PRECARIOUS MANHOOD AND THREAT-MOTIVATED GUN-RELATED ATTITUDES AND BEHAVIORAL INTENTIONS AMONG MEN IN THE UNITED STATES

by

TRAVIS RAY

A dissertation submitted in partial fulfillment of the
requirements for the degree of

DOCTOR OF PHILOSOPHY IN PSYCHOLOGY

2022

Oakland University
Rochester, Michigan

Doctoral Advisory Committee:

Michele R. Parkhill, Ph.D., Chair
Virgil Zeigler-Hill, Ph.D.
Melissa M. McDonald, Ph.D.

ACKNOWLEDGMENTS

I would first like to acknowledge the Oakland University Research Office and Office of the Provost for funding this research. I also thank Dr. Todd Shackelford, Sandy Gabert, Danielle Bildson, Carissa McNellen, and Jacqueline Selnes in the Oakland University Department of Psychology for their administrative support. Similarly, thank you to Zahira Flores-Olivo and Bryan Atkinson for their support regarding the disbursement of participant compensation. I also would like to broadly thank the faculty in the Department of Psychology at Oakland University for their contributions to research development through formal education, workshops, and mentorship. I cannot thank Drs. Virgil Zeigler-Hill and Melissa McDonald enough for their willingness to serve on my comprehensive exam and dissertation committees, as well as the invaluable feedback and guidance they have provided to enhance the research. A special thank you to Dr. Michele Parkhill who not only served as my academic and research advisor throughout my graduate education—including the chair of my thesis, comprehensive exam, and dissertation committees—but also created an embracing research environment that allowed me to flourish in my development as an academic researcher. Finally, I thank my loving wife, Alyssa, for her unwavering support through countless late nights and long weekends as I worked toward realizing my goal of a PhD in Psychology.

Travis Ray

ABSTRACT

PRECARIOUS MANHOOD AND THREAT-MOTIVATED GUN-RELATED ATTITUDES AND BEHAVIORAL INTENTIONS AMONG MEN IN THE UNITED STATES

by

TRAVIS RAY

Adviser: Michele R. Parkhill, Ph.D.

The precarious manhood thesis posits that men are motivated to maintain attributes associated with societally accepted forms of masculinity. As a result, when men feel their manhood is threatened, they tend to respond with exaggerated displays of masculinity. Prior research indicates that guns are closely intertwined with masculinity and thus may be a tool through which men can demonstrate their manhood when feeling threatened. To empirically test this idea, the current research conducted two experimental studies examining the causal influence of masculinity threats on gun-related attitudes (Study 1) and behaviors (Study 2). It was hypothesized that men exposed to a masculinity threat would report more gun-supportive attitudes and have a greater likelihood of engaging in gun-related behaviors relative to men exposed to a gender affirmation—especially in a public context. Adult men residing in the United States ($N = 381$) completed assessments of demographics and adherence to masculine gender norms prior to their randomization into the masculinity threat and public display conditions. Following the manipulations, Study 1 participants ($n = 184$) completed measures of gun-related attitudes, while Study 2 participants ($n = 197$) also completed assessments of gun-

related behaviors. Results generally did not support a causal association between the masculinity threat manipulation and gun-related constructs, resulting in retention of the null hypotheses. However, exploratory analyses revealed significant associations between adherence to masculine gender norms and demographic variables with gun-related outcomes. Together, these results suggest that masculinity threats do not have a causal influence on gun-related variables. Rather, gun-related attitudes and behaviors are partially explained by social, developmental, and cultural factors—including adherence to masculine gender norms.

TABLE OF CONTENTS

TABLE OF CONTENTS—CONTINUED

TABLE OF CONTENTS—CONTINUED

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ABE	Adult Basic Education
ANCOVA	Analysis of Covariance
ANOVA	Analysis of Variance
FBI	Federal Bureau of Investigation
GAS	Gun Attitudes Scale
GCAS	Gun Control Attitudes Scale
GED	General Educational Development
GPI	Gun Purchase Intentions
GunEn	Gun Enthusiasm Scale
IER	Insufficient Effort Responding
LLCI	Lower Level Confidence Interval
MANCOVA	Multivariate Analysis of Covariance
MANOVA	Multivariate Analysis of Variance
MRNS	Male Role Norms Scale
MT	Masculinity Threat
MTurk	Amazon Mechanical Turk
NRA	National Rifle Association
OR	Odds Ratio
PD	Public Display
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences

ULCI	Upper Level Confidence Interval
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

In the wake of recent high-profile mass shootings (e.g., Pulse Nightclub; Las Vegas; Parkland), public outcry has called for action to prevent firearm-related deaths. Gun violence is a particular concern in the United States, where the firearm homicide rate (i.e., 4.1 homicides per a 100,000 population) is approximately 25 times than other high-income countries (Grinshteyn & Hemenway, 2019). Additionally, the Federal Bureau of Investigation (FBI) reported that the number of active shooting incidents in the United States had more than tripled from the 2000s to the 2010s (FBI, 2019). Homicide and active shooting rates, however, likely capture only a small proportion of gun violence; research suggests that only 12% of incidents involving gunfire result in an emergency call (Carr & Doleac, 2016). Despite these high rates and calls for action, gun violence research has been underfunded and understudied relative to comparable injury-related causes of death (Stark & Shah, 2017). More empirical research is needed to identify factors contributing to gun violence, which could better inform prevention efforts.

Psychological gun violence research, however, is a challenging endeavor due to sampling and methodological restrictions. For example, imprisoned violent offenders are a protected population and unincarcerated perpetrators are difficult to identify and sample. Additionally, there are major ethical considerations when designing and implementing methodology for gun violence research (e.g., inability to manipulate variables that may increase incidence of gun violence); thus, psychological research is scant. Research in the extant literature most commonly takes a sociological or public

health perspective and utilizes observational or correlational designs. Although these approaches have provided substantial insight—such as qualitative themes amongst mass shooter manifestos (Kalish & Kimmel, 2010; Kellner, 2008; Myketiak, 2016) and statistical relationships between gun prevalence, gun laws, and rates of gun violence (Dierenfeldt, Brown, & Roles, 2017; Fleeger, Lee, Monuteaux, Hemenway, & Mannix, 2013; Hamilton & Kposowa, 2015; Stroebe, 2016)—they are limited in their ability to empirically test psychological mechanisms and establish causal relationships between variables.

Rather than assessing gun violence directly, it may be more feasible (and, in some cases, more informative) to examine gun-related attitudes and behaviors. Such research could provide insight into the underlying motivations and psychological intentions of using guns. Notably, men have more gun-supportive attitudes (Miller, 2019; Oraka et al., 2019), are more likely to own guns (Hamilton, Lemeshow, Saleska, Brewer, Strobino, 2018; Kalesan, Villarreal, Keyes, & Galea, 2016; Oraka et al., 2019; Pew Research Center, 2017; 2021), and are more often the perpetrator of gun violence relative to women (Cukier & Eagen, 2018; FBI, 2019; Stone, 2015). Thus, there appear to be gun-related motivations and psychological processes that are specific to men. To further investigate these processes, the current research examined the precarious state of manhood as a motivational factor for gun-related attitudes and behaviors.

Manuscript Organization

The manuscript begins by defining and describing the gun-related constructs of interest. This is followed by a scoping review of prior gun motivation work, which provides comprehensive background and context to the research. Thereafter is an

overview of the precarious manhood framework, its supporting literature, and its theorized connection to gun-related variables. Following the summary of relevant literature, the research is outlined and its methodology detailed. Results of the empirical analyses are then presented and discussed. The manuscript concludes with a general discussion integrating the results into the extant literature, followed by a discussion of the implications, limitations, and future directions.

Definitions

There are two gun-related constructs that are referred to throughout the manuscript: (1) gun-related attitudes, (2) gun-related behaviors. These constructs are undoubtedly intertwined, in that attitudes often motivate behavior (Baumeister, 2016; Bohner & Dickel, 2011; Greenwald & Banaji, 1995), but they also are distinct. Attitudes and behavior are sometimes disjoined, meaning that attitudes do not *always* translate into behavior (Bohner & Dickel, 2011; Nosek, Hawkins, & Frazier, 2011; Sheeran & Webb, 2016). For example, gun owners and non-owners often agree in their support for gun control policies (Barry et al., 2018; Wolfson, Teret, Azrael, & Miller, 2017), despite differing engagement in gun-related behaviors (i.e., gun purchasing). Thus, although these constructs are related, they are best defined and examined independently.

Regarding gun-related attitudes, prior research has most commonly assessed attitudes and opinions associated with gun control. However, gun-related attitudes also consist of gun enthusiasm (i.e., enjoyment and personal value assigned to guns and gun-related hobbies; Matson, 2016; Matson, Russell, & King, 2019) and positive attitudes toward guns (i.e., feelings of control, independence, and safety derived from guns; Tenhundfeld, Parnes, Conner, & Witt, 2020). These types of attitudes are highly

correlated with one another, despite being conceptually distinct and sometimes possessing divergent associations with theoretical antecedents (Ray, Parkhill, & Cook, 2021). Analogous to attitudes more broadly (Albarracin & Shavitt, 2017; Bohner & Dickel, 2011), gun-related attitudes are thought to remain relatively stable overtime (Wozniak, 2017), but may change rather rapidly in certain situational contexts (Jose, Holman, & Silver, 2021; McGinty, Webster, & Berry, 2013; Newman & Hartman, 2017). Specifically, exposure to relevant stimuli may shift attitudes, or the expressions of attitudes, to better align with encoded information and social goals (Albarracin & Shavitt, 2017; Bohner & Dickel, 2011). For example, an individual may exhibit a popular attitude to receive social support, a job candidate could alter his or her mindset to align with a company's mission statement to obtain employment, and dating partners might attempt to meld their differing political opinions to ease relational conflict. Such contextual attitude change could similarly pertain to gun-related attitudes in that people may shift their viewpoint (e.g., gun control stance) when exposed to relevant stimuli (e.g., news reports of mass shootings), or in light of new information (e.g., statistics), to perceptually achieve related goals (e.g., safety; DeFoster & Swalve, 2018; Jose et al., 2021; McGinty et al., 2013; Newman & Hartman, 2017).

In addition to gun-related attitudes, prior research has examined gun-related behaviors. Gun-related behaviors consist not only of self-directed (i.e., suicide) and interpersonal gun violence, but also of behaviors that are not inherently intended to harm a human being. Specifically, prior research has examined recreational gun use (e.g., hunting; target shooting; Yamane, 2017), gun storage practices (e.g., storage location; stored with or without ammunition; Berrigan, Azrael, Hemenway, & Miller, 2019), gun

carrying (e.g., concealed carry; open carry; Carlson, 2015; Stroud, 2012), and gun purchasing or ownership (e.g., Azrael, Hepburn, Hemenway, & Miller, 2017). Consistent with behaviors, more broadly (Ajzen, 1991; Baumeister, 2016), it is theorized that gun-related behaviors are motivated by attitudes and cognitions, and can be vehicles to perceptually fulfill basic needs (e.g., safety) or social goals (Buttrick, 2020; Carlson, 2015; Pierre, 2019; Stroebe, Leander, & Kruglanski, 2017; Stroud, 2012). In some instances, behaviors may even be used to express personal characteristics or internal processes (whether explicit or implicit) to bystanders as a self-presentation strategy. For example, social media posts can be used to signal virtue or morality (Grubbs, Warmke, Tosi, James, & Campbell, 2019), purchasing expensive clothing or flashy cars can demonstrate status (Barry & Weiner, 2019; Han, Nunes, & Drèze, 2010), and erecting political yard signs can cue party affiliation (Makse & Sokhey, 2014). Similarly, gun-related behaviors can demonstrate adherence to norms (e.g., peer norms; male norms; Carlson, 2015; Kahan & Braman, 2003; Kalesan et al., 2016; Stretesky & Pogrebin, 2007; Stroud, 2012), signal group membership (Scaptura & Boyle, 2021), or communicate that an individual is dangerous and "not to be messed with" (Kimmel & Mahler, 2003; Myketiak, 2016; Stretesky & Pogrebin, 2007; Stroud, 2012). Thus, gun-related behaviors could serve various motivational factors.

Prior Motivational Research

Research has explored several motivators of gun-related attitudes and behaviors. For example, racial prejudice (Filindra & Kaplan, 2016; Filindra & Kaplan, 2017; O'Brien, Forrest, Lynott, & Daly, 2013), aggressiveness (Docherty, Beardslee, Grimm, & Pardini, 2019), and delinquency (Docherty et al., 2019; Docherty, Mulvey, Beardslee,

Sweeten, & Pardini, 2020; Emmert, Hall, & Lizotte, 2018) are a few factors examined in prior work. Such literature explains that racial prejudice is associated with a desire to maintain the status quo and retain White rights, such as gun rights (Filindra & Kaplan, 2016), aggressive individuals are inherently drawn to weapons (Docherty et al., 2019), and delinquent youth seek guns as a means of intimidation or defense (Docherty et al., 2019; Docherty et al., 2020). Most research, however, has focused on mental illness, social influence, and fear with varying levels of support for each motivational factor. As could be imagined, these three constructs also vary in their associations with specific gun-related outcomes. Whereas mental illness is commonly conceptualized as a predictor of gun violence (e.g., Gold, 2013; Hodges & Scalora, 2015; Rozel & Mulvey, 2017), social influence and fear seemingly provide motivation for numerous gun-related attitudes and behaviors (e.g., Buttrick, 2020; Kahan & Braman, 2003; Kalesan et al., 2016; Kleck, Gertz, & Bratton, 2009; Pierre, 2019). Because mental illness, social influence, and fear are most often embraced in gun-related research, the literatures pertaining to each of these constructs are summarized in the following sections.

Mental Illness

Politicians and popular media are often quick to suggest that interpersonal gun violence is a result of severe mental illness (DeFoster & Swalve, 2018; Hodges & Scalora, 2015; McGinty, Webster, Jarlenski, & Barry, 2014; Metzl & MacLeish, 2015; Rozel & Mulvey, 2017). Such depictions associate mental illness with violent behaviors and contribute to perceptions that those with mental health disorders are “evil” or “deranged” (DeFoster & Swalve, 2018; Gold, 2013; McGinty et al., 2013; McGinty et al., 2014; Metzl & MacLeish, 2015). Not only does this discourse aid the stigmatization of

mental illness in ways that could harm treatment proceedings (e.g., create barriers for seeking treatment), they also guide prevention resources toward ineffective outcomes (e.g., financing for mental health screenings), place blame on mental health professionals for failing to prevent mass shootings, and limit the types of legislation that politicians are willing to implement (Gold, 2013; McGinty et al., 2013; McGinty et al., 2014; Metzl & MacLeish, 2015; Rozel & Mulvey, 2017). In fact, the vast majority of United States citizens, across the political spectrum, support gun control restrictions for those with a mental illness, whereas other gun polices are much more polarizing (Pew Research Center, 2017; 2021). This suggests that elected officials will likely favor gun bans for the mentally ill, but may shy away from more controversial restrictions.

Mental health practitioners and empirical evidence, however, reject the notion that untreated psychological disorders are responsible for most instances of interpersonal gun violence (Gold, 2013; Lu & Temple, 2019; Metzl & MacLeish, 2015; Pinals, Appelbaum, Bonnie, & Fisher, 2015; Rozel & Mulvey, 2017). Research suggests that gun violence perpetrators typically do not have a mental health diagnosis (Metzl & MacLeish, 2015; Yelderman, Joseph, West, & Butler, 2019) and mass killings with a mentally ill shooter represent only a small proportion of firearm-related homicidal deaths (Metzl & MacLeish, 2015). Additionally, mentally ill individuals are rarely violent (Gold, 2013; Hodges & Scalora, 2015; Pinals et al., 2015; Rozel & Mulvey, 2017; Steadman, Monahan, Pinals, Vesselinov, & Robbins, 2015; Swanson, McGinty, Fazel, & Mays, 2015), and may actually have decreased risk of harming a stranger (Kivisto, 2017). Psychiatric patients also have weaker orientations toward guns (i.e., less knowledge and comfort around guns; more support for gun control) compared to general community

members (Hodges et al., 2021). It is possible, however, that some disorders, such as those involving psychosis (e.g., paranoid schizophrenia), are stronger risk factors for gun violence than others (Stone, 2015), but confounding sociodemographic (e.g., age; socioeconomic status) and psychosocial factors (e.g., substance use; criminality) are better predictors of violent behavior than mental illness (Rozel & Mulvey, 2017). This evidence has led some researchers to conclude that merely restricting those with a mental health diagnosis from purchasing firearms will have little effect on interpersonal gun violence (Gold, 2013; Hodges & Scalora, 2015; Metzl & MacLeish, 2015; Pinals et al., 2015; Rozel & Mulvey, 2017; Stone, 2015).

Contrary to popular belief, the true association between mental illness and gun-related behaviors is self-directed gun violence (Gold, 2013; Swanson et al., 2015). In most instances of suicide, the individual had a diagnosed mental illness or severe psychological symptoms (Gvion & Apter, 2012), which could include several disorders, but those accompanied by depressive symptoms (e.g., Major Depressive Disorder) are most common amongst suicide attempters and completers (Gvion & Apter, 2012; Hawton, Comabella, Haw, & Saunders, 2013; Popovic et al., 2014). Generally, suicidal behaviors are impulsive actions that become increasingly lethal when access to a gun is effortless (Hemenway, 2013; Lewiecki & Miller, 2013). This suggests that mental health disorders and their associated symptoms (e.g., depression; hopelessness; mental pain) can create a temporary state of crisis that motivates desire for death (Gvion, Levi-Belz, Hadlaczky, & Apter, 2015). If an individual is unable to adequately regulate urges for self-harm, and has easy access to a gun, the risk of completing suicide increases (Anglemyer, Horvath, & Rutherford, 2014; Hemenway, 2013; Lewiecki & Miller, 2013).

Although mental illness is theoretically and empirically connected to self-directed gun violence, it has weak or non-existent associations with other gun-related variables. Other motivators may explain a larger proportion of variance in gun-related attitudes and behaviors.

Social Influence

Social influence is a broad term that refers to the effects of interpersonal processes and social-environmental demands on the attitudes, cognitions, and behaviors of an individual (Aronson, Wilson, & Sommers, 2019). Such influence stems from varying levels of society (e.g., nations; cities; communities; families) and can affect individuals through their acquisition and acceptance of social information (i.e., informational social influence), perceptions of social norms (i.e., normative social influence), and identification with social groups (i.e., social identity; Aronson et al., 2019; Turner & Reynolds, 2012). Research examining social influence in the context of gun-related constructs has primarily focused on the impact of particular cultures within geographic regions of the United States, the social norms present in various ideological and peer groups, and the interactive effects of social identity.

Several researchers have examined "gun culture" and its effects on individual-level attitudes and behaviors. Gun culture is a term used to refer to the collective values and cultural influence of areas with a deep-seated connection to guns (Joslyn, Haider-Markel, Baggs, & Bilbo, 2017; Kalesan et al., 2016; Mencken & Froese, 2019; Wolpert & Gimpel, 1998; Yamane, 2017). These areas are characterized by a high prevalence of gun ownership and normative engagement in gun-related recreation (Hall-Sanchez, 2014; Kalesan et al., 2016; Wolpert & Gimpel, 1998; Yamane, 2017). Residents of such areas

tend to have more gun-supportive attitudes (e.g., opposition to gun control) than people who live beyond the immediate influence of gun culture (Joslyn et al., 2017; Kleck et al., 2009; Wolpert & Gimpel, 1998). Although prominently seen in rural areas of Western, Midwestern, and Northeastern states, gun culture is most often attributed to the Southern region of the United States.

The research concentration on the South is likely due to the widespread prominence of gun culture, but also the disproportionately high frequency of gun-related homicide and suicide in this region (Brown, Osterman, & Barnes, 2009; Brown, Imura, & Osterman, 2014; Fleeger et al., 2013; Nisbett & Cohen, 1996; Osterman & Brown, 2011). Scholars explain that the Southern United States has a strong cultural emphasis on honor, which influenced its development of gun culture and continues to affect individual-level outcomes (Brown et al., 2014; Lantz & Wenger, 2021; Nisbett & Cohen, 1996; Osterman & Brown, 2011). This so-called "honor culture" (or "culture of honor") is thought to have culturally evolved as a result of migration by European herdsman to the South in the 17th and 18th centuries. At the time of migration, formalized government among White pioneers was rare or nonexistent. Consequently, frontiersmen and early settlers relied on vigilante justice to maintain social order. The construct of honor also became a powerful social norm that aided the instilment of respect for others and their property, but also motivated retaliatory aggression against those who threatened one's family or assets (e.g., home; livestock; Nisbett & Cohen, 1996). In these environments, guns were essential and efficient tools to enforce indispensable social rules. Through their use in such contexts, guns became a representation of self-reliance and rugged individualism, thus portraying the sense of honor that they physically helped to protect (Lantz & Wenger, 2021).

In the modern context, honor cultures in the United States are deeply rooted in individual freedoms and associated with gun violence (Brown et al., 2009). Self-sufficiency, reputation, and respect remain particular concerns in a similar vein to early Southern settlers (Barnes, Brown, & Osterman, 2012; Brown et al., 2014; Lantz & Wenger, 2021; Nisbett & Cohen, 1996; Osterman & Brown, 2011). Compared to those in the North, residents of Southern regions are more likely to respond to physical or symbolic threats with aggression (Cohen, Nisbett, Bowdle, & Schwarz, 1996; Nisbett & Cohen, 1996)—particularly wielding a gun (Lantz & Wenger, 2021)—in an attempt to defend their honor. Because Southerners also tend to cultivate a deep sense of shame and burdensomeness (a risk factor for suicide; Joiner, 2005) when they fail to maintain their honor, they are also at increased risk of self-directed gun violence (Brown et al., 2014; Osterman & Brown, 2011).

However, guns have evolved beyond their merely functional use as instruments of interpersonal (and intrapersonal) violence and into broad cultural symbols. The 'culture conflict perspective' suggests that much of the gun control debate in the United States is due to conflicting cultures (such as between Northern and Southern states or liberal and conservative ideologies) and what guns represent, rather than a debate over guns themselves (Kahan & Braman, 2003; Kleck et al., 2009; Joslyn et al., 2017; Melzer, 2009; Wozniak, 2017). This perspective argues that guns have come to symbolize traditional lifestyles and values that are closely intertwined with conservative ideology (e.g., individualism; patriotism; moral universalism; Joslyn et al., 2017; Kleck et al., 2009; Melzer, 2009; Wozniak, 2017). Thus, people living in gun cultures are likely to oppose gun restrictions, because they may perceive such measures are impeding their

way of life (e.g., choice of recreation), condemning their held values, and threatening their social identity (Anestis & Houtsma, 2019; Buttrick, 2020; Joslyn et al., 2017; Lacombe, Howat, & Rothschild, 2019; Melzer, 2009; Wozniak, 2017). In contrast, people who reside outside of gun cultures may support gun control, because the implementation of new restrictions represents a shift in political power and progress toward modern values (Joslyn et al., 2017).

However, culture conflict is not restricted only to large regional groups. Rather, guns are a source of conflict between various ideological groups and their subcultures. Kleck and colleagues (2009) explain that guns can symbolize the attributes of any social group with whom they are associated. In the United States, guns and gun-support are common among Southerners (Felson & Pare; 2010; Kleck et al., 2009), Republicans or those with conservative ideology (Joslyn et al., 2017; Pew Research Center, 2017; Wozniak, 2017), and evangelical Christians (Merino, 2018). Guns therefore have the potential to elicit negative (or positive) appraisals, because they may symbolize the perceived negative (or positive) attributes of these social groups. This appraisal then may influence whether the individual develops gun supportive attitudes and engages in gun-related behaviors, because doing so may associate them with members of these groups. Kleck and colleagues' (2009) results supported this idea by demonstrating that the negative stereotyping of gun owners was positively related to support for handgun bans and negatively related to gun ownership. Put simply, guns may be a proxy to determine in-group/out-group membership and avoid undesirable social evaluations.

Similarly, once an individual develops a social identity that aligns with particular social groups, they become subject to the normative influence of these groups. Humans

have a fundamental need to belong (Baumeister & Leary, 1995) and, as a result, follow the norms of groups with whom they identify to avoid being outcast (Christensen, Rothgerber, Wood, & Matz, 2004). Prior research demonstrated that although there are individual differences in the propensity for violence (and attraction to weapons that facilitate violent behavior, such as guns; Beardslee, Docherty, Mulvey, Schubert, & Pardini, 2018; Docherty et al., 2019), the likelihood that youths will acquire and carry guns increases once they begin to affiliate with gun-carrying peers, become members of gangs, or overestimate the prevalence of gun carrying among their peers (Beardslee et al., 2018; Docherty et al., 2019; Hemenway et al., 2011; Stretesky & Pogrebin, 2007). Other research shows that identities entrenched in gun ownership have especially strong associations with gun-related attitudes and behaviors (Anetis & Houtsma, 2019; Lacombe et al., 2019; Mencken & Froese, 2019). Lacombe (2019) suggests this may be due to the careful cultivation of gun identity by pro-gun lobbyists. The National Rifle Association (NRA), for example, uses targeted communications to normalize gun-related behaviors (e.g., purchasing; carrying; recreation) and advance the idea that guns demonstrate the moral virtues that people often associate with their in-groups (Lacombe, 2019; Melzer, 2009; Mencken & Froese, 2019; O'Neill, 2007). Therefore, it may be that people in social environments defined by guns tend to obey gun-related norms as a strategy to maintain the perceived positive characteristics of in-groups and prevent ostracism (Lacombe, 2019; Stretesky & Pogrebin, 2007).

In addition to the direct effect that social influence can have on gun-supportive attitudes and behaviors, there also are indirect associations through risk perceptions. The cultural theory of risk posits that risk perceptions are influenced by social norms,

meaning that people tend to observe their in-group, devote attention to the risks that are commonly expressed, engage in the risk-reduction behaviors that are modeled, and ignore those that are not (Anestis & Houtsma, 2019; Kahan & Braman, 2003; Pierre, 2019). Opponents of gun control often express the notion that gun prevalence improves safety, which is done by directing attention toward the risk of premeditated harm from outsiders (Kahan & Braman, 2003; O'Neill, 2007). The normative solution to mitigate this risk is the acquisition, carrying, and easy accessibility (i.e., unlocked and loaded) of guns by "good" and "valorous" citizens (O'Neill, 2007; Stroud, 2012). This, of course, ignores the imminent risks of impulsive shootings, accidental shootings, and suicide when guns are abundant, which are common points of emphasis among gun control advocates and tend to lend support for gun control (Kahan & Braman, 2003). Nonetheless, a shift in norms and risk perceptions could explain current trends in gun ownership motivation. Whereas gun culture was once characterized by recreational gun use, it has become a culture defined by protective gun ownership, which some refer to as "Gun Culture 2.0" (e.g., Yamane, 2017).

Fear

Recent polls indicated that physical protection was the most frequently reported reason for owning a gun (Azrael et al., 2017; Pew Research Center, 2017; Siegel & Boine, 2020). Although this is true of new gun owners (i.e., became a first-time gun owner within the past five years) and long-standing gun owners alike, new gun owners are at increased odds of owning a gun for the sole purpose of protection (Wertz, Azrael, Hemenway, Sorenson, & Miller, 2018). As previously mentioned, guns were traditionally used for several purposes, including sporting equipment for recreation (e.g., hunting;

target shooting) or collectable items (Yamane, 2017). The concentrated shift toward guns as purely instrumental to self-protection surely has a myriad of explanations, but media influence could be one contributing factor.

Some researchers believe that the recent uptick in mass shootings—or perhaps the widely available and salient news coverage of such events—has induced fear and motivated gun-related attitudes and behaviors (Jang, 2019; Pierre, 2019; Stroebe, Kreienkamp, Leander, & Agostini, 2021; Turchan, Zeoli, & Kwiatkowski, 2017; Wallace, 2015). Indeed, highly publicized shootings are frequently followed by a surge of gun purchases and carrying permit applications (Depew & Swensen, 2019; Turchan et al., 2017; Wallace, 2015), suggesting that guns could be a coping mechanism to deal with the induced emotional state (Buttrick, 2020). Additionally, many gun retailers have altered their marketing strategies to emphasize guns as a necessity for self-protection, as opposed to recreation (Buttrick, 2020; O'Neill, 2007), which could be a response to the dynamic marketplace, but it also reinforces and capitalizes on widespread fear. Exposure to such media may contribute to perceptions that the world is a dangerous place and that law enforcement officers are unable to prevent or thwart all threatening interpersonal encounters (Buttrick, 2020; O'Neill, 2007; Turchan et al., 2017). These viewpoints might lead some people to perceive gun ownership as the most reliable and effective way to protect themselves and their communities (Buttrick, 2020; Carlson, 2015; O'Neill, 2007; Pierre, 2019; Stroebe et al., 2017; Stroud, 2012; Warner & Thrash, 2020).

Even beyond media exposure and the context of mass shootings, fear appears to have a substantial effect on gun-related attitudes and behaviors. Prior victimization experiences (e.g., bullying; assault) are associated with gun carrying among adolescents

and adults (Pham, Schapiro, John, & Adesman, 2017; Turner, Phillips, Tigri, Williams, & Hartman, 2016), gun ownership in adulthood (Kleck, Kovandzic, Saber, Hauser, 2011; Warner & Thrash, 2020), and opposition to handgun bans (Kleck et al., 2009). Additionally, some research finds that childhood trauma exposure (i.e., witnessing domestic or community violence) is predictive of gun involvement in adulthood (Wamser-Nanney, Nanney, Conrad, & Constans, 2019). These results suggest that encounters with violence may prompt protective behaviors—such as gun acquisition—in anticipation of future victimization (though some researchers argue in favor of the opposite causal direction; see Watts, 2019). However, one does not need personal experiences with violence, nor risk of victimization, to be motivated by fear. In fact, rural, high-income areas often have increased rates of gun ownership (Azrael et al., 2017; Hamilton et al., 2018; Pew Research Center, 2017), despite their low risk of victimization (Bunch, Clay-Warner, Lei, 2015; Pierre, 2019; Warner & Thrash, 2020).

Recent theoretical work has sought to distinguish 'perceived risk of victimization' from 'fear of crime' to help make sense of the paradoxical associations between fear and gun-related constructs (e.g., Stroebe et al., 2017; Warner & Thrash, 2020). Perceived risk of victimization is a cognitive assessment in which an individual considers the likelihood of being victimized as part of a violent crime. These perceptions are formed through the observation of one's immediate environment (e.g., neighborhood) and are based on assessments of *specific* threats, such as physical assault. In contrast, fear of crime is an emotional response that could stem from a perceived risk of victimization, but also from *diffuse* threats—such as an ambiguous notion that the world is a dangerous place (Buttrick, 2020; Hauser & Kleck, 2013; Stroebe et al., 2017; Stroebe et al., 2021; Warner

& Thrash, 2020). Although these constructs are independent predictors of gun-related attitudes and behaviors (i.e., gun control opposition; gun purchasing; gun carrying; Stroebe et al., 2017; Stroebe et al., 2021), diffuse fear has a stronger and more consistent relationship than perceived risk of victimization (Warner & Thrash, 2020). This suggests that the emotional experience of fear sometimes overrides well-reasoned risk assessments—or perhaps even objective crime rates (but also see Kleck & Kovandzic, 2009)—to motivate attitudinal and behavior outcomes in an attempt to prevent perceived interpersonal danger (Buttrick, 2020; Pierre, 2019; Warner & Thrash, 2020).

Although gun-supportive attitudes (e.g., gun control opposition) and gun-related behaviors (e.g., gun ownership; carrying) often are intended to protect against perceived threats, these outcomes seldom achieve their anticipated effects and may even intensify underlying issues (Buttrick, 2020; Grinshteyn & Hemenway, 2019; Lee et al., 2017). Buttrick (2020) argued that guns serve as a maladaptive coping mechanism, because people might confuse the sense of empowerment that accompanies gun acquisition with feelings of safety. Empowerment and gun ownership may temporarily relieve uncomfortable emotional states, such as fear, but the presence of guns can make communities more unpredictable and uncontrollable. Guns also may orient their owners toward threat, which increases the likelihood of perceived danger in their immediate environments and beyond. Thus, by introducing disorder and heightened vigilance, guns might reaffirm beliefs in a dangerous world, creating a perpetual feedback loop that induces fear and further motivates gun-related attitudes and behaviors. Consistent with this idea, Hauser & Kleck (2013) found that fear was predictive of gun acquisition, but gun ownership was not associated with reductions in fear at a three-year follow-up

assessment. Interestingly, though, the relinquishment of firearms significantly increased fear. These results suggest that protective gun owners may cling to their firearms, because they believe guns are essential to their safety, despite the weapon's failure to reduce fear. In actuality, gun ownership may support the development of chronic fear, which could entrench an individual in gun-related behaviors (e.g., ownership; carrying) and opposition to gun control (due to fear of losing self-protection abilities; Buttrick, 2020).

Of course, fear does not produce a singular outcome and can differentially motivate depending on contextual factors. For example, mass shootings are indeed followed by a surge of gun purchases (Turchan et al., 2017; Wallace, 2015), but they also could lead to support for gun control (Jose et al., 2021; Pierre, 2019; Wozniak, 2017). Self-interest theory suggests that people will generally favor the gun control stance that they perceive optimally benefits them. Thus, the outcome perceived as most efficacious for self-protection (e.g., gun control versus gun ownership) is likely to draw support (Wolpert & Gimpel, 1998; Wozniak, 2017). There also appear to be partisan differences, wherein fear may motivate gun control opposition, gun purchases, and gun carrying among Republicans, but support for gun control legislation among Democrats (Jang, 2019; Jose et al., 2021; Shepherd & Kay, 2018; Wozniak, 2017). Other contextual factors, such as close residential proximity to a recent shooting or shared personal characteristics (e.g., race or ethnicity) with victims of a shooting, also are associated with gun-related attitudes and behaviors (Depew & Swensen, 2019; Newman & Hartman, 2017). This suggests that, at least in some instances, fear and social identity interact to

predict gun-related attitudinal and behavioral outcomes, highlighting the importance of both motivational constructs.

Current gaps in the motivational literature

Although prior research has provided a firm foundation for the psychological understanding of gun-related motivation, there are several gaps in the extant literature. Most notably are the evident gender differences in gun-related attitudes and behaviors (e.g., Miller, 2019; Pew Research Center, 2017; 2021). Theory has acknowledged that gun-related social influence and cultural norms apply more strongly to men than women (e.g., Carlson, 2015; Stroud, 2012), but research seldom quantifies and empirically investigates men's stronger orientation toward guns. Additionally, much of the extant literature examines self-reported, conscious motivation, which gives the appearance that physical protection is the primary motivator of gun-related constructs (e.g., Pew Research Center, 2017; 2021; Siegel & Boine, 2020; Yamane, 2017). It is likely that safety—and other conscious motivators (e.g., recreation)—account for a substantial proportion of variance in gun-related attitudes and behaviors, but there also is the potential for underlying processes in which the individual is not consciously aware and, thus, cannot self-report. For instance, physical threats (i.e., threats of bodily harm) are explicitly recognized through emotion-driven attention (Neuberg, Kenrick, Schaller, 2011; Öhman, Flykt, Esteves, 2001), whereas symbolic threats (i.e., threats to values, identity, reputation, or status) are generally detected by way of implicit cognition (e.g., Anderson, Hildreth, & Howland, 2015), yet both elicit a behavioral response despite differing levels of self-awareness regarding their core motivations. Consistent with previous scholarly work (Carlson, 2015; Melzer, 2009; Stroud, 2012), it may be that men in the United

States are culturally primed to orient themselves toward guns as a strategy to defend against interpersonal threats, regardless of whether those threats are physical or symbolic. However, because reactions to symbolic threats are often beyond conscious awareness, it is most methodologically appropriate to observe behavioral responses via experimental manipulation. The current project addresses the relative dearth of empirical research on gender and guns by utilizing experimental methodology to examine the motivational effects of a symbolic threat (i.e., a manhood/masculinity threat) on gun-related attitudes and behavioral intentions among men in the United States.

Theoretical Overview: Precarious Manhood

Prior psychological and sociological research on men and masculinities suggest that manhood is hard won and easily lost, meaning that men must continually demonstrate their masculinity to be considered a "real man" or else risk losing their manhood status (Myketiak, 2016; Vandello & Bosson, 2013). However, men face societal expectations of masculinity that are near impossible to achieve. Connell and Messerschmidt (2005) suggest that hegemonic masculinity is the dominant, directive, and regulatory form of masculinity within a given society, indicating that men are pressured to exemplify hegemonic archetypes. In the United States, hegemonic ideals dictate male norms that emphasize expressions of toughness, status, agency, bravery, and honor (Barnes et al., 2012; Connell & Messerschmidt, 2005; Thompson & Pleck, 1986). Although hegemonic masculinity has these identifiable characteristics, its true embodiment is an ever-fleeting objective, which can produce feelings of stress or anxiety among men as they navigate social perceptions (Myketiak, 2016; Vandello & Bosson, 2013). A central tenant of the men and masculinities literature is that manhood in the

United States is often conceptualized as that which is not feminine (DiMuccio, Yost, & Helweg-Larsen, 2017; Levant, Rankin, Williams, Hasan, & Smalley, 2010; Thompson & Pleck, 1986; Vandello & Bosson, 2013). If a man is faced with the perception that he has failed to abide by male norms (e.g., via feminine gender expression), feelings of stress or anxiety could motivate exaggerated expressions of masculinity in an attempt to prove one's manhood (Baugher & Gazmararian, 2015; Himmelstein, Kramer, & Springer, 2019; Smith, Parrott, Swartout, & Tharp, 2015; Vandello & Bosson, 2013).

The precarious manhood thesis is a theoretical framework that encompasses these ideas and tests their assumptions (Vandello & Bosson, 2013; Vandello, Bosson, Cohen, Burnaford, & Weaver, 2008). Prior research has found evidence for the notion that "manhood" is not biologically engrained nor inevitably granted at a certain developmental stage. Rather, manhood is commonly viewed as an achieved status that must be earned through actions, such as occupational success or physical dominance (Vandello et al., 2008). Research shows that men are attuned to this perception, implicitly understand the tenuousness of manhood, and recognize that it can be maintained through adherence to male norms (Vandello & Bosson, 2013). Although the everyday maintenance of manhood is typically quite subtle (e.g., choice of clothing, use of language, and other gender expressive behavior), the performance of masculinity often becomes amplified in instances of threatened manhood. For example, experimental inductions of masculinity threats (e.g., via a "hair braiding" task or bogus gender-threating feedback) tend to result in more aggressive behaviors and cognitions compared to masculinity affirmations (e.g., via a "rope-strengthening" task or bogus gender-affirming feedback; Berke, Reidy, Miller, & Zeichner, 2017; Bosson, Weaver, Caswell,

& Burnaford, 2012; Bosson, Vandello, Burnaford, Weaver, & Wasti, 2009; Vandello et al., 2008). Men also tend to perceive aggression as an appropriate response to manhood threats (Barnes et al., 2012), and experience a reduction in anxiety after engaging in such behavior (Bosson et al., 2009). These results suggest that a threatened sense of manhood can motivate stereotypically masculine behaviors (e.g., aggression), which serve as mechanisms to alleviate anxiety and reaffirm manhood status.

However, outcomes evoked through manhood threats are not limited to aggression. Rather, there are many ways in which men choose to display their masculinity. Prior research has investigated several of these gender-reaffirming outcomes, including engagement in unsafe physical behaviors (e.g., health risks; potential bodily harm; Vandello & Bosson, 2013), exaggerations of one's physical strength (Frederick et al., 2017), sexist or homophobic joke telling (O'Connor, Ford, & Banos, 2017), participation in risky gambling behaviors (Weaver, Vandello, & Bosson, 2013), and decisions to invest in shaky financial portfolios (Parent, Kalenkoski, & Cardella, 2018). Because these actions are associated with hegemonic masculine traits (e.g., bravery; toughness; risk-taking; Vandello & Bosson, 2013), or are behaviors to distinguish themselves from feminine-characterized groups (e.g., women; gay men; O'Connor et al., 2017), any are possible reactions to manhood threats. Yet, in a real-world context, men must choose which (or which combination) of these behaviors to perform. In many cases, the chosen manhood-affirming behavior may be dependent on its applicability to the given context (Vandello & Bosson, 2013). For example, a man whose masculinity is threatened by a fellow patron at the supermarket is unlikely to engage in risky gambling, because that opportunity is not cognitively or physically accessible to

him. Instead, aggression could be perceived as a feasible outcome. Although understudied, there is emerging evidence that gun-supportive attitudes and behaviors are widely applicable (and implicitly recognized) strategies to demonstrate masculinity.

Guns and Masculinity

Sociological scholars contend that guns and masculinity have long been intertwined in United States culture. Stroud (2012) explains that mythological narratives surrounding the "American frontier" portray images of ruggedly individualistic, gun-toting men who approach danger and defend the downtrodden. Similar images are widely seen in popular media (e.g., film, television, and video games), and are used in pro-gun lobbying and marketing campaigns. In fact, the NRA publishes accounts of men who resemble American frontiersmen and use their firearms to fend off violent crime (Melzer, 2009; O'Neill, 2007). Men in these media are depicted with hegemonic masculine characteristics (e.g., tough, courageous, honorable) and often become exemplars of the male ideal (O'Neill, 2007; Stroud, 2012). In addition to these media, gun manufactures further associate guns and masculinity through their advertisements and marketing strategies. Bushmaster, for example, is known for their explicit appeals to masculinity by using advertisement tag lines such as "Consider your man-card reissued" for high-powered assault rifles, implying that possession of the weapon will permit men their manhood. Bushmaster has even included a "manhood test" on their website, in which men must prove their manhood through a series of questions. Successful completers are issued a "Man Card," which is valid for one year (or until it is revoked by someone who feels the individual has betrayed his manhood; Esposito & Finley, 2014). Pro-gun politicians use similar—yet oftentimes subtler—appeals to masculinity, such as

communications that implicate men as responsible for protecting their family (Carlson, 2015; Melzer, 2009; O'Neill, 2007). It is argued that, through these consistent associations overtime, guns became embedded within hegemonic masculinity and a symbol through which men can embody it (Carlson, 2015; Melzer, 2009; Myketiak, 2016; Stroud, 2012).

For many men, especially those from traditional backgrounds, guns are an integral piece of their gender socialization, which may further engrain guns into masculinity. This form of gender socialization includes the paternal passing of gun-related rituals and indoctrination into manhood, as well as ideological developments that aid gun-supportive attitudes and behaviors. Among gun owners, 95% believe that teaching their children about firearms is an important parental duty (Pew Research Center, 2017). However, gun-related teachings tend to be male affairs, suggesting that young boys likely have more exposure to firearms than young girls. Indeed, hunting often serves as a father-son bonding experience and a rite-of-passage for boys into manhood (Hall-Sanchez, 2014). Boys also are regularly taught the importance of the "male role" (Hall-Sanchez, 2014), which includes protecting the family (Carlson, 2015; Cassino & Besen-Cassino, 2020; Stroud, 2012; Warner, Tober, Bridges, & Warner, 2021). This could orient young men's threat-detection processes toward harm from outsiders and away from intrafamilial harm (e.g., accidental shootings; suicide), thus demonstrating the value of guns while also directing attention away from its risks (Daruwala, Bandel, Houtsma, Butterworth, & Anestis, 2020; Pierre, 2019; Stroebe et al., 2021). As a result of these teachings, many men may conclude that the risks associated with a lack of firearms—including symbolic (e.g., failure to fulfill the male role of protector) and physical (e.g., harm from

outsiders)—outweigh the risks associated with the possession of firearms (Stroebe et al., 2021).

In addition to the paternal passing of gun-related attitudes and behaviors, there also are potential group-based processes that could aid gender socialization. Mechling (2014) explains that the Boy Scouts—a popular outdoorsman group for young boys—was founded in response to widespread anxieties about the feminization of men and what it meant for the readiness of future military cohorts. Thus, the Boy Scouts included lessons on "manliness" (e.g., self-reliance; toughness) in a similar vein to military bootcamps. When the Boy Scouts expanded to the United States by the name "Boy Scouts of America," they quickly became a market for guns and ammunition. They also became an avenue to indoctrinate boys into gun culture. In fact, the Boy Scouts of America continue to provide NRA authored pamphlets and shooting instruction alongside lessons that instill hegemonic masculine characteristics into its members (Mechling, 2014). Although appealing to a distinct sociodemographic group (e.g., urban/low-income versus suburban/middle- to high-income), inter-city gangs similarly attract members through their promises to enhance members' masculine personas. Scholars explain that gangs often provide necessities for abiding by manhood norms, including a source of income, a means of protection, and an environment to engage in risky or dangerous behaviors, which may appeal to men who have few fiscal opportunities or prospects for manhood pursuits (Baird, 2012; Deuchar & Weide, 2019; Flores, 2016). Guns serve a particular purpose for gang members in that they allow men to maintain respect, reputation, and status—within and between gangs—through their symbolic portrayal of masculine characteristics (Stretesky & Pogrebin, 2007). The ensuing sense of masculine

empowerment from gun-related behaviors (e.g., gun carrying and violence) may reinforce attraction to guns and situate guns within these men's manhood identities (Mencken & Froese, 2019; Stretesky & Pogrebin, 2007).

Although the handling of guns, engagement in gun-related activities, and expression of gun-supportive attitudes could be suitable manhood-preserving demonstrations in everyday contexts (Carlson, 2015; McDermott, Brasil, Barina, & Borgogna, 2021; Ray et al., 2021; Stroud, 2012; Warner et al., 2021), it is theorized that the use of guns can become inflated in instances of threatened masculinity. For example, manhood threats (e.g., disrespect; insults) from peers are thought to ignite aggressive impulses that can manifest as gun violence among inner-city youth (Hemenway, 2013; Stretesky & Pogrebin, 2007). Additionally, meta-analytic results suggest that bullying victimization is associated with adolescent weapon carrying (van Geel et al., 2014), perhaps due to a perceived sense of emasculation and a subsequent attempt to demonstrate toughness (Stretesky & Pogrebin, 2007). Similar sentiments have been expressed in secondary analyses of writings by mass shooters. Many school shooters, for instance, expressed frustration with the constant humiliation and emasculation brought on by relentless bullying and homophobic name-calling from classmates (Kalish & Kimmel, 2010; Kimmel & Mahler, 2003). Shooters also commonly describe their sexual campaigns and chronic experiences of romantic rejection, which appear to threaten their sense of heterosexuality and, thus, their hegemonic masculine identity (Farr, 2019; Leary, Kowalski, Smith, & Phillips, 2003; Myketiak, 2016). Of course, experiences of bullying, rejection, and ostracism are common in school environments, but rarely manifest as school shootings, despite the increased risk they pose (Tonso 2006; 2009). Engagement

in violent retaliation may be reliant on perceived entitlement to the manhood affirmations that some men feel they have been unjustly stripped, as well as the belief that their avenues for achieving manhood status are desperately narrow (Farr, 2019; Kalish & Kimmel, 2010; Myketiak, 2016). Indeed, Leander and colleagues (2019) explain that thwarted goals can sometimes result in gun-related behaviors, because these behaviors can restore a sense of power over one's environment. In the case of school shootings, the shooters may have chosen the ultra-masculine behavior of gun violence as a way (they thought) to prove their worth as a man, demonstrate control over their fate, and entrench themselves within "warrior culture" (Farr, 2019; Kalish & Kimmel, 2010; Kellner, 2008; Kimmel & Mahler, 2003; Myketiak, 2016).

In addition to these extreme examples, gun-related attitudes (e.g., gun control opposition) and behaviors (e.g., gun purchases) appear to be motivated by more subtle manhood threats, such as physical and economic decline. Scholars suggest that physical and economic decline limit some men's ability to provide for their family and adhere to male norms (Carlson, 2015; Cassino & Besen-Cassino, 2020; Stroud, 2012), which may cause considerable distress as they attempt to maintain their manhood status. Indeed, Syrda (2020) found that married men tend to experience psychological distress when they earn less income than their wives, especially if the difference in income is large. As a result of this distress, men often emphasize a distinct facet of the male role, thus allowing them to fulfill hegemonic ideals in a different context (Carlson, 2015; Cassino & Besen-Cassino, 2020). Many men shift their role from a "provider" (or "breadwinner") to a "protector," which typically includes the acquisition and carrying of guns (Carlson, 2015; Cassino & Besen-Cassino, 2020). Carlson (2015) explains that the newfound role of

"protector" provides men with a sense of usefulness, because it affords the perception that they are essential to the safety of their family and community. Although the role of "protector" is situated within hegemonic masculinity by its very nature, the role further supports manhood status by allowing men to justifiably associate themselves with symbols of masculinity (e.g., guns; Carlson, 2015; Cassino & Besen-Cassino, 2020; Stroud, 2012). In fact, some men are even thought to create and communicate a false perception of physical threat in order to reaffirm the necessity of their role as a "protector" (Cassino & Besen-Cassino, 2020; Stroebe et al., 2021). Without such an outlet to demonstrate their masculinity, men may feel at further risk of losing status and sliding down the gender-based social hierarchy. Thus, in times of physical or economic uncertainty, guns offer men relief from their otherwise precarious manhood standings (Carlson, 2015; Stroud, 2012).

Empirical Evidence

Despite scholarly interest in theory pertaining to guns and masculinity, there has been very little empirical work that directly assesses the relationship. Recent groundbreaking quantitative analyses, however, addressed this evident gap and supported the association. In samples of community men, adherence to masculine gender norms and masculine honor ideology (i.e., a man's prerogative to defend his reputation using masculine gender expression) had significant bivariate associations with indicators of gun-supportive attitudes—including gun enthusiasm, positive attitudes toward guns, and gun control opposition (Matson et al., 2019; Ray et al., 2021). Ray and colleagues (2021) extended these results using a multivariate path analysis and found that masculine honor ideology had a direct relationship with gun enthusiasm and positive attitudes toward

guns, while adherence to masculine gender norms was indirectly related to these outcomes through honor ideology. Adherence to masculine gender norms is also associated with gun ownership (Stroebe et al., 2021; Warner et al., 2021), and the association is particularly strong with norms emphasizing violence, risk-taking, and power over women (McDermott et al., 2021). Together, these results suggest that gun-supportive attitudes and behaviors could be preemptive strategies for men to affirm their manhood status, likely because guns highlight normative male qualities (e.g., toughness; aggressiveness; dominance).

In addition to these results, there is emerging empirical evidence to support manhood threats as motivators of gun-related attitudes and behaviors. Cassino and Besen-Cassino (2020) found that self-reported sexism scores were positively associated with gun control opposition. Sexism and gender-based violence are mechanisms to assert dominance over women and solidify men's position in gender-based social hierarchies (Glick & Fiske, 2001; Smith et al., 2015). These constructs tend to increase when men feel their masculinity has been threatened (O'Connor et al., 2017; Parkhill & Ray, 2021; Ray & Parkhill, in press; Smith et al., 2015) and thus may be indicators of men's insecure social standings. The positive association between sexism and gun control opposition therefore suggests that, in addition to regaining power through sexism, men also may seek manhood stability through guns, thereby opposing restrictions. Additionally, Scaptura and Boyle (2021) found that masculine gender role stress (i.e., felt threats to an individual's sense of masculinity) and status threats (i.e., the belief that societal changes are detrimental to men's social standing) were positively associated with gun-supportive attitudes, and that these effects were pronounced among economically disadvantaged

White men. Similarly, Cassino & Besen-Cassino (2020) found that male unemployment rates—at the state level—were predictive of the number of firearm background check applications that were submitted to the respective state government. These results suggest that a lack of financial security may result in compensatory behavior to regain a sense of power or control. Indeed, Mencken and Froese (2019) reported that men experiencing economic decline are comforted and empowered by guns, further supporting the notion that some men use guns to symbolically demonstrate masculinity and relieve gender-related anxieties, especially when their manhood is threatened.

Current Research

Although prior research has examined the effects of masculinity threat on gun-related attitudes and behaviors (Cassino & Besen-Cassino, 2020; Mencken & Froese, 2019; Scaptura & Boyle, 2021), such research is scant and correlational; thus, prior research should be considered preliminary. Accordingly, it remains unclear if masculinity threats have a casual influence on gun-related variables. Despite the relative dearth of empirical evidence, it is theorized that guns symbolize masculinity and can be tools to situate oneself within hegemonic masculinity (Carlson, 2015; Myketiak, 2016; Stroud, 2012). Therefore, when men feel their masculinity is threatened, they are likely to orient themselves toward guns to stabilize their manhood status, which could manifest as gun-supportive attitudes or gun-related behaviors (Cassino & Besen-Cassino, 2020; Mencken & Froese, 2019; Ray et al., 2021; Scaptura & Boyle, 2021). Given evidence that gun-related behaviors tend to increase in the presence of others (Lantz & Wenger, 2021; Stretesky & Pogrebin, 2007), guns seem to serve a self-presentation function. However, guns provide men with feelings of empowerment (Mencken & Froese, 2019), suggesting

that guns also serve internal functions. As a result, it is unknown whether shifts in gun-related attitudes and behaviors are purely intended to display masculinity to others, or if such shifts could be internal mechanisms to prove manhood to oneself.

Specific Aims

The goal of the proposed research is to empirically test the theorized causal effects of masculinity threats on gun-related attitudes (Specific Aim 1) and behaviors (Specific Aim 2) among men in the United States. In addition to these primary aims, the proposed research also aims to determine whether guns are a symbol used to demonstrate masculinity to others (Specific Aim 3) and if increases in gun-supportive attitudes and behaviors are attempts to prove manhood to oneself (Specific Aim 4). The research consisted of two studies that followed similar procedures. However, because the aims were to examine distinct, albeit interconnected, aspects of psychology (i.e., attitudes and behaviors), one study was devoted to each of these outcomes. All study procedures received ethical approval from the Oakland University Institutional Review Board prior to their implementation (see Appendix A).

CHAPTER TWO

STUDY 1

Methods

Study Design and Hypotheses

The first study examined the association between masculinity and gun-related attitudes. In addition, the study also examined whether this association is due to a desire to display masculinity to others. Thus, Study 1 consisted of a two (masculinity threat: 'gender affirmation'; 'masculinity threat') by two (public display: 'public display'; 'private') experimental design. Based on prior research (Cassino & Besen-Cassino, 2020; Mencken & Froese, 2019; Ray et al., 2021; Scaptura & Boyle, 2021), it was hypothesized that men who receive a masculinity threat—compared to men who receive a gender affirmation—would have more gun-supportive attitudes (i.e., more positive attitudes toward guns; more gun enthusiasm; less support for gun control; hypotheses 1.1-1.3). It also was hypothesized that masculinity threat would interact with public display, wherein men who received a masculinity threat, and were told that their attitudes would be displayed to others, would have the highest gun-supportive attitudes (hypotheses 1.4-1.6).

Participants

An a priori power analysis was conducted in G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) to determine the appropriate sample size for the planned analysis. Prior research indicated that a masculinity threat manipulation produced a moderate-sized effect on masculine-affirming behavior (i.e., aggression; Bosson et al., 2012). Thus, an effect size (multivariate η^2) of .06, an error probability (α) of .05, power ($1-\beta$) of .80, four

groups, two predictors, and three response variables were specified in a power analysis for a two-way multivariate analysis of variance (MANOVA). Based on these criteria, it was estimated that a total 117 responses were necessary to achieve sufficient power.

The final sample consisted of 184 adult men living in the United States. The mean age was 34.91 (*SD* = 10.79) and ranged from 18 to 74; however, nearly two-thirds (*n* = 118; 64.13%) of participants were 35 years of age or younger. Participants were White or European-American (*n* = 129; 70.11%), Black or African-American (*n* = 32; 17.39%), or non-Black Persons of Color (*n* = 23; 12.50%). Most participants held a bachelor's degree or higher (*n* = 131; 71.20%) and had a yearly family income of $40,000 or more (*n* = 134; 72.83%). Political ideology was normally distributed on a scale from 1 (*Extremely liberal*) to 7 (*Extremely conservative*), with a mean of 4.19 (*SD* = 1.67); approximately half (*n* = 87; 47.28%) of participants described their ideology as conservative, one-third (*n* = 61; 33.15%) as liberal, and the remaining as neutral (*n* = 36; 19.57%). Most participants specified a religious affiliation (*n* = 146; 79.35%), the most common of which was Christian (*n* = 84; 45.65%). Region of residence was diverse with 32.61% (*n* = 60) of participants living in the Northeast, 32.07% (*n* = 59) in the South, 24.46% (*n* = 45) in the Midwest, and 10.87% (*n* = 20) in the West. Close to one-third (*n* = 55; 29.89%) of participants owned a gun at the time of their study participation. One-fourth (*n* = 46; 25.00%) of participants were current or former law enforcement officers and 28.80% (*n* = 53) were current or former military personnel. There was considerable overlap between law enforcement and military; 20.32% (*n* = 38) of participants had served in both roles. A breakdown of participant demographics is presented in Table 1.

Table 1. Demographics for Study 1 Participants ($N = 184$)

Demographic Variables	*n*	%
Age		
18-24	27	14.67%
25-29	30	16.30%
30-39	69	37.50%
40-49	39	21.20%
50 or older	19	10.33%
Race/Ethnicity		
Black or African-American	32	17.39%
Non-Black Person of Color[1]	23	12.50%
White or European-American	129	70.11%
Education		
Associate's/technical degree or less[2]	53	28.80%
Bachelor's degree	82	44.57%
Graduate degree	49	26.63%
Yearly Family Income		
$29,999 or less	27	14.67%
$30,000-$39,999	23	12.50%
$40,000-$49,999	53	28.80%
$50,000-$59,999	25	13.59%
$60,000 or more	56	30.43%
Political Ideology		
Extremely or very liberal	40	21.74%
Slightly liberal	21	11.41%
Neutral	36	19.57%
Slightly conservative	34	18.48%
Extremely or very conservative	53	28.80%
Religion		
Agnostic, Atheist, or none	38	20.65%
Catholic	52	28.26%
Christian	84	45.65%
None of the above[3]	10	5.43%

Table 1–Continued

Demographic Variables	*n*	%
Region of Residence		
Midwest	45	24.46%
Northeast	60	32.61%
South	59	32.07%
West	20	10.87%
Gun Ownership		
No	111	60.33%
Yes	55	29.89%
Current or Former Law Enforcement Officer		
No	123	66.85%
Yes	46	25.00%
Current or Former Military		
No	120	65.22%
Yes	53	28.80%

Notes. Some categories were collapsed to protect participant confidentiality that would otherwise be violated due to low cell counts. [1]The "Non-Black Person of Color" category consisted of individuals who were Asian or Asian-American, Hispanic or Latinx, Native American or Alaskan Native, or Native Hawaiian or Pacific Islander. [2]The "Associate's/technical degree or less" category consisted of individuals who earned less than a high school diploma, high school diploma, GED or ABE certificate, attended some college without a degree, or held an Associate's/technical degree. [3]The "None of the above" category consisted of individuals who were Buddhist, Muslim, Jewish, or Pagan.

Recruitment and Sampling Procedures

Participants were recruited through Amazon Mechanical Turk (MTurk). MTurk is an online crowd-sourcing marketplace that has been found to produce valid data that is more demographically diverse than traditional internet or college student samples (Casler, Bickel, & Hackett, 2013). An advertisement for the study was uploaded to MTurk, which included basic information about the study (e.g., duration; compensation). Interested individuals clicked on a hyperlink that led to a screener questionnaire. The screener questionnaire consisted of various demographic items to ensure that respondents met eligibility criteria (i.e., male; lived in the United States; 18 years of age or older). The inclusion criteria were ambiguous to respondents, which is consistent with best practices for collecting data in online research. Specifically, previous research suggests that respondents will lie in online surveys to appear eligible for participation and receive compensation; ambiguous inclusion criteria can mitigate such instances (Chandler & Paolacci, 2017). Respondents who were ineligible were dismissed from the study and not allowed to complete the screener questionnaire a second time. Eligible participants were given access to the online study, provided with an informed consent document, and asked to provide electronic consent prior to their participation.

A total of 889 individuals consented to participate in the study. Of these, 452 (50.84%) did not meet eligibility criteria, 117 (13.16%) attempted to complete the study more than once, six (0.67%) provided incomplete data (i.e., less than 75%), and one (0.11%) did not provide data for any of the outcome variables; these individuals were removed from the data. In addition, several insufficient effort responding (IER) criteria were examined to ensure validity of the data. These criteria included: (1) one or more

missed attention checks (three items instructing participants to select a specific response were interspersed throughout the study), (2) two or more instances of "straight-lining" (i.e., selecting the same response for a string of five or more items, including at least one reverse-scored item), (3) improbable study completion time (i.e., three or more standard deviations below the mean duration), (4) suspicious free-response entries (e.g., nonsense text; copying and pasting the question prompt into the text box; clear indication that the question prompt was not read). A total of 112 (12.60%) respondents incorrectly answered one or more attention check, eight (0.90%) straight-lined on two or more instances, and six (0.67%) entered suspicious text in free-response items; there were no participants who had a study duration three or more standard deviations below the mean. Finally, at the conclusion of the study, but prior to debriefing, participants were asked if they had any suspicions while completing the study. Three (0.34%) participants correctly guessed the purpose of the study and at least one hypothesis. Those who failed any of the IER criteria, or correctly guessed the purpose of the study, were removed from the data. This resulted in the final sample of 184 adult men residing in the United States.

Study Procedures and Manipulations

Eligible participants first completed a self-report measure of adherence to masculine gender norms (Thompson & Pleck, 1986), which was followed by a masculinity threat manipulation. The masculinity threat manipulation and its associated procedures were based on prior research examining precarious manhood (e.g., Berke et al., 2017; Bosson et al., 2012; Vandello et al., 2008). Specifically, participants were asked to complete a "Gender Knowledge Test" (Rudman & Fairchild, 2004; Vandello et al., 2008), in which they answered stereotypical gender-based knowledge questions (e.g.,

"What is the best way to deflect a punch?") with binary response options. Participants were told that the Gender Knowledge Test would assess their level of masculinity or femininity and, once completed, would provide them with feedback relative to others who had previously completed the study. Upon completing the Gender Knowledge Test, participants were held on a page that stated, "Please wait while your results are calculated." After several seconds, feedback was presented on the screen with two normally distributed bell curves along a continuum from "feminine" to "masculine." The bell curve that was lower on the continuum was labeled "women" and the bell curve on the higher end was labeled "men." These bell curves were overlapping, wherein the high end of the bell curve (i.e., above the 75th percentile) labeled "women" overlapped with the low end of the bell curve (i.e., below the 25th percentile) labeled "men." The content of the feedback, however, was fictitious; participants were randomized to receive feedback that was either a (1) gender affirmation (n = 93) or (2) masculinity threat (n = 91). In the gender affirmation condition, an arrow labeled "Your Score" pointed just above the average score on the "men" bell curve along with text stating, "Your score indicates that you have the masculinity level of a typical man" (see Appendix B). In the masculinity threat condition, the arrow pointed toward the low end of the bell curve labeled "men," and was closer to the average score for women than to the average score for men. This was accompanied by text stating, "Your score indicates that you have the femininity level of a typical woman" (see Appendix C).

Participants were then further randomized into either the (1) 'public display' group (n = 90) or (2) 'private' group (n = 94) as part of the 'public display' manipulation. Participants in the 'public display' group were told that their scores on the following

questionnaires—which assessed "hobbies, interests, and attitudes"—were to be used, along with their masculinity or femininity score, to create a social media profile that represents them. They also were told that the desire to spend time with the person depicted in the profile would be rated by participants in a future study, and the average ratings from male and female observers would be sent to them via email. Participants in the 'private' group were told that their responses to the following questionnaires would be kept completely confidential. Both groups were told that the first few questionnaires would assess their attitudes toward guns, followed by questions addressing other topics (the latter part of the statement was fictious and designed to prevent suspicion).

Following the public display manipulation, participants completed the dependent variable measures (i.e., positive attitudes towards guns, gun enthusiasm, support for gun control), which were displayed to participants in a random order. After completion of the dependent measures, but prior to debriefing, participants were presented with two free-response questions that asked them (1) to provide any comments about the study and (2) if they had any suspicions about the study. Participants were then debriefed and told that the purpose of the study was to evaluate the effect of the 'masculinity and femininity' feedback on responses to the gun-attitudes questionnaires. The debriefing information also explicitly stated that the feedback on the 'masculinity and femininity' assessment was fictitious and that none of their responses would be shared with other participants. Because deception was used, participants were given the opportunity to withdraw their data from the study—though no participant chose to do so. Participants also were provided with resources for community mental health agencies and contact information for the researchers. Prior to departing from the study, participants were asked to indicate

whether they were current or former law enforcement officers, current or former military service members, and current gun owners. Finally, participants were provided with financial compensation paid through their MTurk accounts.

Measures

Demographic variables. Demographic variables were used to describe the study sample and to assess whether there were between-group differences for any of the demographic characteristics (which would indicate that the randomization procedure did not eliminate confounds). The demographic variables assessed in the study included gender, age, race/ethnicity, education, family income, political ideology, religion, region of residence, gun ownership, employment as a law enforcement officer, and military service. The items used to assess these constructs are presented in Appendix D.

Adherence to masculine gender norms. Adherence to masculine gender norms was included in the study to assess whether there were between-group differences in masculinity prior to the experimental manipulations. Adherence to masculine gender norms was assessed using the 26-item Male Role Norms Scale (MRNS; Thompson & Pleck, 1986). The MRNS measures the extent to which respondents adhere to the traditional male norms of toughness (i.e., men must be tough), status (i.e., men must achieve occupational and financial success), and antifemininity (i.e., men must not be feminine). Participants were asked to indicate the extent to which they agreed or disagreed with each statement on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Items included "A man should never back down in the face of trouble," "Success in his work has to be man's central goal in this life," and "It is a bit embarrassing for a man to have a job that is usually filled by a woman" (see Appendix E for a complete list of

items). Higher mean scores on the MRNS indicated greater adherence to masculine gender norms. The MRNS demonstrated validity and excellent internal consistency (α = .91-.92) in prior research (Ray & Parkhill, 2020; Ray et al., 2021; Thompson & Pleck, 1986) and in the current data (α = .95).

Dependent variables.

Positive attitudes toward guns. Positive attitudes toward guns were assessed using the 9-item Gun Attitudes Scale (GAS; Tenhundfeld et al., 2020). The GAS measures support for gun ownership and the extent to which feelings of control, independence, and safety are derived from guns. Participants were asked to indicate the extent to which they agreed or disagreed with each statement on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Items included "Owning a gun would give me a feeling of independence" and "I would personally feel more in control by keeping a gun in my home" (see Appendix F for a complete list of items). Higher mean scores on the GAS indicated more positive attitudes toward guns. The GAS demonstrated validity and excellent internal consistency (α = .91-.95) in prior research (Ray et al., 2021; Tenhundfeld et al., 2020) and in the current data (α = .90).

Gun enthusiasm. Gun enthusiasm was assessed using the 8-item Gun Enthusiasm Scale (GunEn; Matson, 2016). The GunEn measures the extent to which respondents enjoy and engage in gun-related activities (e.g., hobbies). For the purposes of this research, the GunEn was slightly revised to assess *interest* in gun-related activities. Participants were asked to indicate the extent to which they agreed or disagreed with each statement on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Items included "I would enjoy hunting small game, such as fowls or rabbits" and "I would enjoy collecting

assault rifles" (see Appendix G for a complete list of items). Higher mean scores on the GunEn indicated more interest in gun enthusiasm. The GunEn demonstrated validity and adequate internal consistency (α = .79) in prior research (Matson, 2016; Ray et al., 2021) and in the current data (α = .74).

Support for gun control. Support for gun control was assessed using the 14-item Gun Control Attitudes Scale (GCAS; Stark & Sachau, 2016). Participants were asked to indicate the extent to which they agreed or disagreed with each statement on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Items included "It should be more difficult to purchase a gun in this country" and "People should not be allowed to carry guns for self-protection" (see Appendix H for a complete list of items). Higher mean scores on the GCAS indicated more support for gun control. The GCAS demonstrated validity and good internal consistency (α = .88-.89) in prior research (Ray et al., 2021; Stark & Sachau, 2016) and in the current data (α = .85).

Data Analytic Approach

Several data preparation procedures were conducted prior to the primary analysis. Normality of data was assessed through patterns of missing data, identification of outliers, and examination of data distributions for all study variables. Collinearity of the dependent variables was examined to ensure the constructs were strongly associated with one another, but not to the extent that including all variables in the same model would produce unreliable estimates. Tests also were conducted to assess between-group homogeneity and determine whether participants encompassed within each group were derived from the same population. In addition to these data preparation procedures, a series of between-group analyses were conducted to examine characteristic differences

between conditions and determine whether inclusion of covariates in the primary model was necessary. Specifically, one-way analyses of variance (ANOVA) were utilized for continuous demographic variables (i.e., age, education, family income, political ideology, adherence to masculine gender norms), whereas Pearson Chi-Square tests were used for categorical variables (i.e., race/ethnicity, religion, region of residence, gun ownership, employment as a law enforcement officer, military service).

The primary analysis consisted of a two-way MANOVA. All three dependent variables (i.e., 'positive attitudes toward guns,' 'gun enthusiasm,' 'support for gun control') were included in the model; 'masculinity threat' (0 = gender affirmation; 1 = masculinity threat) and 'public display' (0 = private; 1 = public) were specified as fixed factors. The main effects of 'masculinity threat' on the dependent variables were used to test hypotheses 1.1 to 1.3, whereas the interaction effects between 'masculinity threat' and 'public display' on the dependent variables tested hypotheses 1.4 to 1.6. All data analytic procedures were conducted using SPSS version 25.

Results

Primary Analysis

Data diagnostics. Data were determined to be missing at random; no more than three individuals (1.63%) had identical patterns of missing data. To adjust for instances of missing data, mean imputation was implemented for respondents who provided data for at least 75% of items for each construct, respectively. List-wise deletion was used for respondents who completed less than 75% of items. Univariate and multivariate outliers were assessed through inspection of histograms, scatterplots, and z-scores. No outliers were identified through the inspection of histogram and scatterplots, and all participants

had scores within three standard deviations from the mean for all study variables. Constructs were normally distributed with acceptable values for indices of skewness (≤ |1|) and kurtosis (≤ |3|), except for positive attitudes toward guns, which had a slight negative skew (skewness = -1.12). An exponential transformation was applied to positive attitudes toward guns, resulting in a modified distribution that fell within acceptable estimates of normality. The dependent variables were significantly associated with one another (*r*s = |.40|-|.75|, *p*s ≤ .001); this indicated that problematic collinearity (*r*s ≥ |.90|; Tabachnick & Fidell, 2012) was not present and that examination of the dependent variables within a single model was appropriate. Between-group homogeneity of variance was demonstrated by non-significant values for Box's Test of Equality of Covariance Matrices (Box's M = 28.33, *f* = 1.52, *p* = .071) and Levene's Test of Equality of Error Variances (*f*s ≤ 1.36, *p*s ≥ .258).

There were no between-group differences for any of the demographic characteristics. Specifically, a one-way ANOVA indicated that there were no significant between-group differences for any of the continuous variables, including age (*f* [3, 180] = 1.23, *p* = .302), education (*f* [3, 180] = 2.60, *p* = .054), family income (*f* [3, 180] = 0.09, *p* = .966), political ideology (*f* [3, 180] = 0.57, *p* = .634), and adherence to masculine gender norms (*f* [3, 178] = 1.56, *p* = .202). Upon examination of the categorical variables (i.e., race/ethnicity, religion, region of residence, employment as a law enforcement officer, military service), it was found that several had low cell counts (< 5) for some of the encompassed categories. Thus, categorical variables were recoded into dichotomous variables to allow for the examination of between-group differences. Because prior research indicated that gun-supportive attitudes are most common among individuals who

are White or European-American (Kleck et al., 2009; Pew Research Center, 2021), Christian (Merino, 2018), and live in the South (Kleck et al., 2009; Lantz & Wenger, 2021; Warner & Thrash, 2020; Warner et al., 2021), the corresponding variables were recoded accordingly (i.e., race/ethnicity: 0 = Person of Color, 1 = White/European American; religion: 0 = non-Christian, 1 = Christian; region of residence: 0 = Midwest/Northeast/West, 1 = South). However, religion also was examined on the basis of any religious affiliation (i.e., 0 = none/Atheist/Agnostic, 1 = Any specified religious affiliation); thus, there were two religious variables compared between-groups. 'Employment as a law enforcement officer' and 'military service' also were recoded into dichotomous variables, wherein individuals who had any employment/service within their lifetime were coded as 1 (*yes*) and those who did not were coded as 0 (*no*). There were no significant between-group differences in observed frequencies for race/ethnicity ($\chi^2[3] = 1.97$, $p = .579$), religion for either the 'Christian' ($\chi^2[3] = 0.33$, $p = .954$) or 'any religious affiliation' ($\chi^2[3] = 6.20$, $p = .102$) variables, region of residence ($\chi^2[3] = 3.21$, $p = .360$), gun ownership ($\chi^2[3] = 0.81$, $p = .848$), employment as a law enforcement officer ($\chi^2[3] = 1.42$, $p = .702$), or military service ($\chi^2[3] = 4.53$, $p = .210$). These results provided evidence that the methodological randomization sufficiently prevented demographic confounds between groups.

Two-way MANOVA. A two-way MANOVA indicated that there were no significant main effects of masculinity threat ($f[3, 169] = 1.47$, $p = .224$, Wilks' $\Lambda = .975$) or public display ($f[3, 169] = 2.12$, $p = .099$, Wilks' $\Lambda = .964$), nor interaction effects between masculinity threat and public display ($f[3, 169] = 0.28$, $p = .837$, Wilks'

$\Lambda = .995$), on positive attitudes toward guns, gun enthusiasm, or support for gun control. These results suggested that the study manipulations did not have a casual effect on gun-supportive attitudes, which ensued retention of the null hypotheses.

Exploratory Analysis

Although the primary analysis indicated that the masculinity threat manipulation did not influence gun-supportive attitudes, the possibility remained that the effect was reliant on participants' adherence to masculine gender norms. Adherence to masculine gender norms was connected to gun-related variables in several prior research studies (McDermott et al., 2021; Ray et al., 2021; Stroebe et al., 2021; Warner et al., 2021). This may suggest that the construct is a predisposed risk factor for gun-supportive attitudes, meaning that only men who strongly adhere to masculine gender norms might perceive the manipulation as a masculinity threat and attempt to compensate through attitudinal shifts. To explore this possibility, a series of hierarchical linear regressions were conducted to examine interaction effects between adherence to masculine gender norms and masculinity threat on positive attitudes toward guns, gun enthusiasm, and support for gun control. The 'public display' variable was dropped from the exploratory analysis, due to its secondary function in the current research, as well as the lack of power within the study to detect a three-way interaction.

Power analysis. Prior to the exploratory analysis, a power analysis was conducted in G*Power (Faul et al., 2009) to determine if the sample size was adequate for the planned analytic approach. A post hoc power analysis indicated that a hierarchical linear regression with three predictors (i.e., two main effects; one interaction) and five

covariates (see 'Model preparation' below) had sufficient power (1-β = .96; α = .05) to detect a small-to-moderate effect (f^2 = .10) with a sample size of 184.

Model preparation. Several procedures were conducted to prepare data for modeling. First, to determine if any covariates should be included in the model, bivariate associations between demographic variables and outcomes were examined (see Table 2). Nominal variables (i.e., race/ethnicity, religion, region of residence, gun ownership, employment as a law enforcement officer, military service) were dummy coded consistent with the prior analysis examining between-group differences in demographics (see 'Data diagnostics' in the 'Primary analysis' section above). Five constructs had significant bivariate associations with at least one gun-related attitude; these included education, political ideology, religion, gun ownership, and military service. Regarding the religion variables, the 'Christian' variable was significantly associated with gun enthusiasm (r = .20, p = .008) and support for gun control (r = -.18, p = .015), whereas the 'any religious affiliation' variable was significantly associated with all three outcomes. Because 'any religious affiliation' had stronger and more consistent relationships with the outcome variables relative to the 'Christian' variable, it was selected to represent 'religion' in later analyses. All five demographic variables that demonstrated significant bivariate associations with gun-related attitudes were included as covariates in the hierarchical linear regressions.

To prevent multicollinearity of the predictors and interaction term, the two primary predictors (i.e., masculinity threat; adherence to masculine gender norms) were centered around their sample means. More specifically, mean values were subtracted from observed values, resulting in a transformed sample mean of zero for both predictor

Table 2. Bivariate Correlations, Means, and Standard Deviations for Study 1 Outcome Variables

Variables	GAS	GunEn	GCAS
Age	-.02	-.04	.05
Race/Ethnicity	-.08	-.02	.01
Education	-.18*	-.15*	.20**
Yearly Family Income	-.10	-.08	.07
Political Ideology	.28***	.29***	-.22**
Religion – Christian	.08	.20**	-.18*
Religion – Any Religious Affiliation	.16*	.24**	-.23**
Region of Residence	.07	.01	-.11
Gun Ownership	.24**	.40***	-.28***
Law Enforcement Officer	.11	.09	-.02
Military Service	.15	.17*	-.14
Masculinity Threat	-.16*	-.13	.10
Adherence to Masculine Gender Norms	.33***	.18*	-.12
Mean	56.23	3.17	3.54
Standard Deviation	37.12	0.78	0.68

Notes. GAS = Positive attitudes toward guns. GunEn = Gun Enthusiasm. GCAS = Support for gun control. The mean and standard deviation presented in the table for GAS are for the exponentially transformed variable; the observed mean and standard deviation was 3.71 and 0.94, respectively. *$p < .05$ *$p < .01$ *$p < .001$.

variables. Multicollinearity of predictors and covariates was then evaluated through the examination of variance inflation factor (VIF) estimates. None of the predictors or covariates had a VIF value greater than the conservative cutoff of 2.50 (VIFs ≤ 1.62), which indicated that multicollinearity was not an issue within the regression models.

Hierarchical linear regressions. A hierarchical linear regression was conducted for each outcome variable (i.e., positive attitudes toward guns, gun enthusiasm, and support for gun control); covariates were entered as predictors on Step 1, masculinity threat and adherence to masculine gender norms were entered on Step 2, and the interaction between masculinity threat and adherence to masculine gender norms was entered on Step 3. The association between each predictor and outcome variable was interpreted on the step in which the predictor was entered into the model, but standardized coefficients for associations at each step can be seen in Table 3.

Positive attitudes toward guns. Positive attitudes toward guns was specified as the outcome in the first series of models. The predictors specified within each step of modeling were significantly associated with the outcome (fs ≥ 6.64, ps < .001), which signified that the models fit the data well. Step 1 explained a significant proportion of the variance in positive attitudes toward guns (R^2 = .18, p < .001) and the amount of explained variance significantly increased once masculinity threat and adherence to masculine gender norms were entered in Step 2 (ΔR^2 = .12, p < .001); there was a non-significant change in explained variance after entering the interaction term in Step 3 (ΔR^2 = .01, p = .259). Education (b = -4.51, t = -2.12, p = .035), political ideology (b = 4.63, t = 2.31, p = .022), religion (b = 16.72, t = 2.03, p = .045), and gun ownership (b = 15.95, t = 2.56, p = .011) were significantly associated with positive attitudes toward guns at Step

Table 3. Standardized Coefficients for Study 1 Hierarchical Linear Regressions by Outcome Variable

	GAS	GunEn	GCAS
Step 1			
Education	-.17*	-.12	.21**
Political Ideology	.20*	.16*	-.10
Religion – Any Religious Affiliation	.17*	.29***	-.30***
Gun Ownership	.20*	.38***	-.23**
Military Service	.07	.08	-.09
Step 2			
Education	-.20**	-.12	.19*
Political Ideology	.15	.14	-.10
Religion – Any Religious Affiliation	.02	.24**	-.30**
Gun Ownership	.23**	.39***	-.22**
Military Service	-.02	.05	-.10
Masculinity Threat	-.12	-.08	.05
Adherence to Masculine Gender Norms	.39***	.12	.02
Step 3			
Education	-.20**	-.12	.19*
Political Ideology	.14	.13	-.10
Religion – Any Religious Affiliation	.00	.21*	-.28**
Gun Ownership	.22**	.37***	-.21**
Military Service	-.02	.05	-.10
Masculinity Threat	-.12	-.08	.05
Adherence to Masculine Gender Norms	.40***	.13	.02
MT*MRNS	.08	.16*	-.11

Notes. Constructs are bolded to emphasize the step upon which they were entered into the model. GAS = Positive attitudes toward guns. GunEn = Gun Enthusiasm. GCAS = Support for gun control. *$p < .05$ **$p < .01$ ***$p < .001$.

1. Adherence to masculine gender norms was significantly associated with the outcome at Step 2 (b = 13.90, t = 4.68, p < .001), while masculinity threat was not (b = -9.14, t = -1.69, p = .094). The interaction between masculinity threat and adherence to masculine gender norms at Step 3 was non-significant (b = 5.74, t = 1.13, p = .259).

Gun enthusiasm. Gun enthusiasm was specified as the outcome in the second series of models. The predictors specified within each step of modeling were significantly associated with the outcome (fs ≥ 10.92, ps < .001), which signified that the models fit the data well. Step 1 explained a significant proportion of the variance in gun enthusiasm (R^2 = .34, p < .001), but the amount of explained variance did not significantly increase once masculinity threat and adherence to masculine gender norms were entered in Step 2 (ΔR^2 = .02, p = .149). The specification of the interaction term in Step 3, however, resulted in a significant increase in the amount of explained variance in gun enthusiasm (ΔR^2 = .02, p = .022). Political ideology (b = 0.08, t = 2.05, p = .042), religion (b = 0.60, t = 3.70, p < .001), and gun ownership (b = 0.67, t = 5.44, p < .001) were the only covariates significantly associated with gun enthusiasm at Step 1. Neither masculinity threat (b = -0.14, t = -1.23, p = .220) nor adherence to masculine gender norms (b = 0.09, t = 1.49, p = .137) was associated with the outcome at Step 2. However, the interaction effect at Step 3 was significant (b = 0.24, t = 2.32, p = .022), which indicated that there were contextual effects not detected through the testing of simple main effects. The interaction was later probed through a simple slopes analysis (see the 'Simple slopes' section below).

Support for gun control. Support for gun control was specified as the outcome in the third series of models. The predictors specified within each step of modeling were significantly associated with the outcome (fs ≥ 6.02, ps < .001), which signified that the models fit the data well. Step 1 explained a significant proportion of the variance in support for gun control (R^2 = .24, p < .001), but the amount of explained variance did not increase in Step 2 (ΔR^2 = .00, p = .759) or Step 3 (ΔR^2 = .01, p = .146) of modeling. Education (b = 0.10, t = 2.72, p = .007), religion (b = -0.52, t = -3.57, p < .001), and gun ownership (b = -0.34, t = -3.09, p = .002) were the only covariates significantly associated with support for gun control at Step 1. Neither masculinity threat (b = 0.07, t = 0.70, p = .483) nor adherence to masculine gender norms (b = 0.01, t = 0.25, p = .802) was associated with the outcome at Step 2. The interaction effect at Step 3 also was non-significant (b = -0.14, t = -1.46, p = .146).

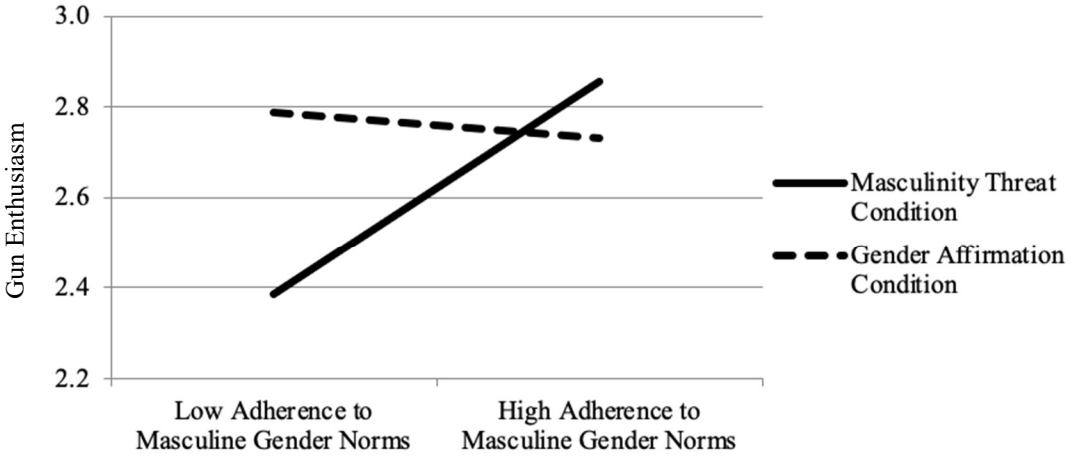
Simple slopes. To probe the significant interaction between masculinity threat and adherence to masculine gender norms on gun enthusiasm, a simple slopes analysis was conducted. Four variables were created to examine the influence of masculinity threat and adherence to masculine gender norms at high (+1 SD) and low levels (-1 SD) of these variables. The four variables were independently entered into a series of four regression equations (i.e., one for each newly created variable), which included the other construct's centered variable along with the five demographic covariates specified in the prior analysis. Results indicated that participants in the 'Gender Affirmation' condition had moderate levels of gun enthusiasm, regardless of their adherence to masculine gender norms (β = -0.03, t = -0.33, p = .745). In contrast, the masculinity threat had differential effects on gun enthusiasm, depending upon the extent to which participants adhered to

masculine gender norms. Men who were in the 'Masculinity Threat' condition and had high adherence to masculine gender norms scored significantly higher on gun enthusiasm compared to those who were in the 'Masculinity Threat' condition but had low adherence to masculine gender norms ($\beta = 0.28$, $t = 2.67$, $p = .009$). These men also had slightly elevated gun enthusiasm relative to participants with high adherence to masculine gender norms in the 'Gender Affirmation' condition—though not significantly so ($\beta = 0.08$, $t = 0.78$, $p = .436$). Contrary to expectations, participants with low adherence to masculine gender norms who were exposed to a masculinity threat had significantly lower gun enthusiasm compared to other participants with low adherence to masculine gender norms but were in the 'Gender Affirmation' condition ($\beta = -0.24$, $t = -2.53$, $p = .012$). A plot of the interaction can be seen in Figure 1.

Discussion

The purpose of Study 1 was to test the causal influence of masculinity threats on gun-related attitudes, including positive attitudes toward guns, gun enthusiasm, and support for gun control. The study also sought to determine if causal effects produced by masculinity threats are reliant on whether the participant believed that their attitudes would be displayed to others. Thus, participants were randomly assigned into masculinity threat and public display conditions to examine between-group differences in gun-related attitudes after exposure to the manipulations. Based on prior theoretical and empirical research (e.g., Carlson, 2015; Mencken & Froese, 2019; Ray et al., 2021; Scaptura & Boyle, 2021; Stretesky & Pogrebin, 2007; Stroud, 2012; Vandello & Bosson, 2013), it was hypothesized that men exposed to a masculinity threat would have more gun-

Figure 1. Interaction Between Masculinity Threat and Adherence to Masculine Gender Norms on Gun Enthusiasm



supportive attitudes compared to men whose masculinity was affirmed, especially if such men were told that their attitudes would be publicly displayed.

The primary analysis did not yield any evidence for masculinity threats, nor public displays of masculinity, as motivational factors of gun-related attitudes. Specifically, there were no significant between-group differences for any of the three outcome variables. This indicated that neither the masculinity threat manipulation nor the public display manipulation had main effects on positive attitudes toward guns, gun enthusiasm, or support for gun control. In addition, the interaction term was non-significant for all outcome variables, suggesting that there were no conditional effects on gun-related attitudes resulting from two manipulations. These results led to the rejection of the study hypotheses (i.e., hypothesis 1.1-1.6).

Because researchers have previously suggested that masculinity threats might only influence gun-related attitudes and behaviors among men who strongly adhere to masculine gender norms (Kalish & Kimmel, 2010; Kimmel & Mahler, 2003; Ray et al., 2021; Warner et al., 2021), an exploratory analysis was conducted to examine these potential contextual effects. The results provided some evidence that the effect of the masculinity threat manipulation was reliant on adherence to masculine gender norms, but findings were inconsistent across outcomes. The interaction between masculinity threat conditions and adherence to masculine gender norms was only significant when it was specified as a predictor of gun enthusiasm; there were no contextual effects of the manipulation on positive attitudes toward guns nor support for gun control. Results of the interaction probe indicated that men who strongly adhered to masculine gender norms, and were exposed to the masculinity threat, had relatively equal levels of gun enthusiasm

to men in the gender affirmation condition. The manipulation had a different effect among men low in adherence to masculine gender norms, wherein the masculinity threat resulted in lower levels of gun enthusiasm relative to men in the gender affirmation condition.

Although the pattern of results was unexpected, they could be interpreted as support for the notion that gun-related attitudes are a form of gender expression. Specifically, the interaction probe seemed to suggest that men adapted their gun enthusiasm to their self-perceptions of masculinity. Men in the gender affirmation condition were told that they had "the masculinity level of a typical man" and may have reported their gun attitudes accordingly. This was evidenced by the moderate levels of gun enthusiasm within the gender affirmation condition, regardless of adherence to masculine gender norms. Men who had low adherence to masculine gender norms, and were exposed to a masculinity threat, also seemed to internalize gender feedback. These men were told that they had "the femininity level of a typical woman," which may have served as faux confirmation of their relative femininity and influenced their low levels of gun enthusiasm. In contrast, men high in adherence to masculine gender norms may have rejected feedback from the masculinity threat (e.g., perceived it as incorrect information rather than a masculinity threat), potentially due to the strong integration of manhood norms within their identities. This is supported by the fact that several men in the masculinity threat condition wrote in survey comment boxes that they believed the 'Gender Knowledge Test' was an inaccurate assessment of masculinity—such comments were not written by men in the gender affirmation condition. Thus, cognitive biases (e.g., self-serving bias) may have protected masculine self-perceptions, particularly among the

men who strongly adhered to masculine gender norms, which may be reflected by their self-reported gun enthusiasm.

Although there were no main effects of the masculinity threat manipulation on gun-supportive attitudes, as hypothesized, there was additional evidence—beyond the significant interaction between the masculinity threat manipulation and adherence to masculine gender norms—for the connection between masculinity and gun-supportive attitudes. Adherence to masculine gender norms had significant associations with positive attitudes toward guns in both bivariate and multivariable models. This is consistent with prior research (Ray et al., 2021; Scaptura & Boyle, 2021; Warner et al., 2021) and suggests that masculine gender performance might partially explain men's gun-supportive attitudes, despite the lack of evidence for masculinity *threats* as motivational factors.

However, these results should be considered preliminary. Further research is necessary to replicate the study and determine the reliability of results across samples. Particularly, it is surprising that the masculinity threat manipulation interacted with adherence to masculine gender norms to predict gun enthusiasm, but not the other gun-related attitudes. One possibility is that the results were a fluke and, therefore, unlikely to be observed in future research; consistent results across studies would be met with greater confidence. Beyond direct replication, it also would be informative to examine the effects of the masculinity threat and public display manipulations on other gun-related outcomes (e.g., gun-related behaviors). It may be that the measures were too obvious of outcomes, thus hinting at the study hypotheses and causing participants to report their gun-related attitudes in ways that were inconsistent with their psychological orientations toward guns.

Indeed, three participants explicitly guessed the true purpose of the study; it is likely that more participants had some indication of the study hypotheses but did not openly communicate it. A distinct pattern of results may emerge if examining a behavioral outcome that is less obvious to participants.

CHAPTER THREE

STUDY 2

Methods

Study Design and Hypotheses

The second study sought to replicate the results of Study 1 (i.e., the effects on gun-related attitudes) and test whether a threatened sense of masculinity can motivate gun-related behaviors. Because it would be infeasible to examine the causal association between a manhood threat and the actual purchase of a gun (or another gun-related behavior), the study used a real-world scenario (i.e., a budgeting task) to examine the likelihood of purchasing a gun when men feel their masculinity has been threatened. The study also examined whether gun purchasing is a mechanism for men to demonstrate their masculinity to others. Thus, like the first study, Study 2 consisted of a two (masculinity threat: 'gender affirmation'; 'masculinity threat') by two (public display: 'public display'; 'private') experimental design. It was hypothesized that men who received a masculinity threat—relative to men who received a gender affirmation—would have increased odds of budgeting their hypothetical money to allow for the purchase of a gun (hypothesis 2.1) and would have greater intentions of purchasing a gun in their actual lives (hypothesis 2.2). It also was hypothesized that men who received a masculinity threat, and were told that their responses would be displayed to others, would have the highest likelihood of budgeting for a gun in the hypothetical scenario (hypothesis 2.3) and purchasing a gun in their actual lives (hypothesis 2.4).

Participants

An a priori power analysis was conducted in G*Power (Faul et al., 2009) to determine the appropriate sample size for the planned analyses. Results suggested that 192 responses were needed to detect a moderate sized effect (Odds ratio = 2.5; Cohen's *f* = .25) with power (1-β) of .80 and an error probability (α) of .05.

The final sample consisted of 197 adult men (*M* age = 32.60, *SD* = 9.60, range: 18-65) living in the United States. Participants were White or European-American (*n* = 140; 71.07%), Black or African-American (*n* = 21; 10.76%), or non-Black Persons of Color (*n* = 36; 18.27%). Participants were generally well-educated, with 60.41% (*n* = 119) holding a bachelor's degree or higher. The majority of participants had a yearly family income above the national poverty threshold; 77.66% (*n* = 153) received $40,000 per year or more. Most participants were married (*n* = 96; 48.73%) or single (*n* = 57; 28.93%) and had one or more children living in their household (*n* = 106; 53.81%). Political ideology was normally distributed on a scale from 1 (*Extremely liberal*) to 7 (*Extremely conservative*; *M* = 3.85, *SD* = 1.71); 36.05% (*n* = 71) described themselves as conservative, 43.65% (*n* = 86) as liberal, and 20.30% (*n* = 40) as neutral. Most participants specified a religious affiliation (*n* = 123; 62.44%), the most common of which were Christian (*n* = 60; 30.46%) and Catholic (*n* = 48; 27.37%). Participants resided across all four major regions of the United States, including the South (*n* = 66; 33.50%), Northeast (*n* = 50; 25.38%), Midwest (*n* = 44; 22.34%), and West (*n* = 37; 18.78%). About one-fourth (*n* = 48; 24.37%) of participants were gun owners at the time of their study participation. A few participants (*n* = 31; 15.74%) worked as a law

enforcement officer within their lifetimes and 19.80% (n = 39) served in the military. A breakdown of participant demographics is presented in Table 4.

Recruitment and Sampling Procedures

Recruitment and sampling for Study 2 followed the same procedures as those outlined for Study 1. Specifically, participants were recruited through advertisements on MTurk to complete a screener questionnaire designed to assess eligibility. Respondents who were ineligible were dismissed from the study, whereas those who met criteria (i.e., male; lived in the United States; 18 years of age or older) were provided with an informed consent document, asked to provide electronic consent, and given access to the online study. For more details, see the 'Recruitment and Sampling Procedures' section from Study 1.

A total of 1,016 individuals consented to participate in the study. Of these, 494 (48.62%) did not meet eligibility criteria, 164 (16.14%) attempted to complete the study more than once, and 14 (1.38%) provided incomplete data (i.e., less than 75%); these responses were removed from the data. The IER criteria used in Study 1 (see 'Recruitment and Sampling Procedures' in Study 1) also were used in Study 2. A total of 139 (13.68%) respondents incorrectly answered one or more attention check, four (0.39%) straight-lined on two or more instances, and three (0.30%) entered suspicious text in free-response items; there were no participants who had a study duration three or more standard deviations below the mean. In addition, one (0.10%) participant correctly guessed the purpose of the study and at least one hypothesis. Those who failed any of the IER criteria, or correctly guessed the purpose of the study, were removed from the data. This resulted in the final sample of 197 adult men residing in the United States.

Table 4. Demographics for Study 2 Participants (N = 197)

Demographic Variables	*n*	%
Age		
18-24	36	18.27%
25-29	41	20.81%
30-39	82	41.62%
40 or older	38	19.29%
Race/Ethnicity		
Black or African-American	21	10.66%
Non-Black Person of Color[1]	36	18.27%
White or European-American	140	71.07%
Education		
High school diploma/GED or ABE or less	21	10.66%
Associate's/technical degree or some college	57	28.93%
Bachelor's degree	77	39.09%
Graduate degree	42	21.32%
Yearly Family Income		
$39,999 or less	44	22.34%
$40,000-$49,999	19	9.64%
$50,000-$59,999	27	13.71%
$60,000-$69,999	19	9.64%
$70,000-$79,999	20	10.15%
$80,000 or more	68	34.52%
Relationship Status		
Single	57	28.93%
Dating or engaged	44	22.34%
Married	96	48.73%
Number of Children		
0	91	46.19%
1	38	19.29%
2	47	23.86%
3 or more	21	10.66%
Political Ideology		
Extremely or very liberal	50	25.38%
Slightly liberal	36	18.27%
Neutral	40	20.30%
Slightly conservative	30	15.23%
Extremely or very conservative	41	20.81%
Religion		
Agnostic, Atheist, or none	74	37.56%
Catholic	48	24.37%
Christian	60	30.46%
None of the above[2]	15	7.61%

Table 4–Continued

Demographic Variables	*n*	%
Region of Residence		
Midwest	44	22.34%
Northeast	50	25.38%
South	66	33.50%
West	37	18.78%
Gun Ownership		
No	132	67.01%
Yes	48	24.37%
Current or Former Law Enforcement Officer		
No	157	79.70%
Yes	31	15.74%
Current or Former Military		
No	148	75.13%
Yes	39	19.80%

Notes. Some categories were collapsed to protect participant confidentiality that would otherwise be violated due to low cell counts. [1]The "Non-Black Person of Color" category consisted of individuals who were Asian or Asian-American, Hispanic or Latinx, Middle Eastern or Arabic, Native American or Alaskan Native, or multiracial [2]The "None of the above" category consisted of individuals who were Buddhist, Muslim, Jewish, Mormon, or Hindu.

Study Procedures and Manipulations

Study 2 followed many of the same procedures as Study 1 (see 'Study Procedures and Manipulations' in Study 1), including the initial assessments (i.e., demographics; MRNS), masculinity threat manipulation, public display manipulation, debriefing, and compensation processes. Participants first completed the initial assessments and were subsequently randomized into the 'masculinity threat' (n = 114) and 'gender affirmation' (n = 83) conditions, followed by randomization into the 'public display' (n = 91) and 'private' (n = 106) conditions. Participants then completed the dependent variable measures.

In addition to the dependent variables assessed in Study 1 (i.e., gun-related attitudes), Study 2 included a behavioral task designed to measure the likelihood of engaging in gun-related behavior (i.e., gun purchasing). Directly following the 'public display' manipulation, participants were told to imagine they had an annual family income of $68,703 (the 2019 median household income), which computed to $41,537 in annual net earnings or $3,461 per month. Using their monthly income, participants were asked to create a budget, which consisted of typical living expenses (e.g., housing; internet; phone plan; transportation; food; clothing; insurance; protection). For each category, participants were provided with several options. Some of these options were more expensive and higher quality, whereas others were cheaper and lower quality (e.g., the payment for a large house, small house, large apartment, small apartment, or studio apartment). Where applicable, participants were allowed to select several (or none) of the options. For example, the 'protection' category included options for a security system, security cameras, deadbolt locks, and a gun (the latter three options were presented as

month-to-month "payment plans," given that they are typically one-time purchases); participants were allowed to select all, some, or none of these options. The budgeting task was a computerized program that kept track and displayed the remaining budget to participants, who were free to alter their choices until they decided on a final budget within their income (see Appendix I for an outline of the budgetary categories and choices). After the budgeting task, participants completed the second gun-related behaviors measure, which was followed by completion of the gun-related attitudes measures, debriefing, and compensation.

Measures

Demographics. Several demographics variables were included to describe the study sample and to determine whether there were demographic confounds that should be included as covariates in statistical analyses. These variables included those assessed in Study 1 (i.e., age, race/ethnicity, education, yearly family income, political ideology, religion, region of residence, gun ownership, current or former employment as a law enforcement officer, and current or former military service), but also 'relationship status' and 'number of children,' which were examined as possible covariates in the primary analysis due to their potential influence on budgetary decisions. The items used to assess these constructs are presented in Appendix J.

Adherence to masculine gender norms. Adherence to masculine gender norms was included in the study as a potential covariate for the primary analysis, but also was used to replicate the analyses conducted in Study 1. The construct was assessed using the MRNS (Thompson & Pleck, 1986; see the 'Measures' section in Study 1 for further

details; see Appendix E). The MRNS demonstrated excellent internal consistency in the current data (α = .93).

Dependent variables.

Gun-related behaviors. Gun-related behaviors included two measures designed to assess the likelihood of purchasing a gun. The first measure was part of the budgeting task (see Appendix I). The choice of whether or not to include a gun in the hypothetical budget was used as a behavioral indictor for the likelihood of purchasing a gun. Participant responses were coded into a dichotomous variable for its use in analyses (i.e., 0 = no gun purchase; 1 = gun purchase). The second measure was used to assess the intentions of purchasing a gun in the real world. Specifically, participants were presented with the question "In your actual life, how likely are you to purchase a gun in the near future?" and asked to specify a response on a scale from 1 (*not at all likely*) to 5 (*extremely likely*). Higher scores were indicative of stronger intentions for purchasing a gun.

Gun-related attitudes. The gun-related attitudes assessed in Study 2 were the same as those assessed in Study 1; these included positive attitudes toward guns, gun enthusiasm, and support for gun control. GAS assessed positive attitudes toward guns (Tenhundfeld et al., 2020; see Appendix F), GunEn assessed gun enthusiasm (Matson, 2016; see Appendix G), and GCAS assessed support for gun control (Stark & Sachau, 2016; see Appendix H). Further details regarding these measures are presented in the 'Measures' section of Study 1. All three measures demonstrated good to excellent internal consistency in the current data (GAS: α = .91; GunEn: α = .80; GCAS: α = .88).

Data Analytic Procedure

Data preparation procedures were the same as those specified in Study 1 (see 'Data Analytic Approach' in Study 1). Analyses were performed to examine patterns of missing data, outliers, variable distributions, collinearity, and between-group homogeneity. A series of ANOVAs (continuous variables) and Pearson Chi-Square tests (categorical variables) were conducted to examine demographic differences between conditions and determine whether inclusion of covariates was necessary in between-group analyses; bivariate associations were examined to determine which covariates should be included in logistic and linear regressions.

The replication analysis consisted of a two-way multivariate analysis of covariance (MANCOVA) that followed the same procedures as those specified for Study 1 (see 'Data Analytic Approach' in Study 1); masculinity threat and public display were specified as fixed factors, whereas positive attitudes toward guns, gun enthusiasm, and support for gun control were specified as dependent variables. Unlike Study 1, covariates were included in the between-group model due to demographic differences between conditions (see 'Model preparation' in the 'Two-way MANCOVA' section below). The exploratory analysis from Study 1 (see 'Exploratory Analysis' in Study 1) also was respecified using Study 2 data. This included analyses of bivariate associations between demographics and outcomes (i.e., gun-supportive attitudes), multicollinearity of covariates and predictors (i.e., masculinity threat; adherence to masculine gender norms), and multivariable linear associations between predictors and outcomes. A series of hierarchical linear regressions were used to test multivariable models, wherein covariates

were entered into the model on Step 1, predictors on Step 2, and the interaction between predictors on Step 3.

The primary analyses for Study 2 consisted of a hierarchical logistic regression and a two-way analysis of covariance (ANCOVA). The hierarchical logistic regression tested hypotheses 2.1 and 2.3, whereas the two-way ANCOVA tested hypotheses 2.2 and 2.4. Demographic variables associated with the purchase of a gun in the budgeting task were entered as covariates in Step 1 of the logistic regression, masculinity threat (0 = gender affirmation; 1 = masculinity threat) and public display (0 = private; 1 = public) were entered in Step 2, and the interaction between masculinity threat and public display was entered in Step 3 of the model; the purchase of a gun in the budgeting task (0 = no gun purchase; 1 = gun purchase) was specified as the outcome variable. The main effect of masculinity threat on gun purchasing tested hypothesis 2.1 and the interaction effect tested hypothesis 2.3. The two-way ANCOVA was used to test between-group differences in mean scores on the item assessing intentions to purchase an actual gun. Masculinity threat and public display were specified as fixed factors, demographic variables as covariates, and the continuous "gun purchase intentions" variable as the dependent variable. The main effect of masculinity threat on gun purchase intentions tested hypothesis 2.2 and the interaction between the masculinity threat and public display conditions tested hypothesis 2.4. All data analytic procedures for Study 2 were conducted using SPSS version 25.

Results

Data Diagnostics

An analysis of missing data indicated that data were missing at random; patterns of missing data had frequencies less than or equal to three (1.52%). Mean imputation was used to account for missing data among participants who completed at least 75% of the items for each respective construct; listwise deletion was used for respondents who provided less than 75% of the requested information. Inspections of histograms, scatterplots, and z-scores suggested that there were not outliers for any variable. Continuous variables were normally distributed with estimates of skewness (≤ |0.76|) and kurtosis (≤ |1.30|) within acceptance ranges (i.e., skewness ≤ |1|, kurtosis ≤ |3|).

Replication Analysis

Two-Way MANCOVA.

Model preparation. Collinearity, between-group homogeneity, and between-group differences in demographics were examined prior to the implementation of the two-way MANCOVA. Correlations between gun-related attitudes were strong (*r*s = |.58|-|.79|), but did not meet the problematic collinearity cutoff of .90 (Tabachnick & Fidell, 2012), which indicated that the specification of all three dependent variables within a single multivariate model was appropriate. Between-group homogeneity was evidenced by a non-significant Box's Test of Equality of Covariance Matrices (Box's M = 13.150, f = 0.71, p = .806) and a non-significant Levene's Test of Equality of Error Variances (fs ≤ 1.53, ps ≥ .208) for each of the three dependent variables.

A series of one-way ANOVAs indicated that yearly family income significantly differed between conditions (f [3, 193] = 3.16, p = .026). More specifically, mean income

was significantly lower (p = .022) among participants who were randomized into both the gender affirmation and public display conditions (M = 6.05, SD = 2.89) relative to those assigned to both the gender affirmation and private conditions (M = 7.96, SD = 2.81). There were no other between-group differences for any of the continuous demographic variables (fs [3, 193] ≤ 1.76, ps ≥ .155), or for adherence to masculine gender norms (f [3, 193] = .129 p = .943).

As a result of low cell counts for some categories within nominal variables, categorical variables were recoded into dichotomous variables, consistent with Study 1 procedures. Recoded dichotomous variables included race/ethnicity (0 = Person of Color, 1 = White/European American), region of residence (0 = Midwest/Northeast/West, 1 = South), gun ownership (0 = no, 1 = yes), current or former employment as a law enforcement officer (0 = no, 1 = yes), and current or former military service (0 = no, 1 = yes). The 'religion' constructs consisted of two variables: any religious affiliation (0 = none/Atheist/Agnostic, 1 = any religious affiliation) and Christian affiliation (0 = non-Christian; 1 = Christian). Pearson Chi-Square tests indicated that there were no significant between-group differences for any categorical variable (χ^2s [3] ≤ 3.47, ps ≥ .325), other than race/ethnicity (χ^2[3] = 8.14 p = .043). Pairwise comparisons suggested the 'gender affirmation and public display' group had a significantly lower proportion of People of Color relative to the 'masculinity threat and public display group' (χ^2[1] = 7.80, p = .005). As a result, income and race/ethnicity were specified as covariates in the two-way MANCOVA.

Model results. Results of the two-way MANCOVA indicated that there were no significant main effects of the masculinity threat manipulation (f [3, 182] = 0.03, p =

.995, Wilks' $\Lambda = 1.00$), nor the public display manipulation (f [3, 182] = 0.69, $p = .562$, Wilks' $\Lambda = .99$), on positive attitudes toward guns, gun enthusiasm, or support for gun control. In addition, the interaction between masculinity threat and public display was non-significant (f [3, 182] = 0.93, $p = .429$, Wilks' $\Lambda = .99$), indicating that there were no contextual effects of the two manipulations on any of the three outcomes.

Hierarchical linear regressions.

Model preparation. Seven demographic constructs had significant bivariate associations with at least one of the three outcome variables (see Table 5). These included education, political ideology, religion, region of residence, gun ownership, current or former employment as a law enforcement officer, and current or former military service; all seven constructs were included as covariates in the hierarchical linear regression models. For the religion construct, the 'Christian' variable had stronger associations with gun-related attitudes relative to the 'any religious affiliation' variable; thus, the 'Christian' variable represented the religion construct in the regression models.

To prevent multicollinearity, the masculinity threat and adherence to masculine gender norms variables were centered around their means (consistent with Study 1 procedures). VIF values were examined for the covariates and predictors included in the models, all of which were less than or equal to 2.12. Because there were no VIF values that exceeded the conservative cutoff of 2.50, it was determined that multicollinearity was not an issue in the hierarchical regression models.

Multivariable associations between covariates/predictors and outcome variables were interpreted on the step in which they were entered into the model, but standardized coefficients and p-values at each step of modeling are presented in Table 6.

Table 5. Bivariate Correlations, Means, and Standard Deviations for Study 2 Continuous Outcomes

Variables	GAS	GunEn	GCAS	GPI
Age	-.06	.69	.05	-.03
Race/Ethnicity	.07	.12	-.08	-.11
Education	-.07	-.18*	.14	.05
Yearly Family Income	.01	-.05	.13	.01
Relationship Status	—	—	—	.32***
Number of Children	—	—	—	.18*
Political Ideology	.37***	.42***	-.43***	.38***
Religion – Christian	.28***	.34***	-.23**	.19**
Religion – Any Religious Affiliation	.24**	.24**	-.24**	.28***
Region of Residence	.20**	.17*	-.07	.23**
Gun Ownership	.35***	.45***	-.31***	.29***
Law Enforcement Officer	.24**	.24**	-.15*	.43***
Military Service	.23**	.23**	-.13	.40***
Masculinity Threat	-.02	-.01	-.01	-.02
Adherence to Masculine Gender Norms	.49***	.41***	-.33***	.40***
Mean	3.38	2.88	3.64	2.59
Standard Deviation	1.04	0.95	0.81	1.50

Notes. GAS = Positive attitudes toward guns. GunEn = Gun Enthusiasm. GCAS = Support for gun control. GPI = Gun Purchase Intentions. *$p < .05$ *$p < .01$ *$p < .001$.

Table 6. Standardized Coefficients for Hierarchical Linear Regressions by Study 2 Replication Outcome Variables

	GAS	GunEn	GCAS
Step 1			
Education	-.12	-.21**	.15*
Political Ideology	.25**	.33***	-.40***
Religion – Christian	.12	.14*	-.06
Region of Residence	.17*	.10	-.03
Gun Ownership	.32***	.39***	-.27***
Law Enforcement	.11	.06	-.04
Military Service	.06	.09	-.02
Step 2			
Education	-.12	-.21***	.15*
Political Ideology	.13	.25***	-.35***
Religion – Christian	.08	.12*	-.05
Region of Residence	.17**	.11	-.03
Gun Ownership	.33***	.39***	-.28***
Law Enforcement	.01	.01	-.01
Military Service	.03	.07	-.01
Masculinity Threat	-.07	-.05	.03
Adherence to Masculine Gender Norms	.38***	.23***	-.14
Step 3			
Education	-.12	-.21***	.15*
Political Ideology	.13	.25***	-.35***
Religion – Christian	.08	.13*	-.05
Region of Residence	.17**	.10	-.04
Gun Ownership	.32***	.39***	-.28***
Law Enforcement	.00	.00	-.01
Military Service	.04	.08	-.00
Masculinity Threat	-.07	-.05	.03
Adherence to Masculine Gender Norms	.39***	.24***	-.13
MT*MRNS	-.05	-.04	-.03

Notes. Constructs are bolded to emphasize the step upon which they were entered into the model. GAS = Positive attitudes toward guns. GunEn = Gun Enthusiasm. GCAS = Support for gun control. MT = Masculinity Threat. MRNS = Adherence to Masculine Gender Norms. *$p < .05$ **$p < .01$ ***$p < .001$.

Positive attitudes toward guns. Positive attitudes toward guns was specified as the outcome in the first series of regression models. The predictors specified within each step of modeling were significantly associated with the outcome (*f*s ≥ 11.34, *p*s < .001), which signified the models fit the data well. Step 1 explained a significant proportion of the variance in positive attitudes toward guns (R^2 = .33, p < .001), which increased once the predictors were entered on Step 2 (ΔR^2 = .11, p < .001), but not the interaction on Step 3 (ΔR^2 = .00, p = .451). Political ideology (b = 0.16, t = 3.53, p = .001), region of residence (b = 0.38, t = 2.60, p = .010), and gun ownership (b = 0.75, t = 4.86, p < .001) were the only covariates significantly associated with positive attitudes toward guns at Step 1. Adherence to masculine gender norms was associated with the outcome at Step 2 (b = 0.38, t = 5.55, p < .001), but masculinity threat was not (b = -0.14, t = -1.12, p = .267). The interaction between masculinity threat and adherence to masculine gender norms was non-significant when it was entered in Step 3 of modeling (b = -0.09, t = -0.76, p = .451).

Gun enthusiasm. Gun enthusiasm was specified as the outcome in the second series of regression models. The predictors specified within each step of modeling were significantly associated with the outcome (*f*s ≥ 16.31, *p*s < .001), which signified the models fit the data well. Step 1 explained a significant proportion of the variance in gun enthusiasm (R^2 = .46, p < .001), which increased once the predictors were entered on Step 2 (ΔR^2 = .04, p = .002), but not the interaction on Step 3 (ΔR^2 = .00, p = .514). Education (b = -0.13, t = -3.51, p = .001), political ideology (b = 0.18, t = 5.13, p < .001), religion (b = 0.30, t = 2.31, p = .022), and gun ownership (b = 0.84, t = 6.62, p < .001) were the only covariates significantly associated with gun enthusiasm at Step 1. Adherence to

masculine gender norms was associated with the outcome at Step 2 (b = 0.21, t = 3.61, p < .001), but masculinity threat was not (b = -0.09, t = -0.80, p = .426). The interaction between masculinity threat and adherence to masculine gender norms was non-significant when it was entered in Step 3 of modeling (b = -0.07, t = -0.65, p = .514).

Support for gun control. Support for gun control was specified as the outcome in the third series of regression models. The predictors specified within each step of modeling were significantly associated with the outcome (fs ≥ 7.47, ps < .001), which signified the models fit the data well. Step 1 explained a significant proportion of the variance in support for gun control (R^2 = .31, p < .001), but the amount of explained variance did not increase in Step 2 (ΔR^2 = .01, p = .201) nor Step 3 (ΔR^2 = .00, p = .679) of modeling. Education (b = 0.08, t = 2.19, p = .030), political ideology (b = -0.19, t = -5.39, p < .001), and gun ownership (b = -0.50, t = -4.07, p < .001) were the only covariates significantly associated with support for gun control at Step 1. Neither adherence to masculine gender norms (b = -0.10, t = -1.77, p = .079), nor masculinity threat (b = 0.04, t = 0.38, p = .707), was associated with the outcome at Step 2. Similarly, the interaction between masculinity threat and adherence to masculine gender norms was non-significant when it was entered in Step 3 of modeling (b = -0.04, t = -0.41, p = .679).

Primary Analysis

Hierarchical logistic regression.

Model preparation. A series of bivariate logistic regressions were specified to examine demographic associations with the decision to purchase a gun in the budgeting task (henceforth referred to as 'gun budgeting'). Prior to these analyses, nominal variables were recoded into dichotomous variables, consistent with the coding scheme

from the replication analyses (see 'Model preparation' in the 'Two-way MANCOVA' section above). Relationship status and number of children were added and examined as potential covariates in the primary analysis; relationship status was recoded into a dichotomous variable (0 = not married; 1 = married), whereas number of children was treated as a continuous variable. Five of the demographic constructs were associated with gun budgeting. These included education (B = -.37, SE = .11, $Wald$ = 11.14, p = .001), political ideology (B = .31, SE = .10, $Wald$ = 8.85, p = .003), religion (only the 'Christian' variable; B = 1.02, SE = .35, $Wald$ = 8.78, p = .003), region of residence (B = .82, SE = .34, $Wald$ = 5.77, p = .015), and gun ownership (B = 1.22, SE = .37, $Wald$ = 10.75, p = .001). Thus, five demographic constructs were included as covariates in the hierarchical logistic regression. Odds ratios and 95% confidence intervals using 1,000 bootstrapped samples are presented in Table 7.

Model results. Each step of modeling was a significant improvement in fit relative to the baseline model (χ^2s ≥ 42.13, ps < .001, Cox & Snell R^2s ≥ .21), but Step 2 did not improve fit compared to Step 1 (χ^2 [2] = 2.98, p = .226, ΔR^2 = .01), nor did Step 3 compared to Step 2 (χ^2 [1] = 0.00, p = .994, ΔR^2 = .00). Education (B = -0.47, SE = .14, $Wald$ = 11.02, p = .001), political ideology (B = 0.34, SE = .13, $Wald$ = 6.52, p = .011), region of residence (B = 1.04, SE = .41, $Wald$ = 6.36, p = .012), and gun ownership (B = 1.22, SE = .43, $Wald$ = 8.20, p = .004) were associated with gun budgeting as Step 1, whereas religion was not (B = 0.73, SE = .42, $Wald$ = 2.99, p = .084). Neither masculinity threat (B = -0.70, SE = .43, $Wald$ = 2.65, p = .103) nor public display (B = 0.27, SE = .41, $Wald$ = 0.43, p = .513) was associated with the outcome at Step 2. Similarly, the interaction between masculinity threat and public display was non-significant when it

Table 7. Odds Ratios and Confidence Intervals for Bivariate Logistic Regression Associations Between Demographic Variables and Gun Budgeting

Variables	OR	LLCI	ULCI
Age	0.99	-0.05	0.03
Race/Ethnicity	0.52	-1.35	0.02
Education	0.69**	-0.59	-0.17
Yearly Family Income	0.97	-0.15	0.10
Relationship Status	0.96	-0.72	0.64
Number of Children	0.97	-0.38	0.23
Political Ideology	1.36**	0.11	0.55
Religion – Christian	2.79**	0.35	1.73
Religion – Any Religious Affiliation	1.44	-0.32	1.11
Region of Residence	2.27*	0.15	1.51
Gun Ownership	3.39**	0.46	2.01
Law Enforcement Officer	1.38	-0.86	1.17
Military Service	1.55	-0.46	1.22

Notes. OR = Odds Ratio. LLCI = 95% Lower Level Confidence Interval. ULCI = 95% Upper Level Confidence Interval. *$p < .05$ **$p < .01$.

was entered in Step 3 of modeling (B = 0.01, SE = .82, $Wald$ = 0.00, p = .994). Thus, null hypotheses 2.1 and 2.3 were retained. Odds ratios and confidence intervals for each step of the hierarchical logistic regression model are presented in Table 8.

Two-Way ANCOVA.

Model preparation. Between-group homogeneity for intentions to purchase a gun in one's actual life (henceforth referred to as 'gun purchase intentions') was demonstrated by a non-significant Levene's Test of Equality of Error Variances (f [3, 189] = 1.36, p = .256). As previously mentioned (see 'Model preparation' in the 'Two-way MANCOVA' section above), there were between-group differences in the demographic items assessing income and race/ethnicity. Thus, income and race/ethnicity were entered as covariates in the between-group analysis.

Model results. Results of the two-way ANCOVA indicated that there were no significant main effects of the masculinity threat manipulation (f [1, 187] = 0.20, p = .659), nor the public display manipulation (f [1, 187] = 0.16, p = .689), on gun purchase intentions. Additionally, the interaction between masculinity threat and public display was non-significant (f [1, 187] = 0.12, p = .735), indicating that there were no contextual effects of the two manipulations on gun purchase intentions. These results ensued the retention of null hypotheses 2.2 and 2.4.

Exploratory Analysis

As with Study 1 (see 'Exploratory analysis' in Study 1), exploratory analyses were conducted to determine whether the influence of masculinity threat was reliant on adherence to masculine gender norms. Thus, a hierarchical logistic regression was specified to examine the effects of masculinity threat and adherence to masculine gender

Table 8. Odds Ratios and Confidence Intervals for Study 2 Hierarchical Logistic Regressions on Gun Budgeting

	Primary Analysis			Exploratory Analysis		
Variables	OR	LLCI	ULCI	OR	LLCI	ULCI
Step 1						
Education	0.62**	-0.83	-0.22	0.62**	-0.77	-0.22
Political Ideology	1.40*	0.09	0.68	1.40*	0.04	0.66
Religion – Christian	2.07	-0.15	1.77	2.07	-0.12	1.69
Region of Residence	2.84*	0.24	2.03	2.84*	0.20	2.05
Gun Ownership	3.37**	0.35	2.18	3.37**	0.40	2.22
Step 2						
Education	0.63**	-0.84	-0.20	0.63**	-0.79	-0.21
Political Ideology	1.39*	0.07	0.71	1.41*	0.02	0.77
Religion – Christian	2.13	-0.15	1.88	2.19	-0.08	1.84
Region of Residence	3.01*	0.28	2.17	3.06**	0.23	2.19
Gun Ownership	3.90**	0.52	2.47	3.89**	0.51	2.55
Public Display	1.31	-0.67	1.29	—	—	—
Masculinity Threat	0.50	-1.70	0.12	0.51	-1.70	0.17
Adherence to Masculine Gender Norms	—	—	—	0.93	-0.72	0.44
Step 3						
Education	0.63**	-0.84	-0.20	0.64**	-0.84	-0.21
Political Ideology	1.39*	0.07	0.70	1.41*	0.02	0.79
Religion – Christian	2.13	-0.16	1.89	2.18	-0.10	1.90
Region of Residence	3.01*	0.29	2.17	3.12**	0.24	2.32
Gun Ownership	3.90**	0.47	2.48	3.93**	0.51	2.57
Public Display	1.31	-0.72	1.25	—	—	—
Masculinity Threat	0.50	-1.79	0.13	0.50	-1.76	0.15
Adherence to Masculine Gender Norms	—	—	—	0.93	-0.71	0.47
PD*MT	1.01	-1.97	1.83	—	—	—
MT*MRNS	—	—	—	1.19	-0.81	1.31

Notes. Constructs are bolded to emphasize the step upon which they were entered into the model. OR = Odds Ratio. LLCI = 95% Lower Level Confidence Interval. ULCI = 95% Upper Level Confidence Interval. PD = Public Display. MT = Masculinity Threat. MRNS = Adherence to Masculine Gender Norms.

*$p < .05$ **$p < .01$.

norms on gun budgeting, whereas a hierarchical linear regression was specified to examine the associations between these variables and gun purchase intentions. Covariates were entered on Step 1 of the models, predictors (i.e., masculinity threat; adherence to masculine gender norms) on Step 2, and the interaction between masculinity threat and adherence to masculine gender norms on Step 3. Associations were interpreted on the step in which the variable was entered into the model, but coefficients for each step are presented in Tables 8 and 9.

Hierarchical logistic regression.

Model preparation. Bivariate logistic associations were examined to determine which demographic variables should be included as covariates. More specifically, demographic variables that had significant associations with gun budgeting (see Table 7) were entered as covariates in Step 1 of the model. These variables included education, political ideology, religion (i.e., the 'Christian' variable), region of residence, and gun ownership.

Model results. Each step of modeling was a significant improvement in fit relative to the baseline model (χ^2s $\geq$ 42.13, ps $<$ .001, Cox & Snell R^2s $\geq$ .21), but Step 2 did not improve fit compared to Step 1 (χ^2 [2] = 2.65, p = .266, ΔR^2 = .01), nor did Step 3 compared to Step 2 (χ^2 [1] = 0.17, p = .683, ΔR^2 = .00). Because Step 1 included the same variables as the logistic regression specified in the primary analysis (see 'Hierarchal logistic regression' in the 'Primary Analysis' section above), the results are identical: education, political ideology, region of residence, and gun ownership were associated with gun budgeting, whereas religion was not. Neither masculinity threat (B = -0.68, SE = .43, $Wald$ = 2.55, p = .110) nor adherence to masculine gender norms (B = -0.08, SE =

Table 9. Standardized Coefficients for the Exploratory Hierarchical Linear Regression on Gun Purchase Intentions

	GPI
Step 1	
Relationship Status	.07
Number of Children	-.03
Political Ideology	.19**
Religion – Any Religious Affiliation	.08
Region of Residence	.19**
Gun Ownership	.25***
Law Enforcement	.23*
Military Service	.10
Step 2	
Relationship Status	.06
Number of Children	-.04
Political Ideology	.14
Religion – Any Religious Affiliation	.05
Region of Residence	.20**
Gun Ownership	.25***
Law Enforcement	.20*
Military Service	.09
Masculinity Threat	-.02
Adherence to Masculine Gender Norms	.19*
Step 3	
Relationship Status	.06
Number of Children	-.04
Political Ideology	.14
Religion – Any Religious Affiliation	.05
Region of Residence	.20**
Gun Ownership	.25***
Law Enforcement	.20*
Military Service	.09
Masculinity Threat	-.02
Adherence to Masculine Gender Norms	.19*
MT*MRNS	.01

Notes. Constructs are bolded to emphasize the step upon which they were entered into the model. GPI = Gun Purchase Intentions. MT = Masculinity Threat. MRNS = Adherence to Masculine Gender Norms. *p < .05 **p < .01 ***p < .001.

.24, *Wald* = 0.10, *p* = .755) was associated with the outcome at Step 2. Similarly, the interaction between masculinity threat and adherence to masculine gender norms was non-significant when it was entered in Step 3 of modeling (*B* = 0.17, *SE* = .42, *Wald* = 0.17, *p* = .683). Odds ratios and confidence intervals for each step of the hierarchical logistic regression model are presented in Table 8.

Hierarchical linear regression.

Model preparation. Bivariate linear associations between demographic covariates and gun purchase intentions, as well as procedures to ensure multicollinearity did not obstruct the obtainment of reliable estimates, were conducted to prepare the model for analysis. Eight demographic constructs were associated with gun purchase intentions (see Table 5). These included relationship status, number of children, political ideology, religion, region of residence, gun ownership, current or former employment as a law enforcement officer, and current or former military service; these constructs were entered as covariates in Step 1 of the hierarchical linear regression. Although both religion variables had significant associations with gun purchase intentions (*r*s ≥ .19, *p*s < .01), the association was stronger for the 'Any Religious Affiliation' variable. Thus, 'Any Religious Affiliation' represented 'religion' in the multivariable model. To prevent multicollinearity between the predictors included in the model, the mean-centered masculinity threat and adherence to masculine gender norms were used. VIF values were examined to ensure that no variables met the multicollinearity cutoff of 2.50. All variables included in the model had a VIF value less than or equal to 2.16, which indicated that multicollinearity would not disrupt statistical estimates.

Model results. The predictors specified within each step of modeling were significantly associated with the outcome (*f*s ≥ 9.89, *p*s < .001), which signified the models fit the data well. Step 1 explained a significant proportion of the variance in gun purchase intentions (R^2 = .38, p < .001), which increased once the predictors were entered on Step 2 (ΔR^2 = .03, p = .039), but not the interaction on Step 3 (ΔR^2 = .00, p = .923). Political ideology (b = 0.16, t = 2.65, p = .009), region of residence (b = 0.62, t = 3.04, p = .003), gun ownership (b = 0.85, t = 4.07, p < .001), and current or former employment as a law enforcement officer (b = 0.93, t = 2.61, p = .010) were the only covariates significantly associated with gun purchase intentions at Step 1. Adherence to masculine gender norms was associated with the outcome at Step 2 (b = 0.27, t = 2.57, p = .011), but masculinity threat was not (b = -0.05, t = -0.25, p = .802). The interaction between masculinity threat and adherence to masculine gender norms was non-significant when it was entered in Step 3 of modeling (b = 0.02, t = 0.10, p = .923). Standardized coefficients for the associations at each step of modeling are presented in Table 9.

Discussion

The primary purpose of Study 2 was to examine the causal effects of masculinity threats on gun-related behaviors (i.e., budgeting for a gun; intentions to purchase a gun) and to determine if their effects were reliant on whether behaviors were publicly displayed. In addition, the study also sought to replicate the results of Study 1 (i.e., effects on gun-related attitudes) using an independent sample. Consistent with Study 1 procedures, participants were randomized into masculinity threat and public display conditions, followed by assessments of gun-related attitudes and behaviors. Study 2 provided some support for the notion that gun-related attitudes and behaviors are

associated with adherence to masculine gender norms, but the study did not provide any evidence to suggest that the gun-related outcomes were sensitive to the masculinity threat manipulation, nor the public display manipulation.

Particularly, the primary analysis hypotheses stated that men who received a masculinity threat would have increased odds of purchasing a gun in a budgeting task, and greater intentions of purchasing a gun in their actual lives, relative to men who received a gender affirmation. It also was hypothesized that men who received a masculinity threat and were told that their behaviors would be communicated to others would be most likely to budget for a gun, and have the strongest intentions of purchasing a gun, relative to men in the other conditions. Although the hypotheses had theoretical and empirical support (Carlson, 2015; Cassino & Besen-Cassino, 2020; McDermott et al., 2021; Stroebe et al., 2021; Stroud, 2012), the results led to the rejection of all four study hypotheses (i.e., hypothesis 2.1-2.4). Specifically, there were no main effects of the masculinity threat manipulation, nor the public display manipulation, on gun budgeting and gun purchase intentions. Further, the effects of the masculinity threat manipulation did not interact with the public display manipulation to result in between-group differences for either of the gun-related behaviors. These results were like those of the replication analysis, which indicated that the masculinity threat and public display manipulations did not have significant main effects, nor interaction effects, on positive attitudes toward guns, gun enthusiasm, and support for gun control. Thus, there was no evidence that the masculinity threat had a causal influence on any of the gun-related outcomes—the central focus of this research.

Despite the lack of evidence for a causal association, there was some support for the connection between adherence to masculine gender norms and gun-related behaviors. Specifically, an exploratory analysis was conducted to determine if the effect of the masculinity threat manipulation was reliant on participants' levels of adherence to masculine gender norms. Although the interaction between masculinity threat and adherence to masculine gender norms did not predict gun budgeting nor gun purchase intentions, adherence to masculine gender norms was associated with gun purchase intentions in a bivariate model and this association remained when controlling for demographic variables in a multivariable model. Interestingly, this result did not extend to gun budgeting. Theoretical models of behavior indicate that intentions are more proximal to attitudes and normative influence relative to conscious behavior (e.g., Theory of Planned Behavior; Ajzen, 1991). This could explain why a direct association between adherence to masculine gender norms and gun purchases intentions was observed, but not the potentially more distal outcome of budgeting behavior. Therefore, it may be that adherence to masculine gender norms indirectly influences gun-related behaviors (e.g., gun budgeting), but further research is needed to explore this possibility.

The replication analysis provided further support for the association between adherence to masculine gender norms and gun-related constructs. Specifically, adherence to masculine gender norms had positive bivariate associations with positive attitudes toward guns and gun enthusiasm, as well as a negative bivariate association with support for gun control, which suggested that stronger adherence to masculine gender norms was broadly associated with more gun-supportive attitudes. In multivariable models controlling for demographic variables, adherence to masculine gender norms continued to

demonstrate significant associations with positive attitudes toward guns and gun enthusiasm, but not support for gun control. Although these results slightly diverged from the results of the exploratory analysis conducted in Study 1 (a main effect of adherence to masculine gender norms was observed in Study 2, rather than an interaction predicting gun enthusiasm), they were generally consistent with prior research. For example, Ray and colleagues (2021) found that masculine honor ideology was significantly associated with positive attitudes toward guns, gun enthusiasm, and support for gun control, but the later specification of education and political ideology in the multivariate model accounted for its association with gun control attitudes. Together, these results suggest that demographic variables such as education, political ideology, and gun ownership may sufficiently predict support for gun control, but adherence to masculine gender norms appears to explain additional variance in other gun-related attitudes.

CHAPTER FOUR

GENERAL DISCUSSION

The precarious manhood framework posits that manhood is hard won and easily lost, meaning that men must constantly demonstrate their manhood through gender affirming behaviors such as those associated with hegemonic masculinity (Vandello et al., 2008; Vandello & Bosson, 2013). Scholars argue that guns are closely intertwined with societally accepted forms of masculinity (e.g., hegemonic masculinity) and might even be used as tools to symbolize manhood (Carlson, 2015; Myketiak, 2016; Stroud, 2012). Indeed, prior research supports the association between masculinity and gun-related constructs (Cassino & Besen-Cassino, 2020; Matson et al., 2019; McDermott et al., 2021; Ray et al., 2021; Scaptura & Boyle, 2021; Stroebe et al., 2021; Warner et al., 2021) and has theorized that a threatened sense of masculinity can serve as a motivational force for the development of gun-supportive attitudes and engagement in gun-related behaviors (Carlson, 2015; Cassino & Besen-Cassino, 2020; Farr, 2019; Kalish & Kimmel, 2010; Kimmel & Mahler, 2003; Myketiak, 2016; Ray et al., 2021; Scaptura & Boyle, 2021). Accordingly, the current research used an experimental manipulation based on the precarious manhood framework (Vandello et al., 2008; Vandello & Bosson, 2013) to empirically test if a masculinity threat could cause greater endorsement of gun-supportive attitudes, and engagement in gun-related behaviors, relative to a gender affirmation. The study also sought to determine whether the hypothesized shifts in gun-related outcomes uniquely function as gender performance in social contexts, or if they might also serve internal processes aimed toward "proving" manhood to oneself.

Across two studies, the research provided little support for the causal influence of masculinity threats on gun-related attitudes and behaviors, and no support for an enhanced effect on gender performance among men in a public context. A significant interaction between the masculinity threat manipulation and adherence to masculine gender norms on gun enthusiasm was the only piece of evidence supporting the casual influence of masculinity threats on gun-related constructs. However, the pattern of the interaction was inconsistent with expectations. Interpretations of gender theory could lead to the logical hypothesis that men in the masculinity threat condition would generally endorse *higher* levels of gun enthusiasm (e.g., Carlson, 2015; Connell & Messerschmidt, 2005; Kalish & Kimmel, 2010; Kimmel & Mahler, 2003; Stroud, 2012; Vandello et al., 2008). Yet, men who were exposed to a masculinity threat and weakly adhered to masculine gender norms reported significantly lower levels of gun enthusiasm relative to other men in the sample. This may suggest that, under certain conditions, masculinity threats *decrease* the likelihood of manhood affirming behavior. Indeed, prior research has found that men exposed to a masculinity threat had less desire for muscularity (rather than more; Hunt, Gonsalkorale, & Murray, 2013) and men whose masculinity was affirmed were more prejudiced toward gay men (rather than less; Rivera & Dasgupta, 2018). Although results of the interaction are consistent with these findings, the interaction failed to replicate in Study 2. Thus, the interaction demonstrated weak reliability, meaning the extent to which it represents a real-world phenomenon is unclear.

Although the current research generally did not support the causal association between masculinity threats and gun-related constructs, a recent study published in *Psychology of Men and Masculinities* reported differently. Borgogna, McDermott, and

Brasil (2022) conducted a study in which participants were randomized into conditions consisting of either a masculinity threat, masculinity boost (i.e., gender affirmation), or neither (i.e., control). Researchers then instructed participants to engage in a "marketing survey" in which they were "assigned the firearm category of items" (i.e., cover story). Participants were then shown a series of firearms and asked to rate their level of interest in each item. Results of the study indicated that participants in the masculinity threat condition had significantly greater interest in the firearms relative to the masculinity boost and control conditions; there was a non-significant difference in ratings between the masculinity boost and control conditions. These results were consistent with the hypotheses of the current research, especially those stating that men exposed to a masculinity threat would be more likely to budget for a gun in the budgeting task and have stronger intentions for purchasing a gun (i.e., Hypotheses 2.1 and 2.2).

The sample characteristics and methodology used in the study conducted by Borgogna and colleagues (2022) were quite similar to those used in the current research, making it difficult to discern which factors led to differences in results. However, there were slight methodological differences that potentially could account for the disagreement of results. One difference is that Borgogna and colleagues (2022) did not test for between-group differences in demographics. Although the authors correctly noted that their use of random assignment should eliminate demographic confounds between conditions, such methodology is not always effective. For instance, in Study 2 of the current research, there were between-group differences in yearly family income and race/ethnicity (despite random assignment), which called for the two demographic variables to be included as covariates. Thus, there may have been undetected between-

group differences in demographics that affected the results reported by Borgogna and colleagues (2022). It also could be that the cover story and use of "product ratings" by Borgogna and colleagues (2022) allowed their hypotheses to be less obvious than the current research, thus eliciting more truthful responses. Indeed, four participants correctly guessed the purpose of the current research; it is likely that other participants were skeptical but did not openly communicate their suspicions. The final possibility is that the gender feedback provided to participants in Borgogna et al., (i.e., "You fall below the normal range" [of masculinity relative to other men]) produced a general masculinity threat, whereas the feedback provided to participants in the current research (i.e., "…you have the femininity level of a typical woman") may have threatened men along the antifemininity norm. Thus, the type of masculinity threat may be of critical importance.

There is some evidence to suggest that guns are more closely intertwined with some aspects of masculinity than others, which might explain the null results of the current research, especially considering similar research reported the hypothesized effect (Borgogna et al., 2022). Particularly, using guns as a tool to demonstrate masculinity may be more likely when men are threatened along the toughness norm—or perhaps even the status norm. In the book, *Good Guys with Guns: The Appeal and Consequences of Concealed Carry,* Stroud (2016) notes that the term "guns" is frequently used to describe bicep muscles, suggesting guns are colloquially tied to toughness. Empirical research also supports the associations between toughness and gun-related constructs. For instance, Ray and colleagues (2021) reported stronger bivariate associations between toughness and gun-supportive attitudes relative to their associations with status and antifemininity norms. Using other measures of masculinity, emotional devaluation was associated with

gun enthusiasm (Matson et al., 2019) and masculine gender norms emphasizing violence, risk-taking, and power over women were associated with increased odds of gun ownership (McDermott et al., 2021). In addition to physical deterioration as a reason for seeking solace in guns (suggesting toughness concerns; Stroud, 2012), qualitative research has identified economic decline as a motive of gun carrying (Carlson, 2015). Economic precarity also was positively associated with gun-supportive attitudes and gun sales in prior quantitative research (Cassino & Besen-Cassino, 2020; Mencken & Froese, 2019; Scaptura & Boyle, 2021). Together, these results suggest that portrayals of toughness (whether through physical strength, emotional stoicism, violence, or dominance), or insecurities about failing to "provide," might motivate gun-supportive attitudes and engagement in gun-related behaviors. It is possible that such motivation does not similarly stem from masculinity threats associated with the antifemininity norm, which highlights the potential of obtaining the hypothesized results had the current research utilized a general masculinity threat or one threatening men's toughness or status. Of course, firm conclusions cannot be made in this regard. Further research is needed to test the nuanced effects of masculinity threats on gun-related attitudes and behaviors.

Rather than the causal influence of masculinity threats, most evidence from the current research supports the association between gun-related constructs and adherence to masculine gender norms. These conclusions are similar to those reported by Warner and colleagues (2021), who found that economic instability—a type of masculinity threat—did not result in increased gun ownership, but personal investments in stereotypical forms of masculinity did predict ownership. The association between adherence to masculine

gender norms and gun-related constructs is well-documented and continues to accumulate support in the literature (e.g., Matson et al., 2019; McDermott et al., 2021; Ray et al., 2021; Scaptura & Boyle, 2021; Stroebe et al., 2021; Warner et al., 2021), which is unlike the extant literature supporting a causal association between masculinity threat and gun-related outcomes. Only one experimental study supports a causal association (Borgogna et al., 2022) and other studies examining the influence of masculinity threat on gun-related constructs have been correlational (Cassino & Besen-Cassino, 2020; Mencken & Froese, 2019; Scaptura & Boyle, 2021). Thus, there is more empirical support for the association between adherence to masculine gender norms and gun-related constructs relative to a causal association. This suggests that masculine gender performance has the potential to manifest as gun-supportive attitudes or behaviors, but additional evidence is needed to support the notion that gun-related outcomes are common following masculinity threats, in particular.

It is worth noting, however, that not all gun-related constructs are reliably associated with adherence to masculine gender norms. The current research generally supported its association with positive attitudes toward guns, gun enthusiasm, and gun purchase intentions—but not support for gun control nor gun budgeting. Further, in most cases, the addition of adherence to masculine gender norms and masculinity threat as predictors in hierarchical models only slightly increased the amount of variance explained in the outcomes (ΔR^2s = .01-.11). Demographic variables, in contrast, accounted for large proportions of variance (R^2s = .21-.46), thus appearing to adequately explain much of men's gun-related attitudes and behaviors. Consistent with prior research, gun ownership was the most dependable predictor of gun-supportive attitudes

and behaviors (Buttrick, 2020; Jose et al., 2021; Lacombe et al., 2019; Wolpert & Gimpel, 1998), while political ideology (i.e., more conservative), education (i.e., less educational attainment), and religious affiliation (i.e., 'Christian' or 'any religious affiliation') also were reasonably predictive across analyses (e.g., Jose et al., 2021; Merino, 2018; Ray et al., 2021; Warner et al., 2021; Wozniak, 2017). In addition, there was some evidence to suggest that employment as a law enforcement officer increased men's intentions of purchasing a gun, while those residing in the South had more positive attitudes toward guns and an increased likelihood of engaging in gun-related behaviors. Of course, it should be highlighted that employment as a law enforcement officer and Southern residency were inconsistent predictors across outcomes. This was hardly surprising, given that some law enforcement organizations support gun control policies (International Association of Chiefs of Police, 2019) and Southern culture has received mixed empirical support as a predictor of gun-related constructs at the individual level (e.g., see Kleck et al., 2009; Lantz & Wenger, 2021; Warner et al., 2021; Warner & Thrash, 2020, but also Scaptura & Boyle, 2021; Wozniak, 2017). Nevertheless, the reliable associations between gun-related constructs and other demographic variables indicated that there are complex social, developmental, and cultural circumstances—beyond masculine gender norms—likely affecting the development of gun-supportive attitudes and behaviors. These factors should be considered by researchers seeking a compressive understanding of men's psychological orientation toward guns.

Implications

The study findings have several practical implications for researchers and interventionists. First, gun-related attitudes and behaviors appear more closely tied to

male norms—and perhaps other sociocultural norms—than to a threatened sense of masculinity. It may be that chronic desires to express masculine characteristics can emerge as gun-supportive attitudes and behaviors, but momentary threats to manhood are more likely to result in quick bursts of exaggerated masculine behavior, such as the expression of anger or aggression (Vandello & Bosson, 2013). Even so, it may be beneficial for gun violence interventionists to work toward disentangling guns and masculinity, which might decrease men's general desire for guns, in turn reducing the likelihood of lethal violence when aggression is enacted—especially in the presence of others (see Lantz & Wenger, 2021; Stretesky & Pogrebin, 2007). Disentanglement could be done through the alteration of male norms at the societal level (e.g., media portrayals of men), or even through community- or school-level interventions centered around teaching healthy forms of masculinity to male youth and adolescents. For example, the Coaching Boys into Men program has found success in reducing aggressive behavior in male adolescents by addressing problematic gender norms and providing adaptive ways of dealing with negative emotions (Miller et al., 2012). Similar programs are likely to mitigate the expression of masculine qualities through violent symbols, such as guns.

Further, it is worth considering associates of gun-supportive attitudes when designing, communicating, and implementing polices to curb gun violence. Gun-supportive attitudes have been identified as a major barrier to the implementation of evidence-based public policy designed to mitigate gun violence (e.g., gun control legislation; Jehan et al., 2018; Wozniak, 2017). Addressing the underlying motivations of gun-supportive attitudes could help design policies and media communications that appeal to a greater proportion of the United States population. The results of the current

research highlight not only the need to incorporate appeals to masculinity, but also the demographic characteristics commonly associated with gun-supportive attitudes (e.g., education, religious affiliation, political ideology, gun ownership). For instance, interventions could entice men whose identities are strongly engrained in masculine gender norms by highlighting the traditional male role of "protector" and communicating the protective utility of firearm safety. Such communications have the potential to bypass men's reluctance to forego their firearms by instead focusing their attention on gun-related behaviors that make firearm-related deaths less likely (e.g., trainings; proper gun storage). Firearm safety also is generally accepted by gun owners (Barry et al., 2018; Barry et al., 2019; Pew Research Center, 2017), which implies that formal trainings may be an avenue through which firearm-related information is most impactful. Gun control legislation, in particular, may find success by improving access to higher education, involving religious congregations in firearm education, and focusing on policies with bipartisan support. For example, requiring background checks for gun purchases and limiting concealed carry only to those with a government-issued permit are policies supported by Republicans and Democrats alike (Pew Research Center, 2021). Although these policies alone are unlikely to result in extensive reductions in firearm-related deaths, they may prevent mortality in some instances. Thus, a substantial next step in improving public safety in the United States would be to target the characteristics associated with gun-related attitudes and behaviors, including those identified within the current research.

Limitations

Although the current research had several notable strengths (e.g., experimental design; multimodal measurement tools), there also were limitations that should be considered. Particularly, there were several sample characteristics that may have limited generalizability or affected the study's ability to detect effects within subpopulations. First, participants were primarily White/European-American. Scholars have noted a racialized element to gun ownership, whereby White/European-American owners are often attributed positive characteristics and Black/African-American gun owners attributed negative characteristics (Filindra & Kaplan, 2016; O'Brien et al., 2013; Stroud, 2012). Given that men who strive to achieve hegemonic masculinity are concerned with holding masculine characteristics that are perceived as positive (Connell & Messerschmidt, 2005), Men of Color may not associate guns with masculinity in a similar vein to White/European-American men. Although the race/ethnicity variable was not associated with any of the gun-related outcomes in the current research (suggesting generalizability), there is the possibility that results would diverge from studies with nationally representative samples. In addition, more than half of the participants were over 30 years of age. Prior research indicates that aggression in men tends to diminish once they reach the age of 25 (Björkqvist, 2018), which may partially be a result of prefrontal cortex maturation that improves emotion regulation abilities—particularly impulse control (Arain et al., 2013). This suggests that the masculinity threat manipulation may have been unsuccessful in eliciting intense emotional reactions needed to motivate the acquisition of violent symbols (i.e., guns), thus resulting in retention of the null hypotheses. Further, participants had higher educational achievement than the

United States population more broadly (United States Census Bureau, 2020). Education is associated with less gun-supportive attitudes and a lower likelihood of gun-related behavior (Kleck et al., 2009; Kleck et al., 2011; Ray et al., 2021; Warner & Thrash, 2020), suggesting that many of the respondents were inclined toward negative gun-related schemas and perhaps a reluctance to demonstrate masculinity using guns. The samples also consisted of fairly low frequencies of gun ownership. If masculinity threats truly motivate gun-related behaviors in a real-world context, then men who are susceptible to masculinity threats are likely to own guns. Thus, the low prevalence of gun ownership may be indicative of samples whose respondents are generally unreactive to masculinity threats; samples with higher frequencies of gun owners may be more likely to observe the hypothesized results.

There also were limitations associated with methodological features beyond sample characteristics, including condition sizes, the masculinity threat manipulation, and the outcome measures. More specifically, the data preparation procedures (e.g., removing data for participants who failed IER criteria) in Study 2 caused uneven numbers of participants who were randomized into the masculinity threat ('masculinity threat': n = 114; 'gender affirmation': n = 83) and public display conditions ('public display': n = 91; 'private': n = 106). Although this did not appear to substantially impact results, which was evidenced by relatively consistent findings between Studies 1 and 2, the disproportionate group sizes may have affected statistical estimates in some instances. Another methodological limitation is that the masculinity threat manipulation seemed to threaten men along the antifemininity norm. This may have produced different results than a general masculinity threat, or threats to another male norm (e.g., toughness;

status). Similarly, the online delivery of the masculinity threat manipulation was a limitation. Improved effectiveness may be observed in lab settings, because feedback could be delivered orally creating an interpersonal context in which men might have heightened motivation to demonstrate masculinity. A further limitation is that some of the outcome measures may not translate into real-world contexts. For example, the behavioral outcome (i.e., 'gun budgeting') was based on a hypothetical scenario in which purchasing a gun is one choice in a small field of fixed options. Real-life scenarios are not nearly as controlled, which suggests that the research was limited in external validity. The budgeting task also may have resulted in unrealistic financial decisions, because participants were allocated a fixed income that may have been too dissimilar to their actual incomes. Finally, the gun-related constructs assessed in the current research may not generalize to gun-related attitudes and behaviors beyond the utilized measurements, such as gun-carrying or storage practices—which may be of particular concern to some researchers and interventionists.

Future Directions

Despite limitations, the current research is a step toward a fuller empirical understanding of the associations between masculinity and gun-related constructs. However, the research also uncovered potential moderation in the associations that warrants further investigation. Namely, masculinity threats may have differential effects depending on the male norm in which they threaten. Experimental designs that randomize participants into different masculinity threat conditions (e.g., toughness, status, and antifemininity threats) may lead to a nuanced understanding of masculinity threats—and may also explain the discrepant findings between the current research and Borgogna et

al., (2022). In addition, it would be beneficial to explore moderated effects based on demographic variables, such as determining if masculinity threats are more likely to motivate gun-related attitudes and behaviors in men who are under the age of 30, White/European-American, have little educational achievement, or live in gun cultures (e.g., Southern United States). Further examining the contexts in which masculinity threats are given (e.g., real-world settings; lab settings; interpersonal contexts) and their effects on gun-related outcomes would be similarly informative, as would the examination of masculinity threats on other gun-related constructs (e.g., storage practices; gun carrying).

Beyond research focused on masculinity threats, further research is needed to better understand the association between gun-related constructs and adherence to masculine gender norms—as well as other social, developmental, and cultural variables. In particular, there may be complex interactions between social influence, fear, and masculinity in ways that have yet to be empirically tested. Using these constructs as indicators of latent profiles may be one way of establishing common patterns of variables and determining their associations with gun-related constructs. Other advanced data analytic techniques, such as multilevel modeling, also could be employed to gain insight into shared cultural contexts and their influence on individual-level factors that contribute to gun-related attitudes and behaviors. These data analytic techniques can integrate large numbers of variables, thus helping to account for previously unexplained variance and contributing to a comprehensive understanding of gun-related constructs. Such research is essential to the psychological understanding of gun-related orientations—a knowledge

base that may ultimately help to inform interventions intended to mitigate gun violence in the United States.

Conclusions

Across two experimental studies, results generally did not support a causal association between masculinity threats and gun-related outcomes among men in the United States. The results did, however, support the notion that gun-related constructs are associated with adherence to masculine gender norms. These findings indicate that the precarious manhood framework and transient manhood threats may not apply to gun-related outcomes. Rather, stable desires to embody hegemonic masculine characteristics can supplement other social, developmental, and cultural factors to explain much of men's gun-related attitudes and behaviors. However, additional research is needed to support these conclusions, especially considering recent research has reported contrasting effects on interest in guns stemming from masculinity threats (Borgogna et al., 2022). Thus, there may be some contexts in which the associations between masculinity and gun-related constructs are most likely to emerge, but empirical literature investigating these nuanced effects is underdeveloped in its current state. Further research is crucial for developing more concrete conclusions concerning the precarious manhood thesis and its application to gun-related attitudes and behaviors.

APPENDICES

Appendix A. Institutional Review Board Approval Letter

OAKLAND UNIVERSITY

Institutional Review Board

Date: January 7, 2022

Study #: IRB-FY2022-148

Study Tile: Project GROW2

Submission Type: Initial

IRB Decision: Approved

Research Team:

Travis Ray
Michele Parkhill Purdie

Based on applicable federal regulations, the above referenced study has been determined to involve no more than minimal risk to participants and to be Approved, with the following expedited categories:
7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

Notes for Researchers:
An alteration of informed consent is approved under 45 CFR 46.116(f)(3).

Letter and Consent Document:
This letter along with the IRB approved (date-stamped) consent document can be found in Cayuse in the Submission Details page under Letters and Attachments, respectively.

The IRB approved version of the consent document must be used in consenting participants. Federal regulations require that each participant receive a copy of the consent document unless a waiver is granted by the IRB. Signed consent forms must be retained for a minimum of three years after the completion of the project. Please remember that informed consent is a process that continues throughout the project, starting with recruitment and assurance of participant understanding of the project, and followed by a signed consent form when applicable.

Permission from Research Sites:

Please note the following:

- This IRB approval letter means that the research has met the federal criteria for approval per 45 CFR 46.111 Criteria for IRB Approval of Research.
- Before the research is initiated, permission to conduct research at a given site must be obtained from all research locations listed in the IRB submission. You must keep copies of all such permission letters for your records.
- It is the responsibility of each researcher to follow all applicable policies and procedures of any outside institution where the research will be conducted.

Modifications:
Any changes to the approved project must be approved by the IRB prior to initiation by submitting a MODIFICATION request. Do not collect data while the changes are being reviewed. Data collected during this time cannot be used in research.

Incidents:
All unanticipated problems involving risks to participants or others, serious and unexpected adverse events, non-compliance issues and/or serious complaints regarding this project must be reported promptly to the IRB by submitting an INCIDENT report.

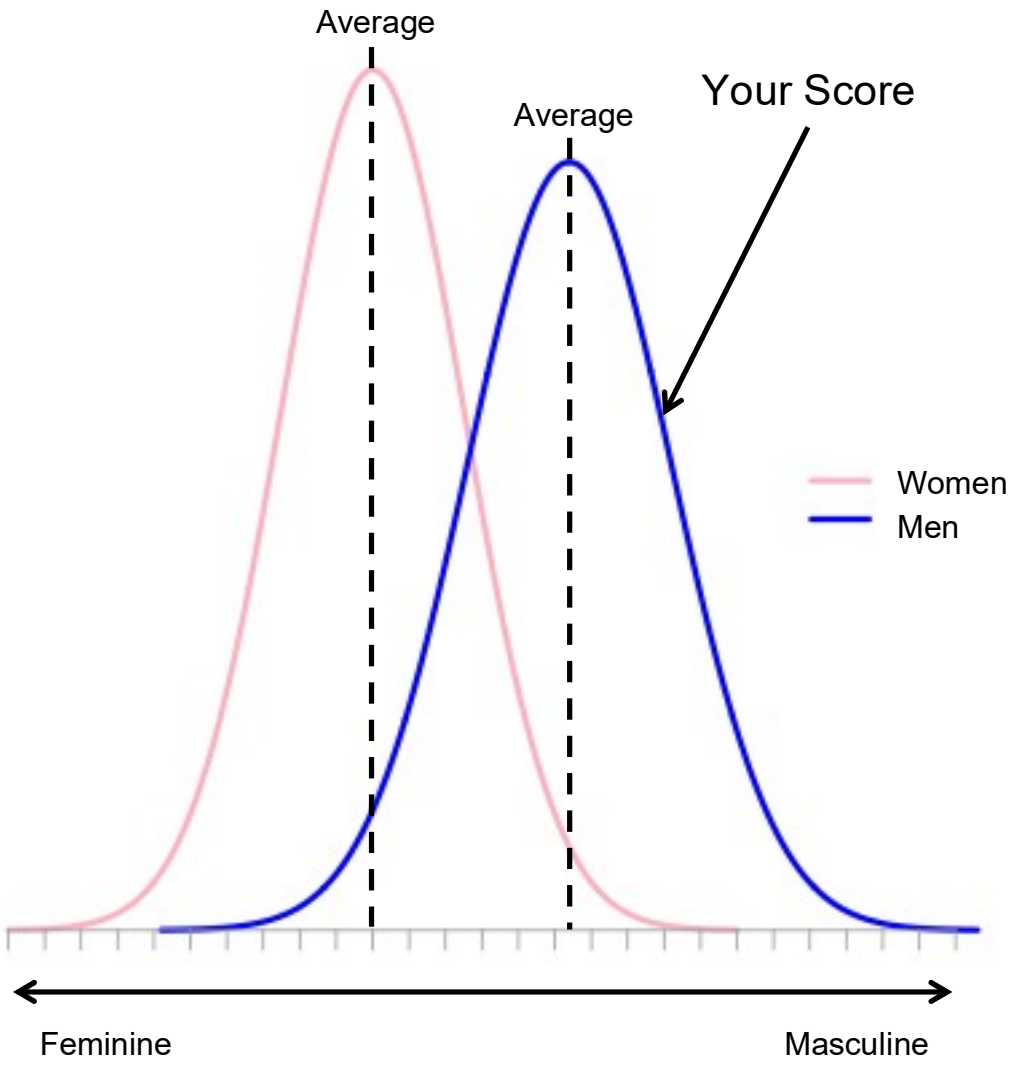
You are approved to start the research. Please retain a copy of this notification for your records.

If you have any questions, please contact the IRB office.

Thank you.

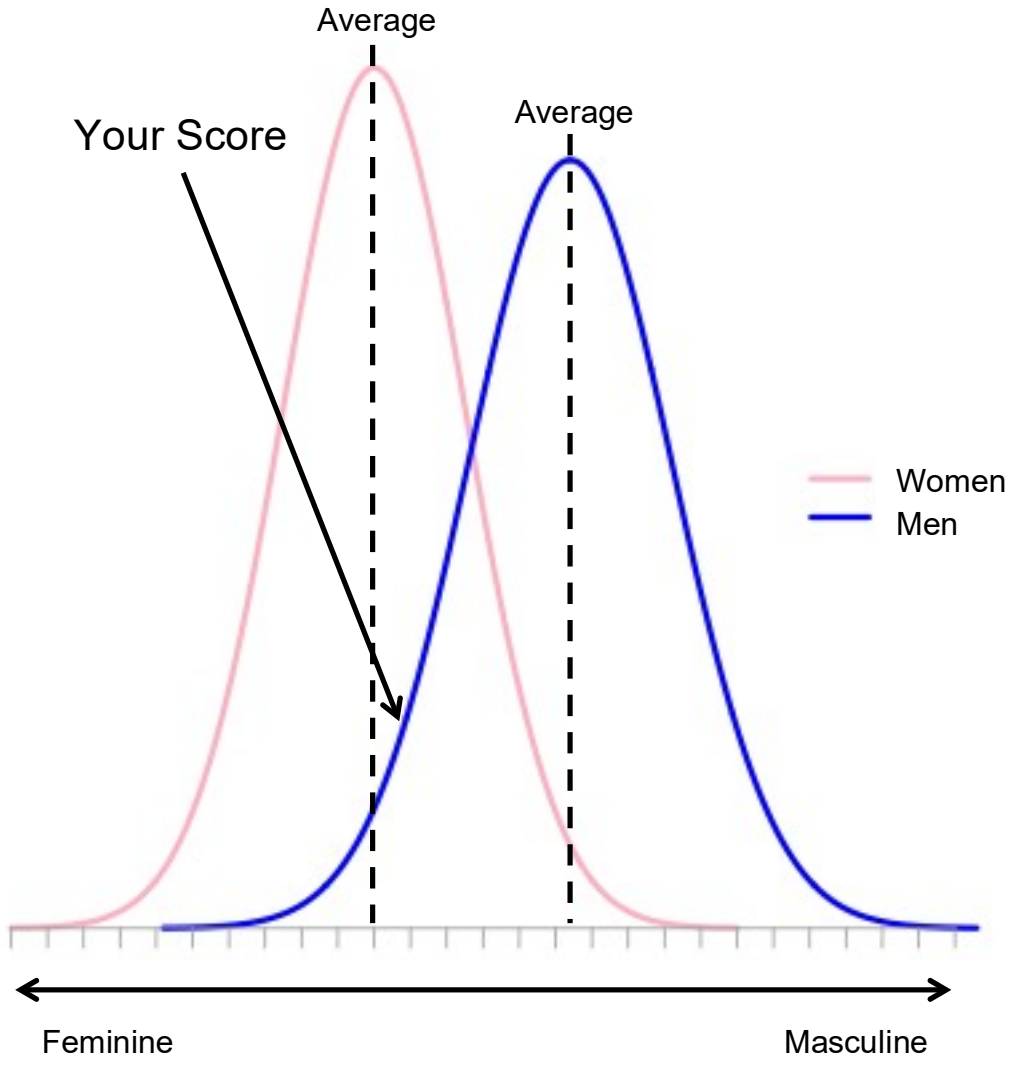
The Oakland University IRB

Appendix B. Gender Affirmation Stimulus



Your score indicates that you have the masculinity level of a typical man

Appendix C. Masculinity Threat Stimulus



Your score indicates that you have the femininity level of a typical woman

Appendix D. Study 1 Demographic Variables

Gender

- ***Item***: What is your gender?
- ***Response options***: 1 = Male, 2 = Female

Age

- ***Item***: What is your age?
- ***Response options***: Free-response

Race/Ethnicity

- ***Item***: What is your race/ethnicity?
- ***Response options***: 1 = Asian or Asian-American, 2 = Black or African-American, 3 = Hispanic or Latinx, 4 = Middle Eastern or Arabic, 5 = Native American or Alaskan Native, 6 = Native Hawaiian or Pacific Islander, 7 = White or European-American, 8 = Not listed (please specify)

Education

- ***Item***: What is the highest level of education you have completed?
- ***Response options***: 1 = less than high school diploma, 2 = High school diploma, 3 = GED or ABE certificate, 4 = Some college, 5 = Associate's/technical degree, 6 = Bachelor's, 7 = Graduate degree (e.g., M.A., PhD, MD)

Family Income

- ***Item***: What is your family's yearly income? (Make your best estimate)
- ***Response options***: 1 = Under $9,999, 2 = $10,000-$19,999, 3 = $20,000-$29,999, 4 = $30,000-$39,999, 5 = $40,000-$49,999, 6 = $50,000-$59,999, 7 = $60,000-$69,999, 8 = $70,000-$79,999, 9 = $80,000-$89,999, 10 = $90,000-$99,999, 11 = $100,000 or more

Political Ideology

- ***Item***: How would you generally describe your political ideology?
- ***Response options***: 1 = Extremely liberal, 2 = Very liberal, 3 = Slightly liberal, 4 = Neutral, 5 = Slightly conservative, 6 = Very conservative, 7 = Extremely conservative

Religion

- ***Item***: Which of the following is most consistent with your current religious beliefs?
- ***Response options***: 1 = Agnostic, 2 = Atheist, 3 = Buddhist, 4 = Catholic, 5 = Christian, 6 = Islamic, 7 = Jewish, 8 = Mormon, 9 = None, 10 = Not listed (please specify)

Region of Residence

- ***Item***: Which region of the United States do you live in?
- ***Response options***: 1 = Midwest, 2 = Northeast, 3 = South, 4 = West, 5 = I live outside of the United States

Gun Ownership

- ***Item***: Do you own a gun?
- ***Response options***: 0 = No, 1 = Yes

Current or Former Law Enforcement Officer

- ***Item***: Have you ever been employed as a law enforcement officer?
- ***Response options***: 0 = No, I have never been employed as a law enforcement officer, 1 = Yes, I am currently a law enforcement officer, 2 = Yes, I am a former law enforcement officer

Current or Former Military

- ***Item***: Are you a current or former member of the military?
- ***Response options***: 0 = No, I have never been a member of the military, 1 = Yes, I am currently on active duty, 2 = Yes, I am currently a reservist, 3 = Yes, I am a veteran

Appendix E. Male Role Norms Scale

Prompt: Please indicate how much you agree or disagree with the following statements.
Response options: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree, 5 = Somewhat agree, 6 = Agree, 7 = Strongly agree
Items:

1. Success in his work has to be man's central goal in this life.
2. The best way for a young man to get the respect of other people is to get a job, take it seriously, and do it well.
3. A man owes it to his family to work at the best-paying job he can get.
4. A man should generally work overtime to make more money whenever he has the chance.
5. A man always deserves the respect of his wife and children.
6. It is essential for a man to always have the respect and admiration of everyone who knows him.
7. A man should never back down in the face of trouble.
8. I always like a man who's totally sure of himself.
9. A man should always think everything out coolly and logically, and have rational reasons for everything he does.
10. A man should always try to project an air of confidence even if he really doesn't feel confident inside.
11. A man must stand on his own two feet and never depend on other people to help him do things.
12. When a man is feeling a little pain, he should try not to let it show very much.
13. Nobody respects a man very much who frequently talks about his worries, fears, and problems.
14. A good motto for a man would be "When the going gets tough, the tough get going."
15. I think a young man should try to become physically tough, even if he's not big.
16. Fists are sometimes the only way to get out of a bad situation.
17. A real man enjoys a bit of danger now and then.
18. In some kinds of situations a man should be ready to use his fists, even if his wife or his girlfriend would object.
19. A man should always refuse to get into a fight, even if there seems to be no way to avoid it.[1]
20. It bothers me when a man does something that I consider "feminine."
21. A man whose hobbies are cooking, sewing, and going to the ballet probably wouldn't appeal to me.
22. It is a bit embarrassing for a man to have a job that is usually filled by a woman.
23. Unless he was really desperate, I would probably advise a man to keep looking rather than accept a job as a secretary.
24. If I heard about a man who was a hairdresser and a gourmet cook, I might wonder how masculine he was.
25. I think it's extremely good for a boy to be taught to cook, sew, clean the house, and take care of younger children.[1]

26. I might find it a little silly or embarrassing if a male friend of mine cried over a sad love scene in a movie.

[1]Item is reverse scored

Appendix F. Gun Attitudes Scale

Prompt: Please indicate the extent to which you agree or disagree with the following statements.

Response options: 1 = Strongly disagree, 2 = Slightly disagree, 3 = Neutral, 4 = Slightly agree, 5 = Strongly agree

Items:

1. I would personally feel more powerful by carrying/keeping a handgun.
2. Owning a gun would give me a feeling of independence.
3. I would personally feel more in control by keeping a gun in my home.
4. Owning a gun would help me to protect my home and property.
5. I would personally feel safer by owning a gun.
6. I am confident that I could successfully defend myself using a handgun.
7. I would be interested in taking a self-defense course that included handgun training.
8. I am concerned about losing my second amendment right to own a gun.
9. I support the right to own a firearm.

Appendix G. Revised Gun Enthusiasm Scale

Prompt: Please indicate the extent to which you agree or disagree with the following statements.
Response options: 1 = Strongly disagree, 2 = Slightly disagree, 3 = Neutral, 4 = Slightly agree, 5 = Strongly agree
Items:

1. I would enjoy hunting small game, such as fowls or rabbits.
2. Shooting firearms since childhood is something to be proud of.
3. I believe that guns do not belong in individual homes.[1]
4. I believe that gun laws need to be more restrictive.[1]
5. I have little or no interest in guns.[1]
6. I would enjoy collecting assault rifles.
7. I would enjoy attending gun shows.
8. I believe that the second amendment affords the best protection against a tyrannical government.

[1]Item is reverse scored

Appendix H. Gun Control Attitudes Scale

Prompt: Please indicate the extent to which you agree or disagree with the following statements.

Response options: 1 = Strongly disagree, 2 = Slightly disagree, 3 = Neutral, 4 = Slightly agree, 5 = Strongly agree

Items:

1. If more people carried guns, there would be less crime.[1]
2. People should have to undergo background checks in order to purchase a gun.
3. People who wish to purchase a gun should have to wait at least 14 days before they can receive a gun.
4. People who own a gun should be required to undergo regular training.
5. People with a criminal record should be unable to purchase or own guns.
6. People with any history of mental illness should be unable to purchase or own guns.
7. People should not be allowed to carry guns for self-protection.
8. All people who wish to purchase a gun should be required to obtain a permit from a government agency.
9. Civilians should be unable to purchase an assault rifle.
10. Civilians should be unable to purchase high-capacity magazines (sometimes called clips).
11. People should have to undergo a mental health screening to purchase a gun.
12. It should be more difficult to purchase a gun in this country.
13. Gun control infringes on people's second amendment rights.[1]
14. The only thing that will stop bad guys with guns is good guys with guns.[1]

[1]Item is reverse scored

Appendix I. Budgeting Task Categories and Options

Prompt: For your next task, you will be asked to create a budget that you think best represents you and your desired lifestyle. For this task, you will have an annual family income of $68,703, which computes to $41,537 in annual net earnings or $3,461 per month. For the purposes of this task, we will use the monthly income and refer to monthly costs. You are required to select housing/utilities, internet, phone, transportation, food, and clothing options, but are also given the choice to select health insurance, and protection options. Your budgetary choices must total $3,461 or less.

Housing + Utilities

- ***Response options***:
  - 1 = Large house – 4 Bedroom, 3 Bath, 2,500 sqft – $2,400
  - 2 = Small house – 2 Bedroom, 2 Bath, 1,200 sqft – $1,700
  - 3 = Large apartment – 2 Bedroom, 1 Bath, 950 sqft. – $1,200
  - 4 = Small apartment – 1 Bedroom, 1 Bath, 600 sqft. – $800
  - 5 = Studio apartment – 0 Bedroom, 1 Bath, 350 sqft. – $500

Internet

- ***Response options***:
  - 1 = Fast wifi – $100
  - 2 = Moderate wifi – $70
  - 3 = Slow wifi – $40

Phone Plan

- ***Response options***:
  - 1 = Unlimited data, talk, and text – $100
  - 2 = Limited data, talk, and text – $50
  - 3 = No data; limited talk and text – $20

Transportation

- ***Response options***:
  - 1 = Private automobile (i.e., car; ranges from $300 - $1,000)
    - [If selected] Which type of vehicle?
      - 1 = Luxury car – $1,000
      - 2 = SUV – $800
      - 3 = Truck – $700
      - 4 = Crossover – $500
      - 5 = Sedan – $300
  - 2 = Public transit – $100

Food

- ***Response options***:
  - 1 = High quality – Healthy; Organic, non-GMO, whole foods; high nutritional value (e.g., groceries from Whole Foods Market; local farmers market) – $1,000
  - 2 = Moderate quality – Somewhat healthy; mix of whole foods and processed foods; moderate nutritional value (e.g., groceries from Kroger, Albertsons, Safeway, etc.) – $600

- 3 = Low quality – Unhealthy; mostly processed foods; low nutritional value (e.g., fast food; food from convenience stores) – $200

Clothing

- ***Response options***:
  - 1 = Very high value - prestigious designer clothing (e.g., Gucci; Louis Vuitton) – $500
  - 2 = High value - name brand clothing (e.g., Patagonia; North Face; Nike; Ralph Lauren) – $300
  - 3 = Moderate value - department store clothing (e.g., Kohl's; Gap; Old Navy) – $150
  - 4 = Low value - convenience clothing (e.g., Walmart; Target; Meijer; grocery stores) – $100
  - 5 = Very low value – "hand-me-downs" (e.g., thrift stores) – $50

Health Insurance (optional)

- ***Response options***:
  - 1 = High coverage – $500
  - 2 = Moderate coverage – $300
  - 3 = Low coverage – $100

Protection (optional; select all that apply)

- ***Response options***:
  - 1 = Security system – $25
  - 2 = Security cameras – $50 per month for 6 months (payment plan)
  - 3 = Gun – $50 per month for 6 months (payment plan)
  - 4 = Deadbolt locks – $10 per month for 4 months (payment plan)

Appendix J. Study 2 Demographic Variables

Gender

- ***Item***: What is your gender?
- ***Response options***: 1 = Male, 2 = Female

Age

- ***Item***: What is your age?
- ***Response options***: Free-response

Race/Ethnicity

- ***Item***: What is your race/ethnicity?
- ***Response options***: 1 = Asian or Asian-American, 2 = Black or African-American, 3 = Hispanic or Latinx, 4 = Middle Eastern or Arabic, 5 = Native American or Alaskan Native, 6 = Native Hawaiian or Pacific Islander, 7 = White or European-American, 8 = Not listed (please specify)

Education

- ***Item***: What is the highest level of education you have completed?
- ***Response options***: 1 = less than high school diploma, 2 = High school diploma, 3 = GED or ABE certificate, 4 = Some college, 5 = Associate's/technical degree, 6 = Bachelor's, 7 = Graduate degree (e.g., M.A., PhD, MD)

Family Income

- ***Item***: What is your family's yearly income? (Make your best estimate)
- ***Response options***: 1 = Under $9,999, 2 = $10,000-$19,999, 3 = $20,000-$29,999, 4 = $30,000-$39,999, 5 = $40,000-$49,999, 6 = $50,000-$59,999, 7 = $60,000-$69,999, 8 = $70,000-$79,999, 9 = $80,000-$89,999, 10 = $90,000-$99,999, 11 = $100,000 or more

Relationship Status

- ***Item***: What is your current relationship status?
- ***Response options***: 1 = Single, 2 = Dating, 3 = Engaged, 4 = Married, 5 = Divorced, 6 = Widowed

Number of Children

- ***Item***: How many children do you have living in your household?
- ***Response options***: 0 = 0, 1 = 1, 2 = 2, 3 = 3, 4 = 4, 5 = 5, 6 = 6, 7 = 7, 8 = 8, 9 = 9, 10 = 10 or more

Political Ideology

- ***Item***: How would you generally describe your political ideology?

- ***Response options***: 1 = Extremely liberal, 2 = Very liberal, 3 = Slightly liberal, 4 = Neutral, 5 = Slightly conservative, 6 = Very conservative, 7 = Extremely conservative

Religion

- ***Item***: Which of the following is most consistent with your current religious beliefs?
- ***Response options***: 1 = Agnostic, 2 = Atheist, 3 = Buddhist, 4 = Catholic, 5 = Christian, 6 = Islamic, 7 = Jewish, 8 = Mormon, 9 = None, 10 = Not listed (please specify)

Region of Residence

- ***Item***: Which region of the United States do you live in?
- ***Response options***: 1 = Midwest, 2 = Northeast, 3 = South, 4 = West, 5 = I live outside of the United States

Gun Ownership

- ***Item***: Do you own a gun?
- ***Response options***: 0 = No, 1 = Yes

Current or Former Law Enforcement Officer

- ***Item***: Have you ever been employed as a law enforcement officer?
- ***Response options***: 0 = No, I have never been employed as a law enforcement officer, 1 = Yes, I am currently a law enforcement officer, 2 = Yes, I am a former law enforcement officer

Current or Former Military

- ***Item***: Are you a current or former member of the military?
- ***Response options***: 0 = No, I have never been a member of the military, 1 = Yes, I am currently on active duty, 2 = Yes, I am currently a reservist, 3 = Yes, I am a veteran

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Albarracin, D., & Shavitt, S. (2018). Attitudes and attitude change. *Annual Review of Psychology*, *69*, 299-327. https://doi.org/10.1146/annurev-psych-122216-011911

Anderson, C., Hildreth, J. A. D., & Howland, L. (2015). Is the desire for status a fundamental human motive? A review of the empirical literature. *Psychological Bulletin*, *141*, 574-601. https://doi.org/10.1037/a0038781

Anestis, M. D., & Houtsma, C. (2019). What I have is what I am: Differences in demographics, suicidal thoughts and behaviors, and firearm behavior and beliefs between firearm owners who do and do not primarily identify as firearm owners. *Journal of Psychiatric Research*, *116*, 157-165. https://doi.org/10.1016/j.jpsychires.2019.06.017

Anglemyer, A., Horvath, T., & Rutherford, G. (2014). The accessibility of firearms and risk for suicide and homicide victimization among household members: a systematic review and meta-analysis. *Annals of Internal Medicine*, *160*, 101-110. https://doi.org/10.7326/M13-1301

Arain, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., ... & Sharma, S. (2013). Maturation of the adolescent brain. *Neuropsychiatric Disease and Treatment*, *9*, 449. https://doi.org/10.2147/NDT.S39776

Aronson, E., Wilson, T.D., & Sommers, S.R. (2019). Conformity and obedience: Influencing behavior. In E. Aronson et al., (Eds.), *Social Psychology* (pp. 216-256). New York, NY: Pearson.

Azrael, D., Hepburn, L., Hemenway, D., & Miller, M. (2017). The stock and flow of US firearms: results from the 2015 National Firearms Survey. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, *3*, 38-57. https://doi.org/10.7758/RSF.2017.3.5.02

Baird, A. (2012). The violent gang and the construction of masculinity amongst socially excluded young men. *Safer Communities, 11*, 179-190. https://doi.org/10.1108/17578041211271445

Barnes, C. D., Brown, R. P., & Osterman, L. L. (2012). Don't tread on me: Masculine honor ideology in the US and militant responses to terrorism. *Personality and Social Psychology Bulletin*, *38*, 1018-1029. https://doi.org/10.1177/0146167212443383

Barry, C. L., Stone, E. M., Crifasi, C. K., Vernick, J. S., Webster, D. W., & McGinty, E. E. (2019). Trends in public opinion on US gun laws: majorities of gun owners and non–gun owners support a range of measures. *Health Affairs*, *38*, 1727-1734. https://doi.org/10.1377/hlthaff.2019.00576

Barry, C. L., Webster, D. W., Stone, E., Crifasi, C. K., Vernick, J. S., & McGinty, E. E. (2018). Public support for gun violence prevention policies among gun owners and non–gun owners in 2017. *American Journal of Public Health*, *108*, 878-881. https://doi.org/10.2105/AJPH.2018.304432

Barry, B., & Weiner, N. (2019). Suited for success? Suits, status, and hybrid masculinity. *Men and Masculinities*, *22*, 151-176. https://doi.org/10.1177/1097184X17696193

Baugher, A. R., & Gazmararian, J. A. (2015). Masculine gender role stress and violence: A literature review and future directions. *Aggression and Violent Behavior*, *24*, 107-112. https://doi.org/10.1016/j.avb.2015.04.002

Baumeister, R. F. (2016). Toward a general theory of motivation: Problems, challenges, opportunities, and the big picture. *Motivation and Emotion*, *40*, 1-10. https://doi.org/10.1007/s11031-015-9521-y

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*, 497-529. https://doi.org/10.1037/0033-2909.117.3.497

Beardslee, J., Docherty, M., Mulvey, E., Schubert, C., & Pardini, D. (2018). Childhood risk factors associated with adolescent gun carrying among Black and White males: An examination of self-protection, social influence, and antisocial propensity explanations. *Law and Human Behavior*, *42*, 110-118. https://doi.org/10.1037/lhb0000270

Berke, D. S., Reidy, D. E., Miller, J. D., & Zeichner, A. (2017). Take it like a man: Gender-threatened men's experience of gender role discrepancy, emotion activation, and pain tolerance. *Psychology of Men & Masculinity*, *18*, 62-69. http:// dx.doi.org/10.1037/men0000036

Berrigan, J., Azrael, D., Hemenway, D., & Miller, M. (2019). Firearms training and storage practices among US gun owners: a nationally representative study. *Injury Prevention*, *25*, 31-38. http://dx.doi.org/10.1136/injuryprev-2018-043126

Björkqvist, K. (2018). Gender differences in aggression. *Current Opinion in Psychology*, *19*, 39-42. https://doi.org/10.1016/j.copsyc.2017.03.030

Bohner, G., Dickel, N. (2011). Attitudes and attitude change. *Annual Review of Psychology. 62,* 391–417.

Borgogna, N. C., McDermott, R. C., & Brasil, K. M. (2022). The precarious masculinity of firearm ownership. *Psychology of Men & Masculinities, 23*, 173-182. https://doi.org/10.1037/men0000386

Bosson, J. K., Vandello, J. A., Burnaford, R. M., Weaver, J. R., & Arzu Wasti, S. (2009). Precarious manhood and displays of physical aggression. *Personality and Social Psychology Bulletin*, *35*, 623-634. https://doi.org/10.1177/0146167208331161

Bosson, J. K., Weaver, J. R., Caswell, T. A., & Burnaford, R. M. (2012). Gender threats and men's antigay behaviors: The harmful effects of asserting heterosexuality. *Group Processes & Intergroup Relations*, *15*, 471-486. https://doi.org/10.1177/1368430211432893

Brown, R. P., Osterman, L. L., & Barnes, C. D. (2009). School violence and the culture of honor. *Psychological Science*, *20*, 1400-1405. https://doi.org/10.1111/j.1467-9280.2009.02456.x

Brown, R. P., Imura, M., & Osterman, L. L. (2014). Gun culture: Mapping a peculiar preference for firearms in the commission of suicide. *Basic and Applied Social Psychology*, *36*, 164-175. https://doi.org/10.1080/01973533.2014.882259

Bunch, J., Clay-Warner, J., & Lei, M. K. (2015). Demographic characteristics and victimization risk: Testing the mediating effects of routine activities. *Crime & Delinquency*, *61*, 1181-1205. https://doi.org/10.1177/0011128712466932

Buttrick, N. (2020). Protective gun ownership as a coping mechanism. *Perspectives on Psychological Science*, *15*, 835-855. https://doi.org/10.1177/1745691619898847

Carlson, J. (2015). Mourning Mayberry: Guns, masculinity, and socioeconomic decline. *Gender & Society*, *29*, 386-409. https://doi.org/10.1177/0891243214554799

Carr, J., & Doleac, J. L. (2016). The geography, incidence, and underreporting of gun violence: new evidence using ShotSpotter data. *Incidence, and Underreporting of Gun Violence: New Evidence Using Shotspotter Data (April 26, 2016)*.

Casler, K., Bickel, L., & Hackett, E. (2013). Separate but equal? A comparison of participants and data gathered via Amazon's MTurk, social media, and face-to-face behavioral testing. *Computers in Human Behavior*, *29*, 2156-2160. https://doi.org/10.1016/j.chb.2013.05.009

Cassino, D., & Besen-Cassino, Y. (2020). Sometimes (but not this time), a gun is just a gun: Masculinity threat and guns in the United States, 1999–2018. *Sociological Forum*, 35, 5-23. https://doi.org/10.1111/socf.12565

Chandler, J. J., & Paolacci, G. (2017). Lie for a dime: When most prescreening responses are honest but most study participants are impostors. *Social Psychological and Personality Science*, *8*, 500-508. https://doi.org/10.1177/1948550617698203

Christensen, P. N., Rothgerber, H., Wood, W., & Matz, D. C. (2004). Social norms and identity relevance: A motivational approach to normative behavior. *Personality and Social Psychology Bulletin*, *30*, 1295-1309. https://doi.org/10.1177/0146167204264480

Cohen, D., Nisbett, R. E., Bowdle, B. F., & Schwarz, N. (1996). Insult, aggression, and the southern culture of honor: An" experimental ethnography.". *Journal of Personality and Social Psychology*, *70*, 945-960. https://doi.org/10.1037/0022-3514.70.5.945

Connell, R. W., & Messerschmidt, J. W. (2005). Hegemonic masculinity: Rethinking the concept. *Gender & Society*, *19*, 829-859. https://doi.org/10.1177/0891243205278639

Cukier, W., & Eagen, S. A. (2018). Gun violence. *Current Opinion in Psychology*, *19*, 109-112. https://doi.org/10.1016/j.copsyc.2017.04.008

Daruwala, S. E., Bandel, S. L., Houtsma, C., Butterworth, S. E., & Anestis, M. D. (2020). Conservative Beliefs, Male Gender, and Beliefs About Means Safety Among Firearm Owners. *Cognitive Therapy and Research*, *44*, 1-9. https://doi.org/10.1007/s10608-019-10057-4

DeFoster, R., & Swalve, N. (2018). Guns, culture or mental health? Framing mass shootings as a public health crisis. *Health Communication*, *33*, 1211-1222. https://doi.org/10.1080/10410236.2017.1350907

Depew, B., & Swensen, I. D. (2019). The Decision to Carry The Effect of Crime on Concealed-Carry Applications. *Journal of Human Resources*, *54*, 1121-1153. https://doi.org/10.3368/jhr.54.4.1016.8287R2

Deuchar, R., & Weide, R. D. (2019). Journeys in gang masculinity: Insights from international case studies of interventions. *Deviant Behavior*, *40*, 851-865. https://doi.org/10.1080/01639625.2018.1443761

Dierenfeldt, R., Brown, T. C., & Roles, R. A. (2017). Re-considering the structural covariates of gun crime: An examination of direct and moderated effects. *Deviant Behavior*, *38*, 208-225. https://doi.org/10.1080/01639625.2016.1196974

DiMuccio, S. H., Yost, M. R., & Helweg-Larsen, M. (2017). A qualitative analysis of perceptions of precarious manhood in US and Danish men. *Psychology of Men & Masculinity*, *18*, 331-340. https://doi.org/10.1037/men0000062

Docherty, M., Beardslee, J., Grimm, K. J., & Pardini, D. (2019). Distinguishing between-individual from within-individual predictors of gun carrying among Black and White males across adolescence. *Law and Human Behavior*, *43*, 144-155. https://doi.org/10.1037/lhb0000320

Docherty, M., Mulvey, E., Beardslee, J., Sweeten, G., & Pardini, D. (2020). Drug dealing and gun carrying go hand in hand: Examining how juvenile offenders' gun carrying changes before and after drug dealing spells across 84 months. *Journal of Quantitative Criminology*, *36*, 993-1015. https://doi.org/10.1007/s10940-019-09442-9

Emmert, A. D., Hall, G. P., & Lizotte, A. J. (2018). Do weapons facilitate adolescent delinquency? An examination of weapon carrying and delinquency among adolescents. *Crime & Delinquency*, *64*, 342-362. https://doi.org/10.1177/0011128717714466

Esposito, L., & Finley, L. L. (2014). Beyond gun control: Examining neoliberalism, pro-gun politics and gun violence in the United States. *Theory in Action*, *7*, 74-103. https://doi.org/10.3798/tia.1937-0237.14011

Farr, K. (2019). Trouble with the other: The role of romantic rejection in rampage school shootings by adolescent males. *Violence and Gender*, *6*, 147-153. https://doi.org/10.1089/vio.2018.0046

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

The Federal Bureau of Investigation (2019). Active shooter incidents in the United States: 2000-2018. U.S. Department of Justice: Washington, D.C.

Felson, R. B., & Pare, P. P. (2010). Gun cultures or honor cultures? Explaining regional and race differences in weapon carrying. *Social Forces*, *88*, 1357-1378. https://doi.org/10.1353/sof.0.0310

Filindra, A., & Kaplan, N. J. (2016). Racial resentment and whites' gun policy preferences in contemporary America. *Political Behavior*, *38*, 255-275. https://doi.org/10.1007/s11109-015-9326-4

Filindra, A., & Kaplan, N. (2017). Testing theories of gun policy preferences among Blacks, Latinos, and Whites in America. *Social Science Quarterly*, *98*, 413-428. https://doi.org/10.1111/ssqu.12418

Flores, E. O. (2016). "Grow your hair out": Chicano gang masculinity and embodiment in recovery. *Social Problems*, *63*, 590-604. https://doi.org/10.1093/socpro/spw017

Frederick, D. A., Shapiro, L. M., Williams, T. R., Seoane, C. M., McIntosh, R. T., & Fischer, E. W. (2017). Precarious manhood and muscularity: Effects of threatening men's masculinity on reported strength and muscle dissatisfaction. *Body Image*, *22*, 156-165.https://doi.org/10.1016/j.bodyim .2017.07.002

Glick, P., & Fiske, S. T. (2001). An ambivalent alliance: Hostile and benevolent sexism as complementary justifications for gender inequality. *American Psychologist*, *56*, 109-118. https://doi.org/10.1037/0003-066X.56.2.109

Gold, L. H. (2013). Gun violence: psychiatry, risk assessment, and social policy. *The Journal of American Academy of Psychiatry and the Law, 41*(3), 337-343.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: attitudes, self-esteem, and stereotypes. *Psychological Review*, *102*, 4-27. https://doi.org/10.1037/0033-295X.102.1.4

Grinshteyn, E., & Hemenway, D. (2019). Violent death rates in the US compared to those of the other high-income countries, 2015. *Preventive Medicine*, *123*, 20-26. https://doi.org/10.1016/j.ypmed.2019.02.026

Grubbs, J. B., Warmke, B., Tosi, J., James, A. S., & Campbell, W. K. (2019). Moral grandstanding in public discourse: Status-seeking motives as a potential explanatory mechanism in predicting conflict. *PloS one*, *14*, 1-31. https://doi.org/10.1371/journal.pone.0223749

Gvion, Y., & Apter, A. (2012). Suicide and suicidal behavior. *Public Health Reviews*, *34*(2), 1-20.

Gvion, Y., Levi-Belz, Y., Hadlaczky, G., & Apter, A. (2015). On the role of impulsivity and decision-making in suicidal behavior. *World Journal of Psychiatry*, *5*, 255-259. https://doi.org/10.5498/wjp.v5.i3.255

Hall-Sanchez, A. K. (2014). Male peer support, hunting, and separation/divorce sexual assault in rural Ohio. *Critical Criminology*, *22*, 495-510. https://doi.org/10.1007/s10612-014-9251-6

Hamilton, D., & Kposowa, A. J. (2015). Firearms and violent death in the united states: gun ownership, gun control and mortality rates in 16 states, 2005-2009. *Journal of Education, Society and Behavioural Science*, *7*, 84-98. https://doi.org/10.9734/BJESBS/2015/16126

Hamilton, D., Lemeshow, S., Saleska, J. L., Brewer, B., & Strobino, K. (2018). Who owns guns and how do they keep them? The influence of household characteristics on firearms ownership and storage practices in the United States. *Preventive Medicine*, *116*, 134-142. https://doi.org/10.1016/j.ypmed.2018.07.013

Han, Y. J., Nunes, J. C., & Drèze, X. (2010). Signaling status with luxury goods: The role of brand prominence. *Journal of Marketing*, *74*, 15-30. https://doi.org/10.1509/jmkg.74.4.015

Hauser, W., & Kleck, G. (2013). Guns and fear: A one-way street?. *Crime & Delinquency*, *59*, 271-291. https://doi.org/10.1177/0011128712462307

Hawton, K., i Comabella, C. C., Haw, C., & Saunders, K. (2013). Risk factors for suicide in individuals with depression: a systematic review. *Journal of Affective Disorders*, *147*, 17-28. https://doi.org/10.1016/j.jad.2013.01.004

Hemenway, D. (2013). Preventing gun violence by changing social norms. *JAMA Internal Medicine*, *173*, 1167-1168. https://doi.org/10.1001/jamainternmed.2013.6949

Himmelstein, M. S., Kramer, B. L., & Springer, K. W. (2019). Stress in strong convictions: Precarious manhood beliefs moderate cortisol reactivity to masculinity threats. *Psychology of Men & Masculinities*, *20*, 491. https://doi.org/10.1037/men0000187

Hodges, H. J., & Scalora, M. J. (2015). Challenging the political assumption that "Guns don't kill people, crazy people kill people!". *American Journal of Orthopsychiatry*, *85*, 211. https://doi.org/10.1037/ort0000069

Hodges, H. J., Fessinger, M. B., Bornstein, B. H., Low, E. C., Viñas-Racionero, R., & Scalora, M. J. (2021). A loaded subject: Comparison of experiences, knowledge, and attitudes about firearms between a diverse male forensic psychiatric sample and a male community sample. *Psychology of Violence*, *11*, 385-394. https://doi.org/10.1037/vio0000347

Hunt, C. J., Gonsalkorale, K., & Murray, S. B. (2013). Threatened masculinity and muscularity: An experimental examination of multiple aspects of muscularity in men. *Body Image*, *10*, 290-299. https://doi.org/10.1016/j.bodyim.2013.02.007

International Association of Chiefs of Police (2019). Firearms Policy Position Statement. Retrieved from https://www.theiacp.org/sites/default/files/2019-05/IACP%20Firearms %20Position%20Paper_2018%20(1).pdf

Jang, S. M. (2019). Mass shootings backfire: The boomerang effects of death concerns on policy attitudes. *Media Psychology*, *22*, 298-322. https://doi.org/10.1080/15213269.2017.1421471

Jehan, F., Pandit, V., O'Keeffe, T., Azim, A., Jain, A., Tai, S. A., ... & Joseph, B. (2018). The burden of firearm violence in the United States: stricter laws result in safer states. *Journal of Injury and Violence Research*, *10*, 11-16. https://doi.org/10.5249/jivr.v10i1.951

Joiner, T. E. (2005). Why people die by suicide. Cambridge, MA: Harvard University Press.

Jose, R., Holman, E. A., & Silver, R. C. (2021). How Americans feel about guns after mass shootings: The case of the 2016 Orlando nightclub massacre. *Psychology of Violence*, *11*, 354-363. https://doi.org/10.1037/vio0000346

Joslyn, M. R., Haider-Markel, D. P., Baggs, M., & Bilbo, A. (2017). Emerging political identities? Gun ownership and voting in presidential elections. *Social Science Quarterly*, *98*, 382-396. https://doi.org/10.1111/ssqu.12421

Kahan, D. M., & Braman, D. (2003). More statistics, less persuasion: A cultural theory of gun-risk perceptions. *University of Pennsylvania Law Review*, *151*, 1291-1327. https://doi.org/10.2307/3312930

Kalesan, B., Villarreal, M. D., Keyes, K. M., & Galea, S. (2016). Gun ownership and social gun culture. *Injury Prevention*, *22*, 216-220. http://dx.doi.org/10.1136/injuryprev-2015-041586

Kalish, R., & Kimmel, M. (2010). Suicide by mass murder: Masculinity, aggrieved entitlement, and rampage school shootings. *Health Sociology Review*, *19*, 451-464. https://doi.org/10.5172/hesr.2010.19.4.451

Kellner, D. (2008). *Guys & guns amok*. Boulder, CO: Paradigm.

Kimmel, M. S., & Mahler, M. (2003). Adolescent masculinity, homophobia, and violence: Random school shootings, 1982-2001. *American Behavioral Scientist*, *46*, 1439-1458. https://doi.org/10.1177/0002764203046010010

Kivisto, A. J. (2017). Gun violence following inpatient psychiatric treatment: Offense characteristics, sources of guns, and number of victims. *Psychiatric Services*, *68*, 1025-1031. https://doi.org/10.1176/appi.ps.201600385

Kleck, G., Gertz, M., & Bratton, J. (2009). Why do people support gun control?: Alternative explanations of support for handgun bans. *Journal of Criminal Justice*, *37*, 496-504. https://doi.org/10.1016/j.jcrimjus.2009.07.010

Kleck, G., & Kovandzic, T. (2009). City-level characteristics and individual handgun ownership: Effects of collective security and homicide. *Journal of Contemporary Criminal Justice*, *25*, 45-66. https://doi.org/10.1177/1043986208329085

Kleck, G., Kovandzic, T., Saber, M., & Hauser, W. (2011). The effect of perceived risk and victimization on plans to purchase a gun for self-protection. *Journal of Criminal Justice*, *39*, 312-319. https://doi.org/10.1016/j.jcrimjus.2011.03.002

Lacombe, M. J. (2019). The political weaponization of gun owners: The national rifle association's cultivation, dissemination, and use of a group social identity. *The Journal of Politics*, *81*, 1342-1356. http://dx.doi.org/10.1086/704329

Lacombe, M. J., Howat, A. J., & Rothschild, J. E. (2019). Gun ownership as a social identity: Estimating behavioral and attitudinal relationships. *Social Science Quarterly*, *100*, 2408-2424. https://doi.org/10.1111/ssqu.12710

Lantz, B., & Wenger, M. R. (2021). Guns, groups, and the Southern culture of honor: Considering the role of co-offenders in Southern firearm violence. *Psychology of Violence*, *11*, 405-416. https://doi.org/10.1037/vio0000352

Leander, N. P., Stroebe, W., Kreienkamp, J., Agostini, M., Gordijn, E., & Kruglanski, A. W. (2019). Mass shootings and the salience of guns as means of compensation for thwarted goals. *Journal of Personality and Social Psychology*, *116*, 704-723. https://doi.org/10.1037/pspa0000150

Leary, M. R., Kowalski, R. M., Smith, L., & Phillips, S. (2003). Teasing, rejection, and violence: Case studies of the school shootings. *Aggressive Behavior*, *29*, 202-214. https://doi.org/10.1002/ab.10061

Lee, L. K., Fleegler, E. W., Farrell, C., Avakame, E., Srinivasan, S., Hemenway, D., & Monuteaux, M. C. (2017). Firearm laws and firearm homicides: a systematic review. *JAMA Internal Medicine*, *177*, 106-119. https://doi.org/10.1001/jamainternmed.2016.7051

Levant, R. F., Rankin, T. J., Williams, C. M., Hasan, N. T., & Smalley, K. B. (2010). Evaluation of the factor structure and construct validity of scores on the Male Role Norms Inventory—Revised (MRNI-R). *Psychology of Men & Masculinity*, *11*, 25-37. https://doi.org/10.1037/a0017637

Lewiecki, E. M., & Miller, S. A. (2013). Suicide, guns, and public policy. *American Journal of Public Health*, *103*, 27-31. https://doi.org/10.2105/AJPH.2012.300964

Lu, Y., & Temple, J. R. (2019). Dangerous weapons or dangerous people? The temporal associations between gun violence and mental health. *Preventive Medicine*, *121*, 1-6. https://doi.org/10.1016/j.ypmed.2019.01.008

Makse, T., & Sokhey, A. E. (2014). The displaying of yard signs as a form of political participation. *Political Behavior*, *36*, 189-213. https://doi.org/10.1007/s11109-013-9224-6

Matson, K. E. (2016). The development of hostile cognitive schemas and adult aggressive tendencies (Master's Thesis). University of North Dakota, Grand Forks, North Dakota.

Matson, K., Russell, T. D., & King, A. R. (2019). Gun Enthusiasm, Hypermasculinity, Manhood Honor, and Lifetime Aggression. *Journal of Aggression, Maltreatment & Trauma*, *28*, 369-383. https://doi.org/10.1080/10926771.2017.1420722

McDermott, R. C., Brasil, K. M., Barinas, J. L., & Borgogna, N. C. (2021). Associations between men's and women's conformity to masculine role norms and firearm ownership: Contributions beyond, race, gender, and political ideology. *Psychology of Men & Masculinities*, *22*, 227-237. https://doi.org/10.1037/men0000341

McGinty, E. E., Webster, D. W., & Barry, C. L. (2013). Effects of news media messages about mass shootings on attitudes toward persons with serious mental illness and public support for gun control policies. *American Journal of Psychiatry*, *170*, 494-501. https://doi.org/10.1176/appi.ajp.2013.13010014

McGinty, E. E., Webster, D. W., Jarlenski, M., & Barry, C. L. (2014). News media framing of serious mental illness and gun violence in the United States, 1997-2012. *American Journal of Public Health*, *104*, 406-413. https://doi.org/10.2105/AJPH.2013.301557

Mechling, J. (2014). Boy scouts, the national rifle association, and the domestication of rifle shooting. *American Studies*, *53*(1), 5-25.

Melzer, S. (2012). *Gun crusaders: The NRA's culture war*. NYU Press.

Mencken, F. C., & Froese, P. (2019). Gun culture in action. *Social Problems*, *66*, 3-27. https://doi.org/10.1093/socpro/spx040

Merino, S. M. (2018). God and guns: Examining religious influences on gun control attitudes in the United States. *Religions*, *9*(6), 189. https://doi.org/10.3390/rel9060189

Metzl, J. M., & MacLeish, K. T. (2015). Mental illness, mass shootings, and the politics of American firearms. *American Journal of Public Health*, *105*, 240-249. https://doi.org/10.2105/AJPH.2014.302242

Miller, S. V. (2019). What Americans think about gun control: evidence from the general social survey, 1972–2016. *Social Science Quarterly*, *100*, 272-288. https://doi.org/10.1111/ssqu.12555

Miller, E., Tancredi, D. J., McCauley, H. L., Decker, M. R., Virata, M. C. D., Anderson, H. A., ... & Silverman, J. G. (2012). "Coaching boys into men": A cluster-randomized controlled trial of a dating violence prevention program. *Journal of Adolescent Health*, *51*, 431-438. https://doi.org/10.1016/j.jadohealth.2012.01.018

Myketiak, C. (2016). Fragile masculinity: social inequalities in the narrative frame and discursive construction of a mass shooter's autobiography/manifesto. *Contemporary Social Science*, *11*, 289-303. https://doi.org/10.1080/21582041.2016.1213414

Neuberg, S. L., Kenrick, D. T., & Schaller, M. (2011). Human threat management systems: Self-protection and disease avoidance. *Neuroscience & Biobehavioral Reviews*, *35*, 1042-1051. https://doi.org/10.1016/j.neubiorev.2010.08.011

Newman, B. J., & Hartman, T. K. (2019). Mass shootings and public support for gun control. *British Journal of Political Science*, *49*, 1527-1553. https://doi.org/10.1017/S0007123417000333

Nisbett, R.E., & Cohen, D. (1996). Culture of honor: The psychology of violence in the South. Boulder, CO: Westview Press.

Nosek, B. A., Hawkins, C. B., & Frazier, R. S. (2011). Implicit social cognition: From measures to mechanisms. *Trends in Cognitive Sciences*, *15*, 152-159. https://doi.org/10.1016/j.tics.2011.01.005

O'Brien, K., Forrest, W., Lynott, D., & Daly, M. (2013). Racism, gun ownership and gun control: Biased attitudes in US whites may influence policy decisions. *PloS one*, *8*, 1-10. https://doi.org/10.1371/journal.pone.0077552

O'Connor, E. C., Ford, T. E., & Banos, N. C. (2017). Restoring threatened masculinity: The appeal of sexist and anti-gay humor. *Sex Roles*, *77*, 567-580. https://doi.org/10.1007/s11199-017-0761-z

O'Neill, K. L. (2007). Armed citizens and the stories they tell: The National Rifle Association's achievement of terror and masculinity. *Men and Masculinities*, *9*, 457-475. https://doi.org/10.1177/1097184X05281390

Öhman, A., Flykt, A., & Esteves, F. (2001). Emotion drives attention: detecting the snake in the grass. *Journal of Experimental Psychology: General*, *130*, 466-478. https://doi.org/10.1037/0096-3445.130.3.466

Oraka, E., Thummalapally, S., Anderson, L., Burgess, T., Seibert, F., & Strasser, S. (2019). A cross-sectional examination of US gun ownership and support for gun control measures: sociodemographic, geographic, and political associations explored. *Preventive Medicine*, *123*, 179-184. https://doi.org/10.1016/j.ypmed.2019.03.021

Osterman, L. L., & Brown, R. P. (2011). Culture of honor and violence against the self. *Personality and Social Psychology Bulletin*, *37*(12), 1611-1623. https://doi.org/10.1177/0146167211418529

Parent, M. C., Kalenkoski, C. M., & Cardella, E. (2018). Risky business: Precarious manhood and investment portfolio decisions. *Psychology of Men & Masculinity*, *19*, 195-202. https://doi.org/10.1037/men0000089

Parkhill, M.R. & Ray, T.N. (2021). The role of masculinity in the perpetration of relationship violence. In T.K. Shackelford (Eds.), *The SAGE Handbook of Domestic Violence* (pp. 187-201). Thousand Oaks, California: SAGE Publications.

Pew Research Center (2017). America's complex relationship with guns. https://www.pewsocialtrends.org/wp-content/uploads/sites/3/2017/06/Guns-Report-FOR-WEBSITE-PDF-6-21.pdf. Accessed 19 Nov 2019.

Pew Research Center (2021). Key facts about Americans and guns. https://www.pewresearch.org/fact-tank/2021/09/13/key-facts-about-americans-and-guns/. Accessed 13 Sep 2021.

Pham, T. B., Schapiro, L. E., John, M., & Adesman, A. (2017). Weapon carrying among victims of bullying. *Pediatrics*, *140*. 1-7. https://doi.org/10.1542/peds.2017-0353

Pierre, J. M. (2019). The psychology of guns: risk, fear, and motivated reasoning. *Palgrave Communications*, *5*, 1-7. https://doi.org/10.1057/s41599-019-0373-z

Pinals, D. A., Appelbaum, P. S., Bonnie, R. J., Fisher, C. E., Gold, L. H., & Lee, L. W. (2015). Resource document on access to firearms by people with mental disorders. *Behavioral Sciences & The Law*, *33*, 186-194. https://doi.org/10.1002/bsl.2181

Popovic, D., Benabarre, A., Crespo, J. M., Goikolea, J. M., González-Pinto, A., Gutiérrez-Rojas, L., ... & Vieta, E. (2014). Risk factors for suicide in schizophrenia: systematic review and clinical recommendations. *Acta Psychiatrica Scandinavica*, *130*, 418-426. https://doi.org/10.1111/acps.12332

Ray, T. N., & Parkhill, M. R. (2020). Examining disgust and emotion regulation difficulties as components of aggression toward perceived gay men. *Psychology of Violence*, *10* 462-471. https://doi.org/10.1037/vio0000265

Ray, T.N. & Parkhill, M.R. (in press). Components of hostile masculinity and their associations with male-perpetrated sexual aggression toward women: A systematic review. *Trauma, Violence, & Abuse.* https://doi.org/10.1177/15248380211030224

Ray, T. N., Parkhill, M. R., & Cook, R. D. (2021). Bullying, masculinity, and gun-supportive attitudes among men: A path analysis testing the structural relationships between variables. *Psychology of Violence, 11*, 395-404. https://doi.org/10.1037/vio0000370

Rivera, L. M., & Dasgupta, N. (2018). The detrimental effect of affirming masculinity on judgments of gay men. *Psychology of Men & Masculinity*, *19*, 102. https://doi.org/10.1037/men0000074

Rozel, J. S., & Mulvey, E. P. (2017). The link between mental illness and firearm violence: implications for social policy and clinical practice. *Annual Review of Clinical Psychology*, *13*, 445-469. https://doi.org/10.1146/annurev-clinpsy-021815-093459

Rudman, L. A., & Fairchild, K. (2004). Reactions to counterstereotypic behavior: the role of backlash in cultural stereotype maintenance. *Journal of Personality and Social Psychology*, *87*, 157. https://doi.org/10.1037/0022-3514.87.2.157

Scaptura, M. N., & Boyle, K. M. (2021). Protecting Manhood: Race, Class, and Masculinity in Men's Attraction to Guns and Aggression. *Men and Masculinities*, *25*, 355-376. https://doi.org/10.1177/1097184X211023545

Sheeran, P., & Webb, T. L. (2016). The intention–behavior gap. *Social and Personality Psychology Compass*, *10*, 503-518. https://doi.org/10.1111/spc3.12265

Shepherd, S., & Kay, A. C. (2018). Guns as a source of order and chaos: Compensatory control and the psychological (dis) utility of guns for liberals and conservatives. *Journal of the Association for Consumer Research*, *3*, 16-26. http://dx.doi.org/10.1086/695761

Siegel, M. B., & Boine, C. C. (2020). The meaning of guns to gun owners in the US: the 2019 National Lawful Use of Guns Survey. *American Journal of Preventive Medicine*, *59*, 678-685. https://doi.org/10.1016/j.amepre.2020.05.010

Smith, R. M., Parrott, D. J., Swartout, K. M., & Tharp, A. T. (2015). Deconstructing hegemonic masculinity: The roles of antifemininity, subordination to women, and sexual dominance in men's perpetration of sexual aggression. *Psychology of Men & Masculinity*, *16*, 160-169. https://doi.org/10.1037/a0035956

Stark, E., & Sachau, D. (2016). Lake Wobegon's guns: Overestimating our gun-related competences. *Journal of Social and Political Psychology, 4*, 8-23. https://doi.org/10.5964/jspp.v4i1.464

Stark, D. E., & Shah, N. H. (2017). Funding and publication of research on gun violence and other leading causes of death. *JAMA*, *317*(1), 84-85. https://doi.org/10.1001/jama.2016.16215

Steadman, H. J., Monahan, J., Pinals, D. A., Vesselinov, R., & Robbins, P. C. (2015). Gun violence and victimization of strangers by persons with a mental illness: data from the MacArthur Violence Risk Assessment Study. *Psychiatric Services*, *66*, 1238-1241. https://doi.org/10.1176/appi.ps.201400512

Stretesky, P. B., & Pogrebin, M. R. (2007). Gang-related gun violence: Socialization, identity, and self. *Journal of Contemporary Ethnography*, *36*, 85-114. https://doi.org/10.1177/0891241606287416

Stone, M. H. (2015). Mass murder, mental illness, and men. *Violence and Gender*, *2*, 51-86. https://doi.org/10.1089/vio.2015.0006

Stroebe, W. (2016). Firearm availability and violent death: The need for a culture change in attitudes toward guns. *Analyses of Social Issues and Public Policy*, *16*, 7-35. https://doi.org/10.1111/asap.12100

Stroebe, W., Kreienkamp, J., Leander, N. P., & Agostini, M. (2021). Do Canadian and US American handgun owners differ?. *Canadian Journal of Behavioural Science*, *53*, 221-231. https://doi.org/10.1037/cbs0000243

Stroebe, W., Leander, N. P., & Kruglanski, A. W. (2017). Is it a dangerous world out there? The motivational bases of American gun ownership. *Personality and Social Psychology Bulletin*, *43*, 1071-1085. https://doi.org/10.1177/0146167217703952

Stroud, A. (2012). Good guys with guns: Hegemonic masculinity and concealed handguns. *Gender & Society*, *26*, 216-238. https://doi.org/10.1177/0891243211434612

Stroud, A. (2016). *Good guys with guns: the appeal and consequences of concealed carry*. UNC Press Books.

Swanson, J. W., McGinty, E. E., Fazel, S., & Mays, V. M. (2015). Mental illness and reduction of gun violence and suicide: bringing epidemiologic research to policy. *Annals of Epidemiology*, *25*, 366-376. https://doi.org/10.1016/ j.annepidem. 2014.03.004

Syrda, J. (2020). Spousal relative income and male psychological distress. *Personality and Social Psychology Bulletin*, *46*, 976-992. https://doi.org/10.1177/0146167219883611

Tabachnick, B. G. & Fidell, L. S. (2012). *Using multivariate statistics* (6th ed.). Boston, MA: Pearson.

Tenhundfeld, N. L., Parnes, J. E., Conner, B. T., & Witt, J. K. (2020). Development of a psychometrically valid gun attitude scale. *Current Psychology*, *39,* 279-286. https://doi.org/10.1007/s12144-017-9761-y

Thompson, E. H. & Pleck, J. H. (1986). The structure of male role norms. *American Behavioral Scientist*, *29*, 531-543. https://doi.org/10.1177/000276486029005003

Tonso, K. (2006). Not" getting some guns and doing some damage": Listening to teens and learning from a ragtime festival. *Educational Studies*, *39*, 102-123. https://doi.org/10.1207/s15326993es3902_2

Tonso, K. L. (2009). Violent masculinities as tropes for school shooters: The Montréal massacre, the Columbine attack, and rethinking schools. *American Behavioral Scientist*, *52*, 1266-1285. https://doi.org/10.1177/0002764209332545

Turchan, B., Zeoli, A. M., & Kwiatkowski, C. (2017). Reacting to the improbable: handgun carrying permit application rates in the wake of high-profile mass shootings. *Homicide Studies*, *21*, 267-286. https://doi.org/10.1177/1088767917699657

Turner, M. G., Phillips, M. D., Tigri, H. B., Williams, M. A., & Hartman, J. L. (2016). On the association between repeat bully victimizations and carrying a firearm: Evidence in a national sample. *International Journal of Offender Therapy and Comparative Criminology*, *60*, 871-896. https://doi.org/10.1177/0306624X15573547

Turner, J. C., & Reynolds, K. J. (2012). Self-categorization theory. *Handbook of Theories in Social Psychology*, *2*, 399-417. http://dx.doi.org/10.4135/9781446249222.n46

United States Census Bureau (2020). *Educational attainment in the United States: 2019.* Retrieved from https://www.census.gov/content/census/en/data/tables/2019/demo/educational-attainment/cps-detailed-tables.html

van Geel, M., Vedder, P., & Tanilon, J. (2014). Bullying and weapon carrying: A meta-analysis. *JAMA Pediatrics*, *168*, 714-720. doi:10.1001/jamapediatrics.2014.213

Vandello, J. A., & Bosson, J. K. (2013). Hard won and easily lost: A review and synthesis of theory and research on precarious manhood. *Psychology of Men & Masculinity*, *14*, 101-113. https://doi.org/10.1037/a0029826

Vandello, J. A., Bosson, J. K., Cohen, D., Burnaford, R. M., & Weaver, J. R. (2008). Precarious manhood. *Journal of Personality and Social Psychology*, *95*, 1325-1339. https://doi.org/10.1037/a0012453

Wallace, L. N. (2015). Responding to violence with guns: Mass shootings and gun acquisition. *The Social Science Journal*, *52*, 156-167. https://doi.org/10.1016/j.soscij.2015.03.002

Wamser-Nanney, R., Nanney, J. T., Conrad, E., & Constans, J. I. (2019). Childhood trauma exposure and gun violence risk factors among victims of gun violence. *Psychological Trauma: Theory, Research, Practice, and Policy*, *11*, 99-106. https://doi.org/10.1037/tra0000410

Warner, T. D., & Thrash, C. R. (2020). A matter of degree? Fear, anxiety, and protective gun ownership in the United States. *Social Science Quarterly*, *101*, 285-308. https://doi.org/10.1111/ssqu.12735

Warner, T. D., Tober, T. L., Bridges, T., & Warner, D. F. (2021). To Provide or Protect? Masculinity, Economic Precarity, and Protective Gun Ownership in the United States. *Sociological Perspectives, 65,* 97-118. https://doi.org/10.1177/0731121421998406

Watts, S. J. (2019). Gun carrying and gun victimization among American adolescents: A fresh look at a nationally representative sample. *Victims & Offenders*, *14*, 1-14. https://doi.org/10.1080/15564886.2018.1536005

Weaver, J. R., Vandello, J. A., & Bosson, J. K. (2013). Intrepid, imprudent, or impetuous? The effects of gender threats on men's financial decisions. *Psychology of Men & Masculinity*, *14*, 184-191. https://doi.org/10.1037/a0027087

Wertz, J., Azrael, D., Hemenway, D., Sorenson, S., & Miller, M. (2018). Differences between new and long-standing US gun owners: results from a national survey. *American Journal of Public Health*, *108*, 871-877. https://doi.org/ 10.2105/ AJPH.2018.304412

Wolfson, J. A., Teret, S. P., Azrael, D., & Miller, M. (2017). US public opinion on carrying firearms in public places. *American Journal of Public Health*, *107*, 929-937. https://doi.org/10.2105/AJPH.2017.303712

Wolpert, R. M., & Gimpel, J. G. (1998). Self-interest, symbolic politics, and public attitudes toward gun control. *Political Behavior*, *20*, 241-262. https://doi.org/10.1023/A:1024814624070

Wozniak, K. H. (2017). Public opinion about gun control post–Sandy Hook. *Criminal Justice Policy Review*, *28*, 255-278. https://doi.org/10.1177/0887403415577192

Yamane, D. (2017). The sociology of US gun culture. *Sociology Compass*, *11*, 1-10. https://doi.org/10.1111/soc4.12497

Yelderman, L. A., Joseph, J. J., West, M. P., & Butler, E. (2019). Mass shootings in the United States: Understanding the importance of mental health and firearm considerations. *Psychology, Public Policy, and Law*, *25*, 212-223. https://doi.org/10.1037/law0000200