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Re-examining the Use of Force Continuum: Why Resistance is Not the Only Driver of Use of Force Decisions

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Abstract

Policing research and use of force policies have been guided by the continuum model for the past several decades. The continuum specifies a relationship between the amount of resistance a suspect presents and the amount of force that an officer should use to respond to or overcome a given level of resistance. In this paper, we show that resistance alone is an insufficient indicator of the necessity and level of force to be used both conceptually and empirically. We argue for the inclusion of considerations of perceived threat in the analysis of use of force incidents—both in policy and in research. Our analysis also reiterates the importance of police culture in understanding use of force decisions.

Keywords

use of force, force continuum, response to resistance

In May and June 2020, massive protests were held across the United States and in other countries demanding major police reform and defunding or abolishing law enforcement

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agencies. While the trigger event was the killing of George Floyd by members of the Minneapolis Police Department, the larger crisis has been attributed to poor policy-making and decision-making regarding police-citizen encounters that result in uses of force. Protestors accurately point out that police departments and their officers break the social contract they are expected to uphold when policing involves misconduct and brutality. One of the suggested reforms coming out of the protests involves the policies suggested by #8cantwait—which include the establishment of a use of force continuum in every police department. Use of force continua provide officers with a framework that authorizes levels of force based on perceived levels of resistance from suspects. The policies of #8cantwait resonated so strongly that many cities across the country passed resolutions mandating their police department adopt the policies (see, for example, Memphis – Poe, 2020; Charlotte – WBTV Web Staff, 2020; and Pittsburgh – Wadas, 2020). However, what is often lost in this conversation is that many police departments already have force continua and that use of force incidents that many find objectionable are permitted under these policies. For example, in some force continua an officer who perceives that a subject is actively resisting (or in some cases fleeing), can use physical force or a less-lethal weapon such as a TASER or OC spray in response to the resistance or flight. As a result, the images of officers using high-capacity streamers to pepper spray protestors as they are backing away is troubling, but may not be violations of a force continuum or agency policy as the protestors are resisting and the officers are responding with an "allowable" level of force.

Furthermore, use of force continua inherently rely on the officer's subjective perception of resistance and provide opportunities for officers to deviate from the policy in deciding which level of force to use (Terrill & Paoline, 2012). Specifically, prior research has shown that multiple individuals viewing the same incident can perceive different levels of force and resistance (Hickman et al., 2015) and that a variety of officer characteristics, such as gender (National Center for Women and Policing, 2002), age (Crow & Adrion, 2011), and even cultural attitudes (Terrill et al., 2003), can impact officers' decision-making in a use of force context. Thus, resistance may not provide objective guidance on if and how much force should be used in a given situation.

We suggest that police departments and their officers move beyond the use of suspect resistance to justify force and adopt and train threat assessments (in our study, exemplified by the concepts of ability, opportunity, and intent) to determine when an officer should use force (see also McLean et al., 2019). Under this conceptualization, officers should not use force unless a subject has the ability to harm the officer or another person, the opportunity to harm the officer or another person, and the intent[1] to harm the officer or another person (Stoughton et al., 2020). Recall the protest incident described above where an individual is "actively resisting" and/or fleeing, but is not presenting the ability, opportunity, or intent to harm someone. The subject should not have force used against them, as there was no objective threat.

Our research examines how officers perceive incidents with citizens and how they make use of force decisions. Prior to the killing of George Floyd and the subsequent protests, we administered a survey with an integrated video of an officer–citizen

interaction to officers in a large, western United States police department. We use their responses to examine factors that correlate with officers' perceptions of incidents and decisions to use force. Our research findings suggest that resistance is not reliable as a singular indicator of officers' use of force decisions and that other factors influence the officers' recommended level of force.

Use of Force Continua in Practice

The use of force continuum was developed at FLETC in the 1970s as a training tool that described a use of force framework whereby police officers recognize that there is a hierarchical order of force and resistance, and that the police response to resistance must be proportional. In other words, the police can use force equal to or slightly higher than the suspect's level of resistance (Stoughton, et al., 2020). Over the years, this training tool has been repurposed as a substantial component of a number of police departments' use of force or response to resistance policies in an effort to ensure that officers only use proportional force in response to citizen resistance (Terrill & Paoline, 2012). From a legal standpoint, however, the use of force continuum is limited in its ability to govern excessive force because of its reliance on a single standard for understanding the appropriate level of force—resistance. The Supreme Court in *Graham v. Connor* required a multifactor reasonableness standard that incorporates the totality of the circumstances in understanding when force should be applied. Thus, considering only resistance neglects this totality of the circumstances and ignores factors that might indicate that force should (or should not) be used in a particular situation (e.g., the protestor example). Despite this legal acknowledgment, departmental policies continue to rely heavily on resistance in describing the appropriate level of force and academic analyses of the appropriate level of force continue to apply a "force factor" analysis that proxies appropriate levels of force by matching resistance to force (e.g., Alpert & Dunham, 1997; 2004; Celestin & Kruschke, 2019; Hine et al., 2019; Terrill et al., 2003).

Assessing Threat: Ability, Opportunity, and Intent

In many real-world situations, the determination of whether force is reasonable relies not on the subject's level of resistance, but on the immediacy or imminence of the threat posed by a subject. To assess the immediacy of a threat, and as noted above, legal scholars have identified three key factors: ability, opportunity, and intent (Stoughton et al., 2020). Ability is defined as "the individual's physical capacity to cause an identifiable type of harm" (*p*. 33), opportunity is "the environment, and situation, specifically with regard to the individual's proximity to the potential target or targets" (*p*. 33), and intent is "the individual's perceived mental state, their apparent desire to cause physical harm to the target or targets" (*p*. 34). By incorporating these three factors, officers can assess whether or not a subject is an immediate threat and whether the use of force is necessary to neutralize that threat.

This is not to suggest that resistance plays no role in the use of force decision-making process. Resistance is a critical element of the subject's intent (i.e., a subject who resists likely has greater desire to inflict harm), but more important, resistance should play a key role in understanding the proportionality of force—ensuring that the appropriate level of force is used to end the threat. However, traditional models of the use of force continua conflate these decision points and place resistance in a role where it is not only used to indicate the level of force to be used, but also *whether* force should be used. This can lead to disastrous consequences, such as those seen in *Armstrong v. Village of Pinehurst* where a mentally ill man resisted police officers, posed no immediate threat, but was tased multiple times and died from the force used by them. As a result, the Fourth Circuit created a new standard for the use of the Taser and admonished the police department for the excessive use of force.

Prior Research on Use of Force Continua

In studying the prevalence of use of force continua, Terrill and Paoline (2012) found that approximately 80% of police departments have some type of a continuum contained in their use of force policies. Of those agencies, 73% followed some sort of linear design with levels of force presented in some form of increasing to decreasing fashion, while about 10% of agencies presented force in a circular or wheel approach and 10% presented it in a matrix format. Regardless of presentation, this suggests that the movement to incorporate use of force continua as part of police reform policies is likely to be ineffective as the vast majority of agencies already utilize some form of the continuum. Additionally, as noted earlier, many of these policies provide numerous opportunities for officers to ignore the continuum in extenuating circumstances, thereby limiting their restrictive value (Terrill & Paoline, 2012).

In the event that a department utilizes a use of force continuum and restricts officers to follow the proscribed levels of force, there are still issues in ensuring that officers use a reasonable level of force. Rojek et al. (2012) point out that the nature of use of force reports require officers to report the level of resistance presented by a subject post-hoc, meaning that officers can indicate that the level of resistance presented by a subject matches the level of force the officer eventually used.[2]

Using and interpreting a force continuum is further compounded by the inherent subjectivity of a perceptual measure of resistance. Hickman et al. (2015) obtained use of force narratives from the Seattle Police Department and had two teams of coders rate the level of resistance and force used in 1238 use of force reports based on the officer's written narrative in the report. While still limited to examining the incident in hindsight (and from the officer's narrative point of view), this provided an opportunity to examine how two independent groups of people would perceive the same incident. Interestingly, the two teams demonstrated an intraclass correlation of 0.85 in identifying the maximum level of force used by the officer, but only 0.62 in identifying the maximum level of resistance used by the suspect. Thus, the raters largely agreed on what level of force the officer used, but commonly disagreed on the level of resistance presented by

the suspect. To the extent that officers are unable to agree on the level of resistance presented by the suspect, the use of force continuum is not useful in restricting the level of force that an officer can use.

Use of Force Decision-Making

If use of force decision-making is not linked to guidelines outlined in use of force continua, then it is important to consider what factors may shape an officer's decision. As early as 1980, scholars studied the individual characteristics of police officers that make the use of force more or less likely (Friedrich, 1977), but research examining the correlates of uses of force have blossomed in recent decades (Alpert et al., 2004; Paoline & Terrill, 2007; Terrill & Mastrofski, 2002; Worden, 1995). Unfortunately, studies of individual officer characteristics are largely inconclusive on a number of potential correlates of force. With respect to gender, studies have alternatively suggested that officer gender is irrelevant (Kaminski et al., 2004; McCluskey & Terrill, 2005; Paoline & Terrill, 2007) and that male officers are more likely to use force (Garner et al., 2002). In considering race, studies have found both that officer race does not affect uses of force (Friedrich, 1977; McCluskey & Terrill, 2005; Worden, 1995), that minority officers are more likely to use force (Cohen & Chaiken, 1972; Sun & Payne, 2004), and that minority officers are less likely to use force (Ba et al., 2021). When looking at age, researchers have shown that younger officers are more likely to use force (Bayley & Garofalo, 1989; Garner et al., 2002), and that age has no impact on use of force (McCluskey & Terrill, 2005; Sun & Payne, 2004). In sum, scholars have produced an extensive body of work on the correlates of uses of force resulting in little conclusive evidence.

One area where these conclusions are more consistent is the impact of police cultural values on use of force. Terrill et al. (2003) found that adherence to certain cultural values were related to use of force in two police departments using a merged dataset of survey data and systematic social observations of police officer encounters. Using survey data collected from samples of police officers, Silver et al. (2017) similarly found that cultural attitudes predicted support for uses of force and McLean et al. (2020) found that cultural attitudes predicted support for the use of excessive force.

Still, studies of the correlates of use of force decision-making are typically limited. First, if a study uses survey data (e.g., McLean et al., 2020; Silver et al., 2017), then the data captures support for use of force but not actual use of force decision-making. Second, if a study uses behavioral data such as use of force reports or systematic social observation, then researchers are left comparing officers in different situations (see also, Ba et al., 2021 for the problems and potential solutions to this type of research). To understand well how these correlates impact use of force decision-making, the researcher would ideally watch different officers react to the exact same situation, rather than comparing different officers reacting to wildly different situations. In fact, the differences in policing roles and situations, may explain some of the inconclusive findings such as why younger officers—who are more likely to be on patrol in high-

crime areas and have frequent contacts with the public—are at times found to use more force than older officers—who are more likely to take on specialized roles, such as investigative or administrative functions, with more limited public contact (Alpert & Dunham, 2004).

Current Study: Toward a Better Understanding of Force

The present study addresses two gaps in the literature: understanding the role of ability, opportunity, and intent in use of force decisions, and examining correlates of use of force decision-making. We utilize body-camera video of real-world police-citizen encounters coupled with a survey to create an opportunity to observe how multiple officers react to the same situation. This methodology provides valuable data on how police departments' use of force policies can include a force framework that considers the totality of the circumstances and a more thorough understanding of the correlates of use of force decision-making.

Methods

Data were collected from a survey with an integrated video of a police-citizen interaction which could result in a use of force incident. Officers were recruited for the survey at an in-service use of force training program at a large police department in the western United States.[3] Over a series of 4 weeks, officers were asked to participate in the survey prior to participating in the training program. Officers were handed paper surveys, asked to complete the front portion, and then wait for the video to begin. After all officers in the room had completed the initial portion of the survey they were then asked to view body-camera video of the encounter and complete the remainder of the survey, which included questions about the officer's reactions to the video.

Two videos were obtained from the police department's collection of body-worn camera video. Both incidents depicted a confrontation between police officers and a subject in the moments leading up to a potential use of force incident, though the video stopped prior to the resolution of the encounter. The videos were edited so that the opening of the video contained a slide that described the call for service information (e.g., "You are responding to a call regarding a robbery at a convenience store. When you arrive on scene the suspect is standing behind the counter. It is unknown if the suspect is armed."). The video then played the incident from the officer's point of view but ended before the encounter was resolved. The video was stopped so officers could provide honest answers regarding whether or not force was justified and at what level without being biased by what the officer in the footage actually did. These videos were selected because they depicted circumstances where the decision of whether to use force and, if so, the appropriate level of force, were unclear and subject to reasonable debate. Both videos depict a subject that is clearly causing an issue that needs to be resolved (i.e., a robbery in progress or blocking traffic) and are refusing to comply with the officers on scene, but neither subject threatens the officers or is apparently armed

(for a full description of the videos, see Supplemental Appendix A).[4] Notably, the agency participating in the study used a wheel approach to the use of force continuum in training documents while their policy laid out the consideration of the totality of the circumstances described in *Graham*. This approach is consistent with many departments across the country, as identified by Terrill and Paoline (2012).

Videos were alternated according to the date of the training, so officers taking the survey on an odd-numbered day watched Video 1 and officers taking the survey on an even-numbered day watched Video 2. This was done to ensure that the findings were not particular to a single circumstance (though, admittedly, they may be particular to two circumstances) and to ensure that the video selection was not specific to which officers were in the room. Additionally, both videos had a black male suspect. While we would have liked to explore issues of race and gender (and the potential intersectionality of perceived threat), we were limited in both the videos available to us and the number of officers who could be surveyed. By limiting our study to two videos we were able to have multiple training sessions surveyed for each video. If we had curated videos depicting suspects of different races and gender in different situations, we would have left open the possibility that differences in perceptions of the incident could be due to those race and gender differences OR differences in the incident. Unfortunately, the method we chose has the limitation of being unable to speak to differences in perceptions due to race and gender, but we hope to continue this line of inquiry by gathering additional videos and exploring alternative video options to examine these issues.

Per IRB regulations, officers were informed that if they did not want to participate or changed their mind about participating in the survey at any point they could leave the survey blank, turn it in partially completed or simply keep the survey and throw it away. Over the course of the study 360 surveys were distributed. All officers returned some portion of the survey completed, but many left portions blank. Long and Freese (2014) recommend calculating missing data using listwise deletion to determine what percentage of responses would actually be included in the main analyses for a study. For this project, this estimate is 75.83%, meaning that almost one-quarter of responses would be deleted if we proceeded with the analysis without accounting for missing data. Accordingly, multiple imputation by chained equations (MICE) was used to account for this missingness and reduce the likelihood of obtaining biased results or incorrect standard errors (Johnson & Young, 2011). More information on the multiple imputation can be found in the Analysis section.

Measures – Primary Variables

There are four primary variables of interest in this study that were all collected in the portion of the survey completed after the officers watched the video. The first is the perceived *resistance* of the subject, which is a single item that asks the officer, "In your view, what was the highest level of resistance the subject has offered?" with four possible responses: passive resistance, active resistance, active aggression, and

aggravated aggression. Each response category included a brief definition to ensure that all officers understood the terms. The second variable of interest is a measure of ability, opportunity, and intent (*AOI*). AOI is a mean-score of three items asking about the subject's ability, opportunity, and willingness to inflict harm on the officer or another person. Responses to each item ranged from 1 (Low) to 5 (High) and were averaged together for a single score that demonstrated strong internal consistency ($\alpha = 0.85$; a breakdown of responses to each individual item can be found in Supplemental Appendix b, Table 1).[5]

The third variable of interest is *necessity*. Necessity is a single item measured dichotomously that asks officers: "Do you believe it is reasonably necessary for the officer to use force now?" Response options were simply "yes" or "no." Finally, the fourth variable of interest is the *highest recommended level of force*. For this variable, officers were asked "what tactics would you recommend the officer use at this point in the interaction?" with response options of: communication/verbalization, tactical repositioning, empty hand tactics (e.g., strikes with the hands or knees, grabs, or pressure point holds), intermediate weapons (e.g., TASER, Baton, or OC Spray), and lethal force. Officers could check as many boxes as they would recommend, so as not to limit their options; however, this variable records the highest level of force that they recommend. Accordingly, communication/verbalization and tactical repositioning were collapsed into a single category to represent no force, with empty hand tactics, intermediate weapons, and lethal force, representing increasing levels of force in that order.[6]

Measures – Control Variables

Beyond these primary variables, data were collected on a series of control variables collected in the portion of the survey prior to the officer watching the video. These control variables included measures of *organizational justice*. Organizational justice is a mean-score of five items with statements such as "When an officer does a good job, top management will publicly recognize his/her performance." on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The scale demonstrated strong internal consistency ($\alpha = 0.72$). Organizational justice has previously been linked to commitment to comply with organizational policies (Wolfe & Lawson, 2020), so to the extent that the police department encourages officers to use the lowest level of force possible (as demonstrated by command staffs evaluation of the incidents used in this study), we would expect that higher evaluations of organizational justice would result in lower recommended levels of force.

Officers were also asked two items about their level of *cynicism* toward the public. These items asked "Based on your experience, what percentage of citizens officers encounter in their daily duties give police officers reason to be suspicious/distrustful?" Responses ranged from 1 (0%) to 5 (100%) in increments of 25% (i.e., 2 = 25%, 3 = 50%, 4 = 75%). These two items were averaged together to create a single mean-score (Spearman's $\rho = 0.64$).

Table 1. Descriptive Statistics.

	N	%
Resistance		
Passive resistance	309	87.04
Active resistance	32	9.01
Active aggression	3	0.85
Aggravated aggression	0	0.00
Ability opportunity intent	M = 2.81, SD = 1.08	
Necessity		
No	238	67.04
Yes	84	23.66
Highest level of force		
No force	208	58.59
Empty hand tactics	72	20.28
Intermediate weapons	54	15.21
Lethal force	5	1.41
Video		
Video 1	185	52.11
Video 2	140	47.89
Age		
21–24	12	3.38
25–29	53	14.93
30–34	43	12.11
35–39	55	15.49
40–44	55	15.49
45–49	65	18.31
50 and older	69	19.44
Gender		
Male	252	70.99
Female	62	17.46
Experience		
1–4 years	73	20.56
5–9 years	41	11.55
10–14 years	79	22.25
15–19 years	51	14.37
20 years or more	108	30.42
Rank		
Officer 1	20	5.63
Officer 2	167	47.04
Officer 3	52	14.65

(continued)

Table 1. (continued)

	N	%
Officer 4	11	3.10
Sergeant	49	13.80
Lieutenant	12	3.38
Education		
High school only	15	4.23
Less than 2 years of college	90	25.35
Associate's degree	78	21.97
Bachelor's degree	145	40.85
Graduate degree	25	7.04
Military		
No	275	77.46
Yes	79	22.25
Force experience		
No	82	23.10
Yes	273	76.90
Organizational justice	M = 3.06, SD = 0.66	
Cynicism	M = 2.41, SD = 0.72	
Low self-control	M = 2.24, SD = 0.56	
Warrior	M = 4.04, SD = 0.67	
Guardian	M = 4.24, SD = 0.76	

Note. Percentages may not sum to 100 due to missing data.

Next, officers were asked to answer a series of items regarding their level of *low self-control*. These items were taken from Tangney and colleagues' (2004) 13-item Brief Self-Control Scale and demonstrated good internal consistency ($\alpha = 0.84$). Response categories ranged from 1 (Strongly Disagree) to 5 (Strongly Agree) and responses were averaged to create a single mean-score with higher values representing less self-control.

Officers were also asked to answer a series of items regarding the perceived role of policing based on prior research into the warrior/guardian approaches to policing (McLean et al., 2020; Stoughton, 2015; 2016). Importantly, however, this scale was adapted to try to improve on weaknesses from previous studies, create a more balanced measure, and incorporate items from other police cultural literature (McLean et al., 2020; Paoline, 2004; Terrill et al., 2003). Thus, four items assessed the *warrior* mentality asking officers how important they perceived: "enforcing the law; " "patrolling aggressively by stopping cars, checking out people, running license checks, and so forth; " "patrolling for serious felony violations rather than stopping people for minor traffic violations and misdemeanors; " and "fighting crime." These items were combined into a single mean-score that demonstrated adequate internal consistency ($\alpha = 0.70$). Four items were also used to assess the *guardian* mentality that asked

officers how important they perceived: "working with the community to solve local problems; " "collaborating with community members in their daily duties; " "building trust between the department and the community; " and "having non-enforcement contacts with the public." Again, these items were combined into a single mean-score that demonstrated good internal consistency ($\alpha = 0.86$). Consistent with prior research, these items loaded on separate but correlated factors (Factor 1 eigenvalue: 3.16, Factor 2 eigenvalue: 0.90, r = 0.39).

Finally, in addition to these constructs, a series of background items were collected from officers as well. Officers were asked their *age* with response categories of 21–24 (1), 25–29 (2), 30–34 (3), 35–39 (4), 40–44 (5), 45–49 (6), and 50 and older (7). Officers were also asked their gender (0 = male, 1 = *female*), *experience* (1 = 1–4 years, 2 = 5–9 year, 3 = 10–14 years, 4 = 15–19 years, 5 = 20 years or more), *rank* (1 = Officer 1, 2 = Officer 2, 3 = Officer 3, 4 = Officer 3 + 1, 5 = Sergeant, 6 = Lieutenant), *education* (1 = high school diploma only, 2 = less than two years of college, 3 = associate's degree, 4 = bachelor's degree, and 5 = graduate degree), and prior *military experience* (0 = no, 1 = yes). Given the uneven intervals between the ordinal categories for age, experience, rank, and education, these variables were transformed into a series of dummy variables. Finally, *force experience* is a dichotomous variable that indicates whether the officer has previously used any force that involved intermediate weapons or deadly force (0 = no, 1 = yes). Descriptive statistics for all of the variables are included in Table 1.[7]

Analysis

The analysis proceeds in two stages. First, descriptive statistics of the responses to the video are examined to evaluate the validity of the resistance-based model of use of force decisions. Specifically, Tables 2 and 3 present the pattern of responses of perceptions of resistance and recommended levels of force for each of the two videos. Spearman's rho, the preferred correlation estimate for ordinal variables, is calculated to examine how well resistance is correlated with necessity and recommended force. This is then compared to Pearson's r estimating the correlation between the continuous ability,

Table 2. Resistance and Force Combined – Video 1

	Passive resistance	Active resistance	Active aggression	Aggravated active agg
	N (%)	*N* (%)	*N* (%)	*N* (%)
No force	91 (60.26)	10 (33.33)	0 (0.00)	0 (0.00)
Empty hand tactics	25 (16.56)	5 (16.67)	0 (0.00)	0 (0.00)
Intermediate weapons	31 (20.53)	14 (46.67)	1 (100.00)	0 (0.00)
Lethal force	4 (2.65)	1 (3.33)	0 (0.00)	0 (0.00)

Table 3. Resistance and Force Combined – Video 2

	Passive resistance	Active resistance	Active aggression	Aggravated active agg
	N (%)	*N* (%)	*N* (%)	*N* (%)
No force	105 (69.08)	1 (50.00)	1 (50.00)	0 (0.00)
Empty hand tactics	41 (26.97)	1 (50.00)	0 (0.00)	0 (0.00)
Intermediate weapons	6 (3.95)	0 (0.00)	1 (50.00)	0 (0.00)
Lethal force	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

opportunity, and intent variable and the categorical variables of necessity and recommended levels of force.

After examining these bivariate statistics, we estimate four sets of multivariate regression models. These models will analyze (1) officers' perceptions of resistance, (2) officers' perceptions of ability, opportunity, and intent, (3) officers' perceptions of the necessity of force, and (4) officers' recommended level of force, respectively. All control variables, including which video the participant watched is included in each of the analyses. Two models are estimated for both officers' assessments of the necessity of force and level of force recommended. The first model contains only perceived resistance, reflecting the traditional use of force continuum, while the second model includes ability, opportunity, and intent and represents the revised model that emphasizes both resistance and perceived threat. Due to the prevalence of missing data, multiple imputation by chained equations will be conducted prior to the multivariate analysis using Stata 16's MI suite of commands (35 imputations).[8] Multiple imputation is a recommended practice for dealing with missing data compared to the more common practice of case-wise deletion (Johnson & Young, 2011). Further, multiple imputation then deletion is utilized to avoid concerns over the imputation of the dependent variable (Von Hippel, 2007). Multiple imputation then deletion is conducted by creating a variable that marks when a case is missing on a given dependent variable. The dependent variable is then included in the imputation in order to create a more robust imputation model, but when analyses are conducted cases that were previously marked as containing a missing dependent variable are dropped. Thus, multiple imputation then deletion provides a cleaner, more robust imputation model and analytic strategy (Von Hippel, 2007).

Post-estimation is not supported in most multiple imputation command suites because Rubin's (1987) rules for imputation are not easily applied to combining prediction estimates for non-linear models. As a result, assumptions of the regression models were checked prior to imputation and revealed a number of problems to deal with in the analytic strategy. First, several of the covariates demonstrated multicollinearity in predictable ways. Specifically, age and experience were highly collinear (variance inflation factors >9). In our judgment, it seems that experience would be the

more relevant variable as opposed to age, so age was dropped from the analysis. Dropping age did not fully resolve the problem as education and rank were also collinear (variance inflation factors >6)—likely due to agency policy requiring higher education to be promoted. Given that rank was likely to be attributed to a combination of experience and education, it made the most sense to drop rank in favor of education, allowing us to assess both experience and education rather than run into additional collinearity problems between experience and rank.[9]

The second analytical issue dealt with the ordinal nature of the resistance categories, which suggest that an ordered logistic regression model would be preferred (Long & Freese, 2014). However, due to the small number of participants indicating that the subject exhibited either active aggression or aggravated aggression ($N = 3$, see Table 1), a perfect prediction problem occurred. To avoid this problem, the only solution was to condense these two categories into the active resistance category and conduct a logistic regression—preferred for binary variables—on a newly constructed variable that distinguished between passive resistance and any higher category of resistance.

Ordinary least squares (OLS) regression was utilized in the regression for ability, opportunity, and intent as the variable approximated normality (skewness = 0.14, kurtosis = 2.34). No substantial problems were diagnosed in checking the assumptions for OLS. Similarly, logistic regression was conducted on the binary dependent variable of necessity and no issues were detected in the assumptions underlying the model.

Finally, the ordered nature of the highest recommended level of force variable suggested that ordered logistic regression would be preferred for this variable. Again, however, there was a perfect prediction issue with only five officers recommending lethal force (see Table 1). Accordingly, lethal force was collapsed into the category intermediate force, such that the new variable had three categories: no force, empty hands tactics, intermediate weapons/lethal force. Again, this suggests that ordered logistic regression would be preferred. While the revised model did not have a perfect prediction problem, there was a violation of the parallel slopes assumption. To address this issue, a generalized ordered logistic regression was conducted, but this model had issues with negative predicted probabilities. Troubleshooting the model suggested that other models needed to be explored (Williams, 2016). The best fitting and most theoretically appropriate model was the multinomial logistic regression model. This model allows different predictors to be significant in understanding the recommendation for both empty hands tactics and the combined intermediate weapons/lethal force category as compared to no force. The implications of this model will be explored in more detail in the results and discussion sections.

Results

Beginning with the descriptive analysis, resistance has a modest relationship with use of force recommendations in Video 1 (Spearman's $\rho = 0.24$), but no relationship with use of force recommendations in Video 2 (Spearman's $\rho = 0.08$). This is likely due to a lack of variance in perceived resistance in Video 2, despite modest variance in the

Table 4. Logistic Regression for Resistance.

	Coef	Std. error	$p > \|z\|$
Video	−2.13	0.56	0.00**
Female	−0.50	0.60	0.40
Exp. 5–9 years	−1.26	1.16	0.28
Exp. 10–14 years	0.68	0.65	0.30
Exp. 15–19 years	−0.15	0.79	0.85
Exp. 20 or more years	0.73	0.65	0.26
Two years of college	−1.27	0.88	0.15
Associate's degree	−0.57	0.85	0.51
Bachelor's degree	−0.41	0.81	0.62
Graduate degree	−1.25	1.31	0.34
Military experience	0.45	0.45	0.32
Force experience	0.42	0.58	0.47
Organizational justice	−0.07	0.30	0.81
Cynicism	0.11	0.27	0.71
Low self-control	−0.06	0.35	0.87
Warrior	0.29	0.35	0.41
Guardian	0.06	0.31	0.86
N	344		
F	1.59		

* $p < 0.05$, ** $p < 0.01$.

recommended level of force (see Table 3). Similarly, resistance is modestly correlated with necessity in Video 1 (Spearman's ρ = 0.23), but not correlated with necessity in Video 2 (Spearman's ρ = 0.15). This suggests that officers are making use of force decisions using factors outside of resistance since resistance is uniformly perceived, but force is variably recommended. In contrast, Pearson's r suggests modest, but significant, correlations between ability, opportunity, and intent and force recommendations in both videos (Video 1 = 0.27, Video 2 = 0.25), as well as ability, opportunity, and intent and the necessity of force (Video 1 = 0.30, Video 2 = 0.27).

Moving to the regression analyses for the dependent variables, the logistic regression for resistance suggests that the video (b = −2.13) is the primary predictor of whether the subject perceived passive resistance or some greater level of resistance (see Table 4). Similarly, the OLS regression for ability, opportunity, and intent (for simplicity, referred to as AOI throughout the rest of this section) suggests that the video (b = −0.88) is the primary predictor of the level of AOI the officer perceives. However, in examining AOI, the officers' cynicism toward the public (b = 0.22)—measured before the video, in the abstract—is also significant such that greater cynicism results in greater perceived AOI (see Table 5). Accordingly, it seems that both resistance and AOI have a high level of consensus in their ratings among officers, though cynicism also impacts AOI.

Table 5. Regression for Ability, Opportunity, and Intent.

	Coef	Std. err	$p > \|z\|$
Video	−0.88	0.11	0.00**
Female	0.09	0.15	0.56
Exp. 5–9 years	0.32	0.20	0.12
Exp. 10–14 years	−0.09	0.17	0.61
Exp. 15–19 years	−0.01	0.20	0.95
Exp. 20 or more years	−0.05	0.17	0.76
Two years of college	0.10	0.28	0.73
Associate's degree	−0.02	0.28	0.93
Bachelor's degree	0.00	0.27	1.00
Graduate degree	0.34	0.33	0.30
Military experience	0.15	0.13	0.25
Force experience	0.24	0.14	0.10
Organizational justice	−0.13	0.08	0.12
Cynicism	0.22	0.08	0.01**
Low self-control	−0.05	0.10	0.62
Warrior	−0.05	0.09	0.63
Guardian	0.08	0.08	0.35
N	342		
F	5.17**		

* $p < 0.05$, ** $p < 0.01$.

Moving to the logistic regression for the necessity of force, the first model estimates the necessity of force using the traditional use of force continuum approach (i.e., resistance only). Perceiving greater resistance (b = 1.53) and being female (b = 0.99) were related to an increased likelihood of indicating that force was necessary (see Table 6). However, the video itself remained significant (b = −0.72) suggesting that there was still information contained within the scenario itself that officers were using to make use of force decisions, but was not captured by the variables included in this first model. The second model included AOI and estimated that perceiving greater resistance (b = 1.18), greater AOI (b = 0.77), and indicating that they were female (b = 1.08) made an officer more likely to indicate that force was necessary. Additionally, officers with a guardian approach to policing (b = −0.49) were less likely to indicate that force was necessary in the video. Importantly, in this second model, the effect of the video is not significant, suggesting that the inclusion of AOI captured additional information from the scenario that officers were using to make their use of force decisions. A Clogg et al. (1995) test for the equality of coefficients, however, suggests that this reduction is not statistically significant.

Table 7 presents the findings of the multinomial regression analysis for the highest recommended level of force split into two models—a traditional use of force continuum approach with only resistance and a modified approach with AOI included. The first

Table 6. Logistic Regression for Necessity.

	Model 1 – No AOI			*Model 2 – AOI*		
	Coef	Std. error	$p > \|z\|$	Coef	Std. error	$p > \|z\|$
Resistance	1.53	0.38	0.00**	1.15	0.40	0.00**
AOI	--	--	--	0.78	0.17	0.00**
Video	−0.72	0.30	0.02*	−0.20	0.33	0.54
Female	0.99	0.37	0.01**	1.01	0.39	0.01**
Exp. 5–9 years	0.27	0.52	0.61	0.14	0.55	0.80
Exp. 10–14 years	0.15	0.44	0.74	0.32	0.46	0.48
Exp. 15–19 years	0.35	0.50	0.48	0.42	0.53	0.44
Exp. 20 or more years	−0.62	0.48	0.19	−0.61	0.51	0.23
Two years of college	0.15	0.75	0.84	−0.02	0.77	0.98
Associate's degree	0.17	0.75	0.83	0.14	0.76	0.86
Bachelor's degree	0.27	0.72	0.71	0.19	0.73	0.80
Graduate degree	−0.14	0.90	0.88	−0.46	0.93	0.62
Military experience	0.38	0.34	0.27	0.32	0.35	0.36
Force experience	−0.32	0.37	0.39	−0.58	0.39	0.14
Organizational justice	−0.12	0.23	0.61	−0.01	0.24	0.98
Cynicism	0.08	0.20	0.69	−0.08	0.21	0.70
Low self-control	0.03	0.26	0.91	0.06	0.27	0.82
Warrior	−0.10	0.25	0.69	−0.08	0.26	0.75
Guardian	−0.39	0.22	0.07	−0.48	0.23	0.03*
N	322	322				
F	2.18**	2.67**				

* $p < 0.05$, ** $p < 0.01$.

two columns of the table examine which of the variables predicts an officer's likelihood of choosing empty hand tactics as compared to no force and the second set of two columns examine which of the variables predicts an officer's likelihood of choosing intermediate weapons/lethal force as compared to no force. This pattern is repeated for the second model with AOI included.

Looking at the model without AOI, being female (b = 0.96) and having prior military experience (b = 0.93) were both related to an increased likelihood that the officer would prefer empty hand tactics over no force. Additionally, law enforcement experience was important with officers with more than 10 years of experience having a reduced likelihood of preferring empty hand tactics over no force as compared to officers with less than 5 years of experience (10–14 years, b = −1.04; 15–19 years, b = −1.28; 20 or more years, b = −1.04). Finally, officers with more of a guardian approach to policing indicated a reduced likelihood of preferring empty hand tactics as compared to no force. Moving to intermediate weapons, greater perceived resistance (b = 1.66) and being female (b = 1.01) were related to an increased likelihood of preferring intermediate

Table 7. Multinomial Logistic Regression for Highest Level of Force.

	Model 1 – No AOI				Model 2 – AOI			
	Empty hand tactics		Intermediate weapons/lethal force		Empty hand tactics		Intermediate weapons/lethal force	
	Coef	Std. error	Coef	Std. error	Coef	Std. error	Coef	Std. error
Resistance	0.42	0.52	1.66**	0.42	0.17	0.52	1.32**	0.44
AOI	--	--	--	--	0.45**	0.17	0.64**	0.19
Video	0.26	0.31	−1.83**	0.44	0.60	0.34	−1.37**	0.46
Female	0.96*	0.41	1.01*	0.46	0.91*	0.41	1.03*	0.47
Exp. 5–9 years	−0.57	0.53	0.26	0.64	−0.74	0.54	0.15	0.66
Exp. 10–14 years	−1.04*	0.46	−0.30	0.58	−1.01*	0.46	−0.13	0.59
Exp. 15–19 years	−1.28*	0.58	0.19	0.62	−1.27*	0.59	0.26	0.64
Exp. 20 or more years	−1.04*	0.46	0.14	0.56	−1.01*	0.47	0.21	0.58
Two years of college	0.33	0.73	1.50	1.22	0.24	0.73	1.51	1.25
Associate's degree	−0.08	0.75	2.00	1.21	−0.07	0.75	2.13	1.24
Bachelor's degree	0.17	0.71	1.98	1.19	0.16	0.71	2.02	1.22
Graduate degree	0.28	0.85	1.22	1.55	0.11	0.86	1.16	1.58
Military experience	0.93**	0.34	0.60	0.43	0.89*	0.35	0.58	0.44
Force experience	−0.04	0.38	−0.38	0.44	−0.17	0.39	−0.60	0.45
Organizational justice	−0.08	0.23	0.03	0.27	−0.01	0.24	0.08	0.28
Cynicism	0.25	0.21	0.37	0.24	0.17	0.22	0.28	0.24
Low self-control	0.15	0.28	−0.44	0.31	0.17	0.29	−0.44	0.31
Warrior	0.48	0.27	0.17	0.31	0.52	0.28	0.19	0.32
Guardian	−0.53*	0.22	−0.45	0.27	−0.59*	0.23	−0.52	0.28
N	339	339						
F	2.13**	2.24**						

* $p < 0.05$, ** $p < 0.01$.

weapons to no force. Additionally, the video itself was a strong predictor (b = −1.83) of a decreased likelihood of preferring intermediate force compared to no force.

In examining the model with AOI included, greater perceived AOI (b = 0.45), being female (b = 0.91), and prior military experience (b = 0.89) were all found to be related to a greater likelihood that the officer would prefer empty hand tactics compared to no force. At the same time, having a guardian attitude toward policing (b = −0.59) made officers significantly less likely to choose empty hand tactics compared to no force.

Experience again played a considerable role in choosing empty hand tactics over no force as officers with 10–14 years of experience (b = −1.01), 15–19 years of experience (b = −1.27), and 20 or more years of experience (b = −1.01) all had a decreased likelihood of choosing empty hand tactics over no force when compared to officers with less than 5 years of experience. Additionally, it is interesting to note that the coefficient for five to 9 years of experience (b = −0.74) is in the same direction, though the effect size is slightly smaller and non-significant, suggesting that the significant change in experience that leads to a preference for no force occurs somewhere in the five to 9 year range.

Greater perceived resistance (b = 1.32), greater perceived AOI (b = 0.64), and being female (b = 0.99) were significantly related to recommending intermediate weapons/lethal force as compared to no force. Additionally, having a guardian attitude toward policing maintained a similar effect size (b = −0.52) as in the analysis of empty hand tactics, though it fell just short of the threshold for significance ($p = 0.06$). Furthermore, in this model, the video the officer viewed (b = −1.37) was still a significant predictor of the officer's likelihood of choosing intermediate weapons/lethal force as compared to no force. Since the analysis included both perceived resistance and perceived AOI, this suggests that there is still something in the video that is important in understanding the officer's preferred level of force that is not captured by either resistance or AOI. Furthermore, though the coefficient for the video was reduced when AOI was included in the model, this reduction was not statistically significant when subjected to a Clogg et al. (1995) test for the equality of coefficients. Thus, while including AOI is important for understanding an officers' decision on the necessity of force (Table 6), its utility is mixed for understanding the level of force to be used (Table 7).

Supplemental Analyses

To this point, ability, opportunity, and intent have been discussed as a scaled measure of the level of threat perceived by an officer during an encounter with a citizen. However, it is possible that each factor operates independently and has unique effects on an officers' decision to use force, as well as what level of force in an encounter. Supplemental Appendix B contains supplemental analyses that explore this possibility. Briefly, the differences between the analyses in Supplemental Appendix B and the main results are minimal. First, in considering the predictors of ability, opportunity, and intent (main results, Table 5; Supplemental Appendix B, Table 2), all three variables are predicted by the same covariate (cynicism) and only intent has an additional significant predictor (prior military experience, b = 0.52). Similarly, estimates see only minor changes when examining the necessity of force (main results, Table 6; Supplemental Appendix B, Table 3). The major exception being that ability appears to have the smallest effect on necessity when considered as an independent component (b = 0.43 compared to b = 0.64) and is not significant when included in a model as its own measure with opportunity and intent—though this is likely substantially impacted by multicollinearity. Finally, when examining the level of force recommended (main

results, Table 7; Supplemental Appendix B, Table 4), intent does not have an impact on the preference for empty hands over no force when considered on its own and none of the three factors are significantly related to the preference for either level of force when they are all included independently in the same model. Again, this is likely due to the impacts of multicollinearity. Accordingly, given that ability, opportunity, and intent loaded well on a single factor, that they are related to the key dependent variables when included independently, and that their independent effects are reduced by simply including the other factors in the concept (i.e., only ability, opportunity, or intent), it is most appropriate to include them as a single construct as done in the main analysis for this study. At the same time, this is not necessarily true for all studies, and the slightly varying impacts seen in this supplemental analysis may become larger and require the factors to be included separately when applied to different officer–citizen encounters.

Discussion

This paper makes two contributions: first, it re-examines the role of resistance in use of force decision-making and urges researchers, policymakers, and trainers to consider factors outside of resistance in developing use of force policies; and second, it analyzes the correlates of use of force decision-making. Earlier, we made our theoretical case that resistance is insufficient for understanding use of force decision-making due to the multifactor standards of *Graham v. Connor* and the need to consider the immediacy of the threat posed by a subject. Our analyses then supported this proposition by showing that police officers in one large, western United States police department already consider outside factors, such as ability, opportunity, and intent in deciding if force is necessary in an officer–citizen interaction. A model with only resistance included suggested that characteristics of the scenario were influencing officers' decisions on whether force was necessary, while a model with ability, opportunity, and intent included reduced this effect to insignificance. To be clear, resistance still plays a role and should not be abandoned, but resistance alone is insufficient for articulating the need to use force.

In examining the correlates of officers' perceptions of an officer–citizen interaction, perceived resistance and perceived ability, opportunity, and intent turned out to have high levels of consensus in the videos shown in this study. That is, officers perceived resistance with considerable uniformity, and even ability, opportunity, and intent, was unrelated to outside factors with one exception—the officer's level of cynicism towards the public. This is somewhat surprising, as research discussed previously indicated that individuals would likely perceive incidents subjectively with varying assessments of resistance (Hickman et al., 2015).

Officers' recommendations for whether force was necessary and what level of force should be used, however, was subject to considerable variation across outside factors. To be clear, resistance and ability, opportunity, and intent were strong predictors of the officers' recommendations for force and seem to be a solid model for making use of

force decisions, but outside factors were also significantly related to use of force recommendations. Specifically, gender, experience, prior military experience, and a guardian mentality towards policing all predicted use of force recommendations in the multivariate analyses.

Examining these factors individually, contrary to other studies, female officers were more likely to recommend force and higher levels of force. More experienced officers were less likely to recommend the use of empty hand tactics compared to no force. Officers with military experience were more likely to recommend empty hand tactics. Consistent with a growing body of literature and calls of activists and police reformers (e.g., Skinner, 2020; Stoughton, 2015; 2016), adopting a guardian approach to policing is related to a reduced likelihood of believing force is necessary and recommending empty hand tactics. In combination with prior results on the importance of police culture (McLean et al., 2020; Silver et al., 2017; Terrill et al., 2003), and the results mentioned above regarding officer cynicism, police culture plays a role in understanding officers' willingness to use force. Various approaches have been used to explain police climate and culture over the past 50 years (see, for example, Alpert et al., 2012; Bittner, 1967; Crank, 2015; Paoline, 2004; Reuss-Ianni, 1983; Van Maanen, 1974; 1978), resulting in a number of models of police culture, such as Muir's (1977) four versions of a police officer, Paoline's (2004) seven-group model of police culture, Silver and colleagues' (2017) conceptualization of traditional police culture, and Stoughton's (2016) warrior and guardian conceptualization of police culture. More work is needed to clarify the nature and components of police culture—which will likely adapt and evolve as policing changes in response to crises of legitimacy—but the evidence on culture and force is clear: culture matters.

There are a number of limitations to the present study. First, and as noted previously, our study included only two videos for officers to assess. Thus, our findings are limited to the specific contexts of these two videos. The videos were chosen to provide a situation with a lack of a clear threat, but some level of resistance, in order to maximize the likelihood of variation in officer responses. Still, few officers indicated there was a high level of resistance in the scenario. While this assessment is appropriate given the videos chosen, it is an important limitation when considering the potential impact of ability, opportunity, and intent on use of force policy. That is, more research should be conducted on scenarios with higher levels of resistance to ensure that the model still applies.

The use of only two videos is also notable considering the findings of the supplemental analyses looking at ability, opportunity, and intent as independent measures. In the context of the videos used in this study, the findings (and the loadings of the measures on a single construct) suggested that combining ability, opportunity, and intent was preferred. However, as the thoughtful reviewers of this paper pointed out, it is very possible that in other contexts these measures may operate in a more independent manner and should be measured independently. This is, undoubtedly, an important avenue for future research. Thus, this study demonstrates the importance of considering factors outside of resistance in use of force decision-making, but should not

be construed to deliver a clear verdict on how ability, opportunity, and intent should be used in future research or policy.

Second, the study was conducted in a single police department in the United States and, therefore, may not be generalizable to other departments.[10] Third, due to our limited sample size and reliance on real-world videos, we were unable to vary encounters by subject race to evaluate the impact of race on use of force decisions. Finally, our considerations of the factors that shape use of force are still in the exploratory phase and additional research may uncover more factors that should be considered in understanding officer perceptions of citizen encounters and use of force decision-making.

To this end, the most important role that this paper can serve is to spark additional research into how concepts outside of resistance influence officer decision-making in potential use of force encounters. Additional efforts should be taken to understand how ability, opportunity, and intent work in scenarios with more or less suspect resistance, on other samples such as other agencies or even among other stakeholders like judges or citizens, as well as how officers may be trained to more accurately perceive ability, opportunity, and intent. While this paper should not be construed to provide conclusive evidence that ability, opportunity, and intent are an urgent and required change, it is evidence that ability, opportunity, and intent require further investigation as a potential method for better conceptualizing use of force policies.

Additionally, we believe that the use of body-worn camera video in this type of research is important. To date, researchers have primarily used body-cameras in research in an evaluation context—that is, do body-cameras have some impact on policing (for a review see White & Malm, 2020). This study provides evidence that body-cameras can be used to answer other policing research questions, as well. In particular, prior studies have examined how officer characteristics correlate with the number of use of force reports filed by an officer. These measures are inherently flawed as no two officers face the same situations creating an inherently flawed counterfactual. By leveraging body-camera footage to expose multiple officers to the same officer-citizen encounter, we are able to understand more clearly how officer characteristics correlate with use of force decision-making. We hope that this encourages researchers to explore how future studies can leverage additional footage to explore similar decision-making in different policing contexts.

In sum, we must better understand use of force decisions in order to develop better policies and reduce the use of unnecessary and/or excessive force. As the public demands that police departments engage in less force and lower levels of force, departments will be forced to reconsider their policies and training on the use of force. Without evidence to explore and evaluate the impacts of these policies and the correlates of force, however, changes to policies and training will simply be a shot in the dark.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. In some departments in the United States, the term jeopardy is substituted for the term intent. Their meaning, however, is largely the same.
2. Reporting the level of resistance prior to using force would more accurately reflect the causal mechanisms in the decision-making process and limit officers to a level of force based on their perceptions but is impractical in the real world.
3. The union for the police department requested that the department not be named in any reports. In order to honor this request, we are unable to provide additional detail about the size of the agency or the demographics of the population served.
4. Importantly, the combination of a lack of clear threat and non-compliance was chosen to maximize the potential for variation among officers. That is, a video with clear threat may have had little variation as all officers would view force as necessary and a compliant subject would likely result in very few, if any, officers viewing force as necessary.
5. As pointed out by a thoughtful reviewer, this creates a comparison of one concept that is measured using only four categories and another concept that is measured using many more categories, which may be unfair empirically. However, this is consistent with the broader goal of this paper in pointing out that a resistance-only model of force is not sufficiently complex enough to capture the sentiment of *Graham v. Connor* and the thought that must go into a use of force decision for an officer.
6. Note that the questions of *necessity* and *highest recommended level of force* were not contingent upon each other, so an officer could provide conflicting answers that force was unnecessary, but that they recommended a particular level of force. In fact, 47 officers said force was unnecessary, but provided a recommended level of force of at least empty hand tactics.
7. We attempted to collect the race of the officer as well, consistent with prior literature, but could not gain approval from the union to include the race of the officer in the study (see McCluskey et al., 2019; for a similar limitation).
8. All analyses were also conducted using listwise deletion to ensure the robustness of the results. These results were not significantly different from the analyses with multiple imputation.

9. At the request of a reviewer, robustness checks were conducted by running models with rank chosen over experience and education. These models produced nearly identical results and are available upon request.
10. Efforts are currently being taken to replicate this project in other departments.

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