	.59 (.49) <sup>a</sup>	0 = Not University season, 1 = University in session
Shift Overlap	.35 (.47)	0 = No shift overlap, 1 = Occurred during shift overlap

N = 287. a indicates a statistically significant ( $p < .05$ ) bivariate relationship (using Spearman's rho) between independent variable and officer emotional states, b. indicates a statistically significant ( $p < .05$ ) bivariate relationship (using Spearman's rho) between independent variable and suspect emotional states

**Table 2: Generalized ordered logistic regression models on suspect and officer negative emotional states**

Variable	Suspect Negative Emotional State (Odds-Ratios)		Officer Negative Emotional State (Odds-Ratios)	
	No Emotions vs Low	Low vs Medium/High	No Emotions vs Low	Low vs Medium/High
	<i>Negative Emotional States</i>			
Officer Low	10.20**	1.50		
Officer Medium/High	11.09***	---		
Suspect Low			12.11***	---
Suspect Medium/High			13.88***	---
<i>Suspect Characteristics</i>				
Male	.43***	---	1.83	---
Nonwhite	.54	---	.64	---
Drug/Alcohol	1.40	---	1.30	---
<i>Interruptions</i>				
Officer 1-2 Interruptions	2.90**			
Officer 3+ Interruptions	5.30***			
Suspect 1-2 Interruptions			.34*	5.72*
Suspect 3+ Interruptions			.28*	5.07
<i>Unique Suspect Behaviors</i>				
Disagreed with Reason			1.08	---
Adversarial Tone			3.39*	---
<i>Unique Officer Behaviors</i>				
Statement of Recording	2.22	---		
Procedural Justice	1.27	---		
Proactive	.69	---		
<i>Environmental Factors</i>				
Bystanders Present	.76	---	.47	---
Bystander Interaction	1.29	---	10.19***	1.07
School	.92	---	3.28***	---
Shift Overlap			.44*	---
Constant	3.54**	.24***	.17**	.0004***
<i>Model Fit</i>				
Pseudo-R2	.18		.26	

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . Generalized ordered logistic regression models produce different coefficients per ordinal comparison. --- indicates the parallel lines assumption is met and the coefficients are identical.

**Table 3: KHB Mediation and Discrimination Analysis**

	Suspect Negative Emotionality on Officer Negative Emotionality	Officer Negative Emotionality on Suspect Negative Emotionality
Total Effect	1.71***	1.80***
Direct Effect	1.36***	1.57***
Mediating Effects	.35	.23
Mediation Percentage	20.46	12.77