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Affirming cultural values for health: The case of firearm restriction in suicide prevention

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1. Introduction

Sustaining a healthy and fulfilling life is a culturally rooted endeavor. As mental and behavioral health research globalizes and gradually sheds some of its colonial and ethnocentric bias, models of health and wellness have increasingly recognized the importance of encountering diverse peoples on their own terms. Prominent recent examples investigate the emic manifestations of mental disorders through a cultural phenomenology of psychiatric syndromes (Kirmayer et al., 2017), decolonize mental health care strategies for indigenous clients (Lewis et al., 2018), and examine methods of facilitating cultural solidarity for health promotion (Berezin and Lamont, 2016). Despite many significant advances, however, substantial challenges remain to realize a robust science of culture and health (Kagawa Singer, 2012; Kagawa Singer et al., 2016).

The cultural dynamics of health communication represent a particularly underexplored aspect of health promotion (Kreuter and McClure, 2004). Health-related messages – be they embedded in public health campaigns or (non)verbal interactions between patients and providers – are never culturally impartial. As Kagawa Singer et al. (2016) remind us in their seminal statement on culture and health, "All human behavior is culturally informed" (p. 237).

One manner in which behavior is culturally informed is through values – those conceptualizations about what is important that exemplify a social entity's desired life goals (Schwartz, 1994). Recent work by Dabovich et al. (2019) demonstrates that values provide clear guidance for health-related behavior, and recommend therapeutic approaches that help individuals bring to mind important personal values to facilitate positive health outcomes. The degree to which cultural values are shared between social actors in health-related interactions may also matter a great deal. Indeed, a sense of shared cultural values engenders trust (Siegrist et al., 2000; Twyman et al., 2008). In turn, trust between patients and providers, as well as between patients and medical institutions, is associated with a variety of positive health outcomes, including increased adherence to medication regimens and following physicians' advice for behavioral change (Birkhauer et al., 2017).

The present study assesses the direct influence of shared values on health by examining the effects of culturally competent messaging on the likelihood of engaging in suicide prevention behaviors. A culture-specific approach has been increasingly adopted in suicide prevention efforts in indigenous communities (Lawson-Te Aho and Liu, 2010; Wexler and Gone, 2012), but has not been integrated more broadly into efforts directed at all communities and cultural groups that are at high risk of suicide (Betz and Wintemute, 2015). In our research, we focus on developing communication tools for individuals and families who own firearms for two reasons. First, because they are at higher risk for self-harm, and second, because it is important to bridge a thoroughly challenging cultural divide in the US – between those who view firearms as a public health hazard and those who view firearms as integral to an American way of life.

Approximately 50% of suicide deaths in the US occur using a firearm (CDC, 2015). The lethality of firearms makes them especially dangerous during periods of suicidal ideation (Chapdelaine et al., 1991;

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Spicer and Miller, 2000) and there is a strong association between the availability of firearms in households and death by suicide (Anestis and Anestis, 2015). Limiting access to lethal means, including safe gun storage practices, is one of the few empirically supported ways to reduce suicide rates (Grossman et al., 2005; Miller et al., 2012; Valenstein et al., 2019). Yet, reducing access to firearms as a suicide prevention strategy is limited in the US today because of the heated political debate over gun restrictions and because of longstanding cultural values among a substantial portion of the population that promote firearm ownership (Caine, 2013; Celinska, 2007; Keyes et al., 2019). Indeed, prior research has shown that discussing guns in general, and restrictions on gun access in particular, is extremely contentious (Kahan and Braman, 2003). Conversations about firearms between patients and providers that are not culturally sensitive can trigger defensiveness, alienation, and dishonesty (Marino et al., 2016).

In prior research, we identified a cultural framework to discuss voluntarily limiting gun access in situations where an individual was at risk of suicide without triggering animosity fueled by the highly contentious national discourse surrounding gun restrictions (Marino et al., 2016). From this cultural analysis, we derived a suicide prevention message that focused on voluntary restriction of firearms and was consistent with the values of gun owning communities. Our experimental work then found that relative to a "standard" suicide prevention message containing guidelines from the National Suicide Prevention Lifeline, firearm owners who were also exposed to a message that affirmed their right to bear firearms reported greater likelihood of temporarily restricting access to firearms for a friend, family member, or oneself (Marino et al., 2018). This effect was moderated by attitudes toward gun ownership and political orientation, such that individuals who displayed stronger gun rights advocacy and who were more politically conservative were *more* likely to express a willingness to restrict access to firearms following the additional firearm culture-specific message.

The present article examines additional variables from the same extensive experimental dataset to determine: (1) the degree to which the effects of a firearm culture-specific message may generalize to other significant behaviors, such as taking specific steps to restrict access to firearms (e.g. locking up guns in a safe) and talking about depression with one's physician; (2) whether these effects on additional behaviors are moderated by gun rights advocacy and political orientation; and (3), whether any observed moderating effects of gun rights advocacy and political orientation are *mediated* by the extent to which message recipients experience the message as an affirmation of their personal values. This last analysis, of mediated moderation, is a key evaluation of the mechanism by which we expect that cultural value affirmation may foster positive health behaviors.

In highly politicized and contentious domains, such as debates over gun control and gun rights in the US, attitudes serve important self- and value-expressive functions, acting as vehicles for conveying ingroup identity and core ingroup values. In this sense, rather than being solely an expression of one's logical deliberation on the lethality of firearms and the risk of self-harm, an individual's attitude about appropriate firearm-related behavior during a period of suicidality may function as a display of loyalty to and membership in an important group – a process comparable to Hillman's (2010) concept of expressive rationality (see also Kahan, 2013). From this perspective, health behaviors may most effectively be changed when they are construed as deep expressions of one's own cultural values.

In our tests of mediated moderation, we hypothesized that the firearm-specific message would result in greater likelihood of engaging in suicide prevention behaviors for gun rights advocates and for political conservatives because the values expressed in the message would be perceived as similar to their own. This reasoning is consistent with Cohen's (2003) discussion of the persuasion process via political identity matching effects: He argues that "what is critical is social meaning – the perceived 'goodness of fit' between the attitude object and socially shared values … defined by the judgments of other individuals who are trusted to share one's moral allegiances – that is, individuals who share one's social identity" (p. 809). Thus, rather than confronting firearm owners with an admonition that "guns are dangerous," we tested the effects of framing firearm restriction behaviors during periods of suicidality as simply a coherent extension of one's identity as a proud and responsible firearm owner.

2. Method

2.1. Participants

A total of 394 participants who owned firearms were sampled from the Amazon MTurk system and completed a short 10–15 min survey in exchange for $1.00. MTurk is an online labor market that is widely utilized by survey researchers in psychology and other social sciences. US samples obtained via MTurk are demographically diverse, representative of the US population, and display strong psychometric properties (e.g. test-retest reliability, experimental replication) (Berinsky et al., 2012; Buhrmester et al., 2011). The sample obtained for this study was relatively balanced in gender (54.3% male, 45.7% female); predominantly White/Caucasian (82.5% White/Caucasian, 7.4% Black/African American, 4.8% Latino/Hispanic, 3.8% Asian American, 0.5% Pacific Islander; 1.0% American Indian/Alaska Native); diverse in age (M = 35.55, SD = 11.05); diverse in highest educational attainment (0.5%, some high school, 10.9%, high school diploma or GED, 35.5%, some college or associates degree, 38.6%, bachelor's degree, 14.4%, master's degree or higher); and representative of the U.S. population in household income (12.2%, less than $25,000; 31.0% from $25,000 to $49,999; 28.8% from $50,000 to $74,999; 13.2% from $75,000 to $99,999; 14.8%, $100,000 or more). None of these demographic characteristics were significantly different between conditions of the experiment.

A small number of participants (n = 13) completed only a few scale items from the beginning of the survey and were deleted from all subsequent analyses. The remaining 394 participants completed all items analyzed for this article. The study sample reported here was drawn from a larger sample of 817 participants that contained one additional experimental condition and one additional control condition (Marino et al., 2018). All analyses presented in the current article have not been previously published. Data collection occurred in 2017 and all protocols for this investigation were reviewed and approved by the Institutional Review Board at Oregon State University.

3. Materials and procedures

Overview. Participants completed an anonymous survey administered via the Qualtrics platform containing four measures: (1) political orientation; (2) gun rights attitudes; (3) salient value similarity; and (4) suicide prevention behavioral likelihood. After completing the first two measures, participants were randomly assigned to read through one of two different suicide prevention messages: (1) standard vs. (2) standard-plus-gun culture. All measures and the experimental manipulation are described below.

Firearm Ownership. Before proceeding to the first measure, participants were reminded of the firearm ownership requirement and were instructed to verify their firearm ownership on the first page of the survey. Near the end of the survey, individuals were asked to provide an open-ended description of their primary reasons for using firearms. Three respondents were deleted from all analyses as they indicated that they did not own a firearm at this point. All other respondents gave valid responses (e.g. hunting, personal protection, etc.).

Measure 1: Political Orientation. Following the general instructions and firearm ownership verification page at the beginning of the survey, participants completed an eight-item assessment of *political orientation* (Nail et al., 2009). Instructions requested that participants indicate the

extent to which they were in favor of or against "each of eight policies, practices, and political groups," on a scale ranging from 1 *strongly against* to 7 *strongly in favor*. Each participant received a *political orientation* score, such that higher scores reflected a more conservative political orientation. The reliability of the scale was reasonably high across participants ($\alpha = 0.81$).

Measure 2: Gun Rights Attitudes. Next, participants completed factor 1 of the 3-dimensional Attitudes Toward Guns Scale (ATGS) (Branscombe et al., 1991), which asked individuals to indicate the extent to which they agreed with a series of statements about the right of the American public to own guns. Responses were recorded on a scale ranging from 1 *strongly disagree* to 7 *strongly agree*. Each participant received a *gun rights* score, calculated as the average response to these items, with higher numbers reflecting a stronger belief in gun rights. The set of gun rights items had very high reliability across participants ($\alpha = 0.92$).

Experimental Manipulation. Next, participants were randomly assigned to receive one of two different messages: a standard suicide prevention message (*standard*) vs. a standard suicide prevention plus firearm culture message (*standard-plus-gun culture*) (see Marino et al., 2018). All participants were instructed to "Please read through the following public health message before responding to the questions that follow." In the *standard* condition, participants then read through material from the National Suicide Prevention Lifeline's information sheet and wallet card on how to recognize suicide warning signs and take action to prevent suicide. Participants in the *standard-plus-gun culture* condition read through the same standard message followed by a message designed to respect the values and rights of gun owners – derived from earlier published research on interviews conducted with gun owners and gun rights advocates (Marino et al., 2018). This message emphasized the importance of protecting second amendment rights detailed in the US Constitution at the same time as protecting oneself and one's friends and family members from unnecessary harm.

Measure 3: Salient Value Similarity. Immediately after reading the suicide prevention message, participants completed a 7-item measure of salient value similarity. This measure instructed participants to indicate their level of agreement with the original 5 items from Siegrist et al. (2000) (e.g. "The message above contains values that are important to me," "The message above comes from someone who thinks in a similar way as me") as well as two additional items utilized by Wolsko et al. (2016) in their work on the value-mediated effects of moral framing ("This message reflects my group's values," and "This message feels like it comes from 'my people' people). Participants responded to these items on a scale ranging from 1 *strongly disagree* to 7 *strongly agree*. Each participant received a *salient value similarity* score which was calculated as the average level of agreement across the 7 items, with higher numbers indicating greater perceived value similarity. The set of items had very high reliability across participants ($\alpha = 0.95$).

Measure 4: Suicide Prevention Behavioral Likelihood. Participants next indicated how likely they would be to engage in several behaviors related to mental health and suicide prevention. Assessments of help seeking intentions for persons at risk of suicide have been utilized in past research (e.g. Aldrich et al., 2014; Carlton and Deane, 2000; Halgin et al., 1987; Maine et al., 2001). The items in the present study retained the same format as those utilized by Aldrich et al. (2014) – asking about the likelihood of engaging in various suicide prevention behaviors – but substituted specific behavioral intention phrasing developed through our discussions with primary care physicians and firearm owners (Marino et al., 2016, 2018).

We examined two categories of behaviors related to suicide prevention. The first category assessed the likelihood of locking up guns and/or ammunition if a friend, family member, or oneself demonstrated warning signs of suicide. For the hypothetical family member and friend experiencing suicidal ideation, participants indicated how likely they would be to engage in each of 3 behaviors: "keep locks on all of their/your guns," "remove ammunition from their/your guns and store guns and ammunition separately," and "keep all of their/your guns and ammunition stored in a safe." Participants indicated the likelihood of engaging in three related behaviors if they personally were contemplating suicide: "place locks on all your guns and give someone else the key," "remove ammunition from your guns and store your guns and ammunition separately," and "lock-up your guns and ammunition in a safe that someone else controls access to." Responses to all items were provided on a 7-point scale ranging from 1 *extremely unlikely* to 7 *extremely likely*. The neutral point on the scale (= 4) was designated as *50/50* (equally likely as unlikely). Each participant then received 2 different *locking up firearms* scores: one score averaging across responses for *family and friends* ($\alpha = .90$), and one score averaging across the items for *self* ($\alpha = 0.92$), constituting their willingness to take steps to lock-up firearms for a family member or friend, and for oneself, with higher numbers indicating greater likelihood.

The second category of items assessed the likelihood of talking to a friend, family member, or physician if warning signs of suicide were present. For the hypothetical family member and friend experiencing suicidal ideation, participants indicated how likely they would be to engage in each of 2 behaviors: "talk with them about their depression," and "talk with your doctor about what you should do to help them." Participants indicated the likelihood of engaging in two similar behaviors if they personally were contemplating suicide: "talk with a friend or family member about your depression," and "ask your doctor for help." Responses to all items were again provided on a 7-point scale ranging from 1 *extremely unlikely* to 7 *extremely likely*. Each participant then received 2 different *communicating and asking for help* scores: one score averaging across responses for *family and friends* ($\alpha = .76$) and one score averaging across responses for *self* ($\alpha = 0.79$) constituting their willingness to take steps to communicate and ask for help if a family member or friend, and if oneself was suicidal, with higher numbers indicating greater likelihood.

4. Results

The means for each dependent variable overall and as a function of condition are presented in Table 1. Relative to those who received the *standard* message, participants who received the *standard-plus-gun culture* message reported significantly higher likelihoods of locking up firearms to protect oneself and a friend or family member. Also relative to those in the *standard* condition, participants in the *standard-plus-gun culture* condition reported significantly higher likelihoods of communicating and asking for help in order to protect oneself and a friend or family member. Across message conditions, participants reported greater likelihood of locking up firearms for a family member or friend than for oneself, as well as greater likelihood of communicating and asking for help for a family member or friend than for oneself.

Zero-order correlations between political orientation, gun rights attitudes, salient value similarity, and all four behavioral intentions measures are presented in Table 2. Behavioral intentions intercorrelations were moderate-to-strong. Political orientation and gun rights attitudes were both weakly correlated or uncorrelated with behavioral intentions; whereas salient value similarity had moderate and positive associations with all measures of behavioral intentions.

4.1. Moderation by gun rights attitudes and political orientation

In our next set of analyses, we examined the extent to which the *standard-plus-gun culture* message, relative to the *standard* message, was particularly effective in increasing the likelihood of engaging in suicide prevention behaviors for individuals who were more supportive of gun rights and more politically conservative. These moderator analyses were conducted via a series of multiple regressions in which behavioral intentions scores were regressed onto the given moderator (*gun rights* or *political orientation*), condition (contrast-coded), and the moderator × condition interaction (calculated as the product of the

Table 1
Means for suicide prevention behavioral intentions, moderators and mediator by message condition.

Variable	Message Condition		Total (n = 394)
	Standard (n = 190)	Standard plus gun culture (n = 204)	
Locking up firearms			
Family member or friend	6.09	6.33	6.21
Self	5.06	5.64	5.34
Communicating and asking for help			
Family member or friend	5.65	5.87	5.76
Self	5.08	5.62	5.34
Political orientation	3.64	3.63	3.63
Gun rights attitudes	6.00	6.09	6.04
Salient value similarity	5.30	5.54	5.41

Note. Behavioral intention likelihoods are represented on the original 1 *extremely unlikely* to 7 *extremely likely* scale. All means for *family member or friend* are significantly different between message conditions at $p < .05$. All means for *self* are significantly different between message conditions at $p < .001$. Across message conditions (total column), participants reported greater likelihood of locking up firearms for a *family member or friend* than for *self,* $t(393) = 11.97$, $p < .001$; as well as greater likelihood of communicating and asking for help for a *family member or friend* than for *self,* $t(393) = 6.29$, $p < .001$. Political orientation, gun rights attitudes, and salient value similarity are represented on the original 7-point scales described in the Method section. Salient value similarity was significantly greater in the standard-plus-gun culture condition, relative to the standard condition, $t(392) = -2.29$, $p = .023$. Political orientation and gun rights attitudes were not different between conditions.

moderator and the condition contrast code).

Behavioral intentions scores for *family member or friend* and for *self* were fairly highly intercorrelated for both *locking up firearms* and for *communicating and asking for help* (see Table 2). In the service of parsimony, we therefore created two composite indices of behavioral intentions by taking the mean of the two scores (*family member or friend* and *self*) for each participant for each behavior type, with higher numbers reflecting greater likelihood of *locking up firearms* and of *communicating and asking for help*. As the sample skewed slightly liberal on political orientation ($M = 3.63$, $SD = 1.21$) we coded this moderator dichotomously (−1 = liberal, defined as political orientation score of 4 or less; and +1 = conservative, defined as political orientation score of greater than 4), rather than continuously in order to distinguish between those who clearly identified as politically conservative vs. liberals and moderates. Finally, as the sample was quite in favor of gun rights on average ($M = 6.04$, $SD = 1.04$), we treated this moderator continuously and used standard scores in the regression analyses' moderator and product terms.

Locking up Firearms. Two regression models were conducted to predict intentions for *locking up firearms*. The first model indicated a significant gun rights by condition interaction, $b = .23$, $SE = 0.06$, $t(391) = 4.14$, $p < .001$. This interaction is depicted in Fig. 1 and demonstrates that the effect of condition on likelihood of locking up firearms was greater for those who were more strongly in favor of gun rights than for those who were more moderately in favor of gun rights. The second model indicated a significant political orientation by condition interaction, $b = .15$, $SE = 0.06$, $t(391) = 2.59$, $p = .01$. This interaction is depicted in Fig. 2 and demonstrates that the effect of condition on likelihood of locking up firearms was greater for those who were more politically conservative, relative to liberals.

Simple slopes analyses conducted within gun rights attitudes indicated that individuals with stronger gun rights attitudes (+1 *SD* on gun rights attitudes) displayed much higher likelihood of locking up guns in the standard-plus-gun culture condition, relative to the standard condition, $b = .43$, $p < .001$. There were no differences in locking up guns scores for individuals with more moderate gun rights attitudes (−1 *SD* on gun rights attitudes) between the two conditions, $b = -0.03$, $p = .71$ (see Fig. 1).

Simple slopes analyses conducted within condition indicated significantly greater likelihood of locking up guns for strong gun rights supporters (relative to more moderate supporters) in the standard-plus-gun culture condition, $b = .34$, $p < .001$, but no differences in likelihood between strong vs. moderate gun rights supporters in the standard condition, $b = -0.12$, $p = .12$ (see Fig. 1).

Simple slopes analyses conducted within political orientation indicated that conservatives (+1 on political orientation) displayed much higher likelihood of locking up guns in the standard-plus-gun culture condition, relative to the standard condition, $b = .31$, $p < .001$. There were no differences in locking up guns scores for liberals (−1 on political orientation) between the two conditions, $b = 0.06$, $p = .31$ (see Fig. 2).

Simple slopes analyses conducted within condition indicated significantly lower locking up guns scores for conservatives (relative to

Table 2
Correlations between suicide prevention behavioral intentions and proposed moderating and mediating variables (across conditions, n = 394).

	Locking up Firearms		Communicating and asking for help		Political Orientation	Gun Rights Attitudes	Salient Value Similarity
	Family member or friend	Self	Family member or friend	Self			
Locking up Firearms							
Family member or friend	–						
Self	.47***	–					
Communicating and asking for help							
Family member or friend	.52***	.38***	–				
Self	.26***	.58***	.51***	–			
Political orientation	-.12*	-.08	.00	-.01	–		
Gun rights attitudes	.15**	.00	.18***	.15**	.41***	–	
Salient value similarity	.34***	.32***	.31***	.31***	.02	.22***	–

*$p < .05$.
**$p < .01$.
***$p < .001$.

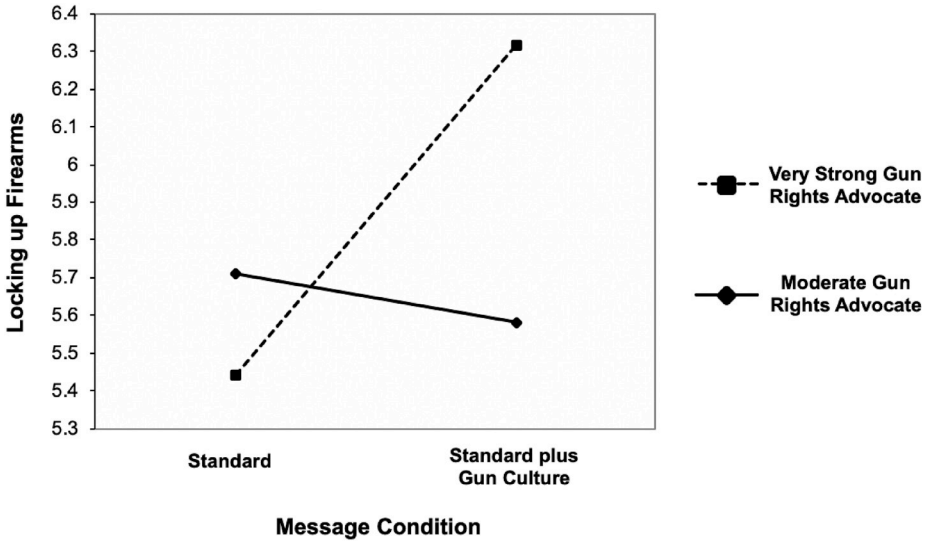

Fig. 1. Effects of gun rights attitudes and message condition on likelihood of locking up firearms when a friend, family member or oneself is at risk of suicide. Values for gun rights attitudes are one standard deviation above (strong) and below (moderate) the mean. Locking up firearms scores are estimated from specified regression models and represented on the original 1 *extremely unlikely* to 7 *extremely likely* scale for that variable.

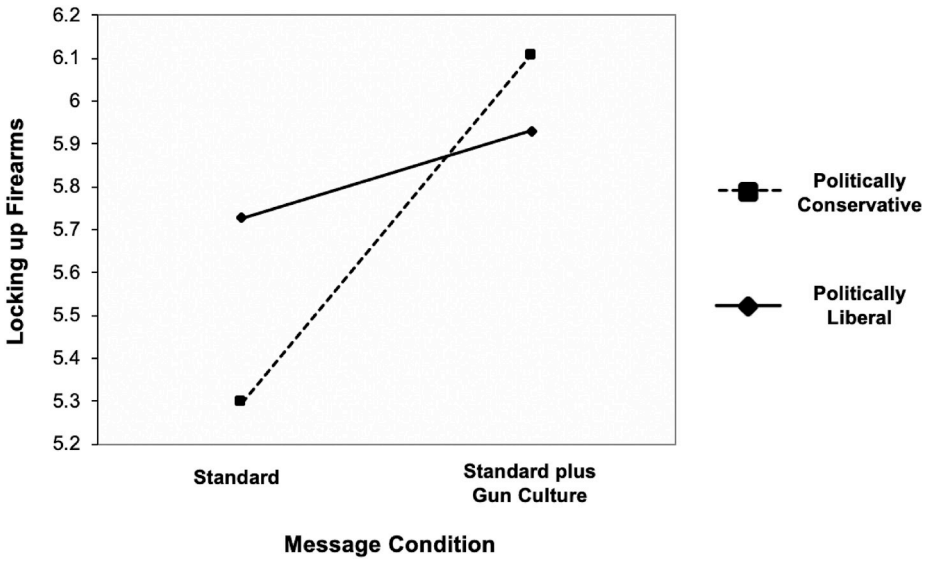

Fig. 2. Effects of political orientation and message condition on likelihood of locking up firearms when a friend, family member or oneself is at risk of suicide. Values for political orientation are defined as −1 for liberals and +1 for conservatives (see Results section). Locking up firearms scores are estimated from specified regression models and represented on the original 1 *extremely unlikely* to 7 *extremely likely* scale for that variable.

liberals) in the standard condition, $b = -.22$, $p = .006$, but no differences in likelihood between conservatives and liberals in the standard-plus-gun culture condition, $b = 0.09$, $p = .26$ (see Fig. 2).

Communicating and Asking for Help. In the two regression models predicting *communicating and asking for help*, findings indicated a significant gun rights by condition interaction, $b = .14$, $SE = 0.05$, $t(391) = 2.80$, $p = .005$, and a marginally significant political orientation by condition interaction, $b = 0.10$, $SE = 0.06$, $t(391) = 1.88$, $p = .06$. These interactions, depicted in Figs. 3 and 4, demonstrate that the effect of condition on likelihood of communicating and asking for help was significantly stronger for those who were more in favor of gun rights and marginally stronger for conservatives.

Simple slopes analyses conducted within gun rights attitudes indicated that individuals with stronger gun right attitudes (+1 *SD* on gun rights attitudes) displayed much higher likelihood of communicating and asking for help in the standard-plus-gun culture condition, relative to the standard condition, $b = .30$, $p < .001$. There were no differences in communicating and asking for help scores for individuals with more moderate gun rights attitudes (−1 *SD* on gun rights attitudes) between the two conditions, $b = 0.01$, $p = .90$ (see Fig. 3).

Simple slopes analyses conducted within condition indicated greater likelihood of communicating and asking for help among strong supporters of gun rights in the standard-plus-gun culture condition, $b = .36$, $p < .001$, but no differences in likelihood between strong vs. moderate gun rights supporters in the standard condition, $b = 0.07$, $p = .34$ (see Fig. 3).

Simple slopes analyses conducted within political orientation indicated that conservatives (+1 on political orientation) displayed much higher likelihood of communicating and asking for help in the standard-plus-gun culture condition, relative to the standard condition, $b = .30$, $p < .001$. There were no differences in communicating and asking for help scores between liberals in the two conditions, $b = 0.10$, $p = .22$ (see Fig. 4).

Simple slopes analyses conducted within condition indicate greater likelihood of communicating and asking for political conservatives in the standard-plus-gun culture condition, $b = 0.15$, $p = .021$, but no differences in likelihood between conservatives and liberals in the standard condition, $b = -0.062$, $p = .33$ (see Fig. 4).

4.2. Mediated moderation by salient value similarity

The final step in the analyses was to examine salient value similarity as a mediator of the moderating effects detailed above. That is, we wanted to determine if variability in the experience of feeling as if "your people were talking to you" (salient value similarity) mediated the tendency for stronger gun rights advocates and more conservative

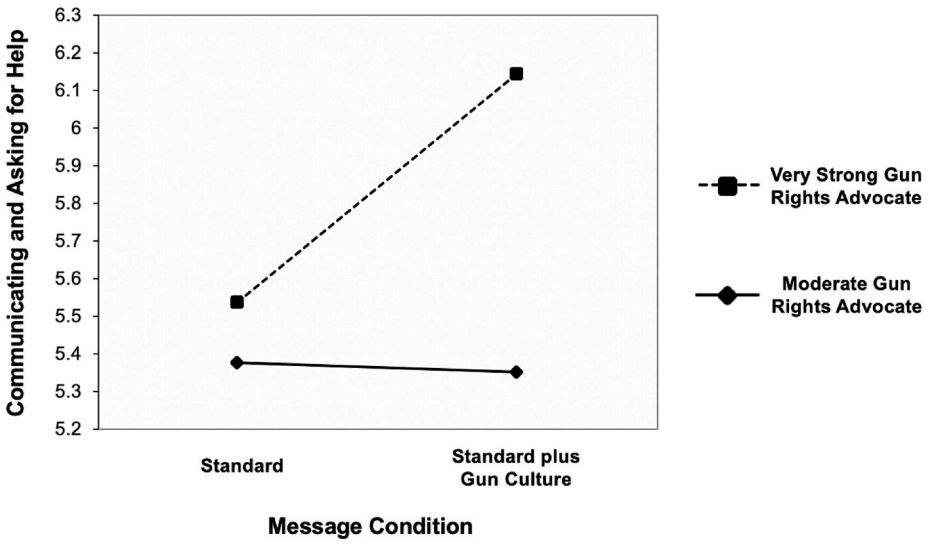

Fig. 3. Effects of gun rights attitudes and message condition on likelihood of communicating and asking for help when a friend, family member or oneself is at risk of suicide. Values for gun rights attitudes are estimated from specified regression models at one standard deviation above (strong) and below (moderate) the mean. Communicating and asking for help scores are estimated from specified regression models and represented on the original 1 *extremely unlikely* to 7 *extremely likely* scale for that variable.

individuals to respond so differently to the message conditions. Four separate models were estimated using Hayes (2013, 2016) PROCESS bootstrapping macro with 10,000 iterations to test: the indirect effect of the gun rights attitudes by message condition interaction through salient value similarity on locking up guns (Model 1) and on communicating and asking for help (Model 2); and the indirect effect of the political orientation by message condition interaction through salient value similarity on locking up guns (Model 3) and on communicating and asking for help (Model 4). In these models, salient value similarity was standardized, and all other variables were treated as described in the models of moderation. Below, we report the total, direct, and indirect effects of the interactions on each DV.

In the analysis predicting locking up guns with the gun rights attitudes by condition interaction (Model 1), the interaction's significant effect in the simple moderation model (Total effect: $b = 0.23$, $SE = 0.06$, $t = 4.14$, $p < .001$) was reduced after including salient value similarity in the model (Direct effect: $b = 0.14$, $SE = 0.06$, $t = 2.49$, $p = .01$). The interaction's indirect effect was significant ($b = 0.02$, $SE = 0.06$, 95% CI [0.05, 0.14]). Because zero was not in the 95% confidence interval, the indirect effect of the interaction on locking up guns via value similarity was significantly different from zero at $p < .05$, thus establishing mediated moderation.

In the analysis predicting communicating and asking for help with the gun rights attitudes by condition interaction (Model 2), the interaction's significant effect in the simple moderation model (Total effect: $b = 0.14$, $SE = 0.05$, $t = 2.80$, $p = .005$) was reduced after including salient value similarity in the model (Direct effect: $b = 0.07$, $SE = 0.05$, $t = 1.27$, $p = .20$). The interaction's indirect effect was significant ($b = 0.08$, $SE = 0.02$, 95% CI [0.04, 0.12]), establishing mediated moderation.

In the analysis predicting locking up guns with the political orientation by condition interaction (Model 3), the interaction's significant effect in the simple moderation model (Total effect: $b = 0.15$, $SE = 0.06$, $t = 2.59$, $p = .01$) was reduced after including salient value similarity in the model (Direct effect: $b = 0.10$, $SE = 0.06$, $t = 1.81$, $p = .07$). The interaction's indirect effect was significant ($b = 0.05$, $SE = 0.02$, 95% CI [0.01, 0.10]), establishing mediated moderation.

In the analysis predicting communicating and asking for help with the political orientation by condition interaction (Model 4), the interaction's marginally significant effect in the simple moderation model (Total effect: $b = 0.10$, $SE = 0.06$, $t = 1.88$, $p = .06$) was reduced after including salient value similarity in the model (Direct effect: $b = 0.06$, $SE = 0.05$, $t = 1.11$, $p = .27$). The interaction's indirect effect was significant ($b = 0.05$, $SE = 0.02$, 95% CI [0.01, 0.09]), establishing mediated moderation.

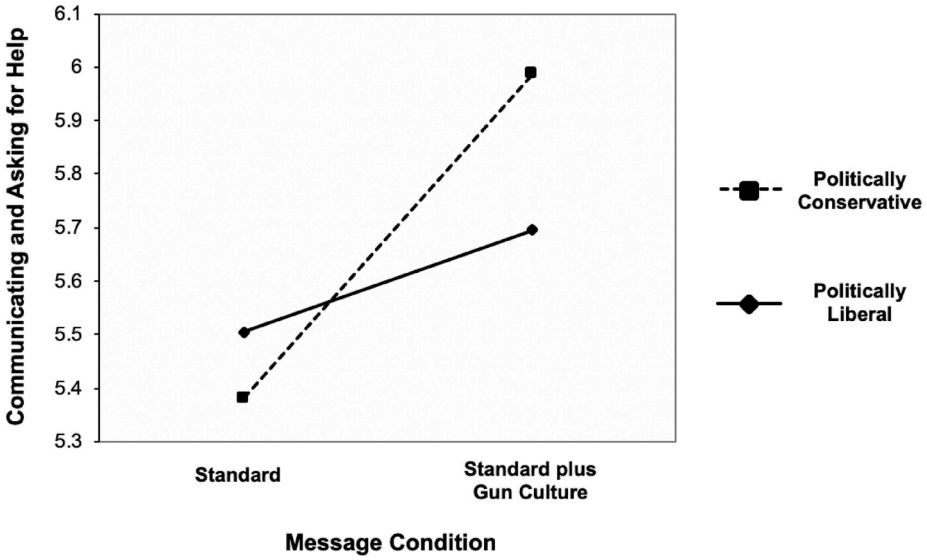

Fig. 4. Effects of political orientation and message condition on likelihood of communicating and asking for help when a friend, family member or oneself is at risk of suicide. Values for political orientation are defined as −1 for liberal and +1 for conservative (see Results section). Communicating and asking for help scores are estimated from specified regression models and represented on the original 1 *extremely unlikely* to 7 *extremely likely* scale for that variable.

5. Discussion

Communication strategies that affirm the cultural values of a target audience may have positive influences on health behavior. In the current experiment, presenting firearm owners with the combination of general suicide prevention guidelines and a firearm culture-specific appeal resulted in greater likelihoods of locking up firearms and communicating and asking for help in order to protect oneself or others from self-harm (see Table 1). The effect of this culture-specific message on behavioral likelihood was greater for individuals who more strongly supported gun rights and who more strongly identified as politically conservative (see Figs. 1–4). In turn, these moderating effects were mediated by the degree to which individuals perceived that the values in the health message were similar to their own.

The observed mediated moderation effects demonstrate the process by which including important audience-relevant cultural values in health messaging may promote health behaviors. As Kahan (2013) illustrates, people frequently make decisions in a manner consistent with affirming aspects of their identity and worldview. This process can also be seen as part of a more general motivation for consistency that has been empirically observed in psychology for decades across many domains of human social behavior (Pyszczynski et al., 1997); and, notably in the present context, appears to be heightened under conditions in which individuals are made aware of their own mortality (Friedman and Arndt, 2005). In this way, a particular health behavior is more likely to occur if the patient can view the behavior as consistent with their sense of identity, or, in Antonovsky's (1993) terminology, coherent with one's personal sense of meaning. Health behaviors are then experienced as issuing forth naturally from one's own cultural values and comprehensible worldview, rather than as dictated from an existentially alien external authority.

Findings from the present work have clear implications for the quality of patient-physician interactions. Recent data indicate that 64% of all people who die by suicide have visited their primary care physician within a year of taking their life (Ahmedani et al., 2014). Because primary care practices are well positioned to provide screening for mental health and suicide risk, interventions directed toward voluntarily reducing access to firearms that are employed in these settings may have particular success in lowering rates of suicide in the US (Simonetti et al., 2018). Data from this experiment, as well as our previous work, indicates that individuals who receive the firearm culture-specific message were not only willing to engage in greater firearm restriction during periods of suicidality, but were also more willing to be open and engaged with their physician about firearms, and likely to ask for help about suicide risk and depression in general. We are currently in the process of developing and testing the efficacy of physician training materials that provide templates for how to discuss firearm ownership in a non-threatening way with patients at risk of suicide.

5.1. Limitations

As we pursue these training protocols, we are aware that the generalizability of findings from the present experiment is limited by the fact that the firearm culture message we developed was largely derived from the cultural values expressed by White American firearm owners in our geographic region. While recent national survey data estimate that 76% of all adult firearm owners in the US are White (Pew Research Center, 2017), the values present in our messaging and the responses from our largely White sample do not necessarily represent those of other gun owners across a variety of demographics. It is important for future work to address the heterogeneity of cultural attitudes about gun restriction in order to tailor health messages more accurately, and, ideally, to craft communication tools that are inclusive and affirming for a broad range of cultural subgroups. The present message serves as an important starting point for this effort, however, as it clearly resonated with and influenced an array of behavioral intentions among a large and relatively diverse national sample of gun owners.

As the effectiveness of the messaging is further validated, future work should also assess actual gun restricting behavior, in addition to behavioral intentions. However, classic research in social and health psychology indicates that understanding the processes which create behavioral intentions are critical in predicting eventual behavior (Ajzen, 1991) and that such intentions do predict actual behavior across a variety of health domains (Godin and Kok, 1996).

6. Conclusions

Recent investigations into firearm storage practices underscore the importance of limiting access to lethal means as a critical method of reducing suicide rates (Karras et al., 2019; Monuteaux et al., 2019; Simonetti et al., 2018). However, efforts to restrict access to firearms for individuals at risk of suicide are complicated in the US by constitutional rights and heavily politicized debates about who should be guaranteed access to what types of weapons. Because all health attitudes and behaviors are culturally derived (Kagawa Singer et al., 2016), we advocate an approach to intervention that first seeks to deeply understand individuals' core values, and then speaks respectfully to these values in an effort to encourage alternative practices. Findings from the present experiment, in conjunction with our past work (Marino et al., 2016, 2018), demonstrate that building trust, highlighting the *temporary* restriction of access during periods of suicidality, respecting the US constitutional right to bear firearms, and validating the social identities of firearm owners are all essential in facilitating the likelihood of suicide prevention behaviors. A recent qualitative investigation lends further support to the utility of this approach with firearm owners (Pallin et al., 2019a; see also Pallin et al., 2019b).

In sum, the present investigation demonstrates how affirming cultural values can make public health messages and interventions more effective. All human communication is inherently embedded in cultural systems of meaning. It is possible to make our health care interactions more effective and inclusive if we take greater efforts to learn about, respect, and become conversant in the values of those individuals and groups whose health we are seeking to promote.

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