



Leader provided purpose: Military leadership behavior and its association with suicidal ideation



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ABSTRACT

Suicide in U.S. Army Soldiers is of major concern as it is estimated that over 100 Soldiers die by suicide each year. Examining risk and protective factors is essential to develop both an understanding of Soldier suicide as well as inform systemic interventions to reduce suicide. One potential systemic approach is to embed preventive mechanisms within the structure of the military rather than the typical administration of primary intervention through mandatory training. To examine potential mechanisms of leader-based interventions, several leadership behaviors were assessed in a cross-sectional sample of $n = 1,096$ active duty Soldiers. Soldiers completed self-report measures of interpersonal predictors of suicide, suicidal ideation (SI), leadership behaviors, and unit cohesion. Logistic regression was used to identify leadership behaviors related to SI. Only the leader behavior attempting to foster a sense of purpose predicted SI. Leader provided purpose (LPP) was then entered into indirect effect analyses to evaluate the mechanisms of this relationship. Analyses revealed that LPP predicted SI through unit cohesion, thwarted belongingness, and perceived burdensomeness. Results demonstrate that specific aspects of military leadership such as fostering Soldier purpose may enhance resilience and reduce risk for SI.

1. Introduction

Suicide in United States (U.S.) Army Soldiers is of major concern. It is estimated that over 100 Soldiers have died by suicide each year since 2011 (Department of Defense Suicide Event Report [DoDSER], 2018). Not surprisingly, military and political leaders have allotted significant resources to better understand and prevent suicides among military personnel. For example, the Department of Defense (DoD) funded a five-year longitudinal study to assess predictors of risk and resilience in Soldiers before, during, and after service in efforts to inform suicide prevention strategies (Army Study to Assess Risk and Resilience in Service members [Army STARRS]; Kessler et al., 2013).

This and other endeavors have resulted in a wealth of information regarding correlates and predictors of suicidal thoughts and behaviors (STBs) in Soldiers (see Nock et al., 2013, Nock et al., 2014, and Nock et al., 2018 for reviews). Many factors associated with STBs identified in the initial publications from Army STARRS include previously established risk factors in the general population, such as previous suicide attempts (SA), suicide ideation (SI; particularly recent

onset), planning for suicide, and mental health disorder diagnosis (Nock et al., 2018). Additionally, military specific predictors were identified, such as the experience of combat trauma (Naifeh et al., 2018), time between deployments or “dwell time” (Ursano et al., 2018), and military rank (Nock et al., 2014).

Although this work has done an exemplary job of providing nuance to previously established relationships between risk factors and STBs, and identifying risk factors specific to Soldiers, less attention has been paid to resilience or protective factors in this population (Nock et al., 2013). In a review of protective factors for suicide in Soldiers, Nock et al. (2013) note specific conceptual categories of important constructs. These factors include previous mental health treatment, psychological factors (e.g., post-traumatic growth and positive coping to stress and adversity; Bush et al., 2011; Campbell-Sills et al., 2018), and social support. Ostensibly the most studied protective health and well-being factors in military research are unit cohesion and leadership. Unit cohesion, in particular, has received strong attention in the study of Soldier suicide (Van Epps, 2008). Those military members who report high levels of unit cohesion endorse connection and trust with

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military peers as well as their military leadership. High levels of unit cohesion appear to play a role in military performance, combat readiness, and subsequent resilience against mental health disorders such as PTSD and depression (Bryan and Heron, 2015; Griffith, 2002, 2015; Oliver et al., 1999; Vasterling et al., 2015). In a longitudinal study of over 4000 Soldiers, perceived unit cohesion assessed prior to deployment predicted lower levels of SI three and nine months following return from deployment (Anderson et al., 2019).

Research likewise demonstrates that unit cohesion, leadership and health outcomes are strongly linked to each other in the military context (Bass et al., 2003). Leaders have been shown to not only play a role in unit cohesion (Avolio et al., 1999; Bass, 1999), but also impact psychological well-being (Bono and Ilies, 2006; Gilbreath and Benson, 2004; Van Dierendonck et al., 2004). In one study of previously deployed United Kingdom Armed Forces personnel, unit cohesion and positive leadership were negatively related to adverse mental health outcomes (Jones et al., 2012). Furthermore, reductions in negative stress appraisals are related to leader mentorship behaviors (Arnold et al., 2007; Sosik and Godshalk, 2000) and, in a military context, leadership-specific behaviors have been linked to outcomes in particular domains, such as sleep (Adler et al., 2014). It should not be surprising that trust and connection to military peers and leaders, as manifested in leadership quality and unit cohesion, may play protective roles against SI (Joiner, 2005).

Stated differently, leadership and cohesion matter: good leadership communicates concern and commitment to subordinates, while unit cohesion enhances feelings of belongingness and common purpose among peers (Bollen and Hoyle, 1990; Carron, 1988; Garcia-Guiu et al., 2016). These conclusions have a solid theoretical foundation within the suicide literature. Specifically, the Interpersonal Theory of Suicide (ITS; Joiner, 2005) posits two interpersonal constructs that confer vulnerability for SI: thwarted belongingness (TB) and perceived burdensomeness (PB). TB is defined as feelings of stark social isolation and lack of perceived caring from others, and PB includes the belief that one's own being poses significant strain on others. The theory states that co-occurring high levels of both TB and PB leaves individuals vulnerable to SI and that feelings of hopelessness regarding TB and PB may result in active desire for death by suicide (Van Orden et al., 2010). Not surprisingly, these two aspects of the ITS have been shown to be related in multiple samples of active duty service members (Anestis et al., 2015), veterans (Monteith et al., 2013), and Soldiers specifically (Silva et al., 2017). Additionally, unit cohesion is correlated with reduced psychopathology related to feelings of loneliness and isolation (e.g., depression and PTSD), time spent in military service, and even military performance (Griffith, 2002; Oliver et al., 1999; Vasterling et al., 2015).

Extrapolating from the ITS and the empirical literature reviewed above, we hypothesize that positive leadership and strong cohesion promote social connection that are expected to protect against TB and PB, with down-stream effects on SI. Thus, the current study draws together these separate strands of theory and research, to test empirically the concurrent relationships among leadership, unit cohesion, TB, PB, and SI in a sample of active duty Soldiers.

2. Methods

2.1. Procedure

The study was conducted in 2016 with US Army Soldiers stationed in Korea. Opportunities to recruit Soldiers were coordinated with unit leadership. Recruitment briefings included a description of the study, its voluntary and anonymous nature, informed consent procedures, and how anonymity and confidentiality would be protected. Soldiers not present at the recruitment briefings were unable to participate because they had other duties, were ill, or were on temporary duty. The Soldiers were surveyed regarding their experiences in Korea, their physical and mental health, alcohol use, work performance, their perceptions of their

Table 1
Participant demographics.

	Overall (N = 1098) n (%)	Past-year SI (n = 42) n (%)
Age		
18–24	606 (55.2)	27 (64.3)
25–29	224 (20.4)	6 (14.3)
30–39	210 (19.1)	7 (16.7)
40 or older	57 (5.2)	2 (4.8)
Male gender	900 (82.0)	28 (70.0)*
Rank		
E1–E4	753 (69.1)	34 (81.0)
E5–E9	244 (22.4)	6 (14.3)
Officer/WO	93 (8.5)	2 (4.8)
Education		
Some High School	7 (0.6)	0 (0.0)
Diploma/GED	469 (43.0)	17 (40.5)
Some College	465 (42.6)	18 (42.9)
Bachelor's Degree	117 (10.7)	6 (14.3)
Graduate Degree	33 (3.0)	1 (2.4)
\bar{x} (SD)		
Time in ROK (Months)	8.1 (5.8)	7.4 (4.2)

SI = Suicidal Ideation. WO = Warrant Officer. ROK = Republic of Korea.

* Significant Difference ($p < .05$).

unit and leaders, their relationship with family members and occupational stressors. Of the 1613 Soldiers who completed the survey, 1096 (68.1%) consented to have their data be used for future research purposes. All initial study procedures and secondary analysis of its data were reviewed by the Human Subjects Protection Branch of the Walter Reed Army Institute of Research (WRAIR).

2.2. Participants

Participants were US Army Soldiers stationed in the Republic of Korea. Unique to US forces in Korea is the presence of rotational units that train and augment traditionally stationed forces for shorter periods of time. Of the consented sample, 200 (18.2%) of Soldiers were in rotational units. There was no significant difference in terms of our main outcome (i.e., past-year SI) between rotational and non-rotational units ($\chi^2 (1, N = 1075) = 0.358, p = .55$). Forty-two individuals (3.9%) reported “seriously thinking about committing suicide” within the past-year. Participant demographics are reported in Table 1.

2.3. Measures

2.3.1. Demographics and military characteristics

Standard sociodemographic and military characteristics questions were included, such as gender, age category, highest level of civilian education, years in the military, rank category and deployment history.

2.3.2. Suicidal ideation

One item from the Composite International Diagnostic Interview (CIDI) depression module (World Health Organization [WHO], Kessler et al., 2004) was used to assess past-year SI (“During the past-year did you seriously think about committing suicide”). Respondents were instructed to mark *no* or *yes* to the item.

2.3.3. Thwarted belongingness and perceived burdensomeness

TB and PB were assessed with the 15-item Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2012). Respondents were instructed to mark what best matches their current feelings on a scale of 1 (*not at all true for me*) to 7 (*very true for me*). Items that are part of the INQ subscales of TB ($\alpha = 0.88$) and PB ($\alpha = 0.93$) were summed, aligning with Van Orden et al. (2012).

2.3.4. Supportive leadership behaviors

Six items were used to assess perceptions of the extent to which

Table 2
COSC leadership items.

	My platoon sergeant (or equivalent)...
Sgthelp01	Intervenes when a Soldier displays stress reactions such as anxiety depression or other behavioral health problems.
Sgthelp02	Demonstrates concern for how families are dealing with stress.
Sgthelp03	Encourages Soldiers who seek behavioral health help.
Sgthelp04	Does not judge Soldiers who seek behavioral health help.
Sgthelp05	Encourages Soldiers to express emotions following losses and setbacks during deployment.
Sgthelp06	Reminders Soldiers after intense experiences that we are here to serve with honor, serve a mission, and serve a great purpose.

leaders engage in supportive leadership behaviors that encourage their subordinates to manage stressors. These questions were developed from leader behaviors highlighted in Combat Operational Stress Control (COSC) doctrine and have been published elsewhere (Adler et al., 2014). Respondents were instructed to mark the frequency that their platoon sergeant (or equivalent) displays each behavior on a scale of 1 to 5 (*never, seldom, sometimes, often, and always*). The individual contribution each item was analyzed as they reflected different leadership behaviors. For example, “My platoon sergeant [or equivalent]” “reminds Soldiers after intense experiences that we are here to serve with honor, serve a mission and serve a greater purpose” reflects an externally provided sense of purpose whereas “does not judge Soldiers who seek behavioral health help” reflects de-stigmatization of support-seeking. For a full list of these supportive leadership behavior items, see Table 2.

2.3.5. Unit cohesion

Unit cohesion was measured with four items adapted from Podsakoff and MacKenzie (1994) that have been used in previous studies with military samples (c.f., Britt et al., 2007; Lopez et al., 2018). Respondents were instructed to rate their level of agreement with each statement on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*), using platoon as the referent unit level (e.g., “the members of my platoon are cooperative with each other”). The items were summed such that higher scores indicated greater perceptions of unit cohesion ($\alpha = 0.92$)

2.4. Analytical strategy

Independent logistic regression analyses were conducted to replicate the existing literature demonstrating the relationship between factors of the INQ (i.e., TB and PB) and past-year SI. Items from the COSC leadership scale were entered into a separate robust logistic regression in order to identify items that were related to SI. Those COSC leadership items that were significantly related to SI were then entered as predictor variables in indirect effect analyses to determine if the significant relationships exist because of levels of TB, PB. Indirect effect analyses were conducted with 5000 bootstrapped samples via the PROCESS macro (Hayes, 2018). Additional indirect analyses with serial mediators were conducted to assess the impact of unit cohesion on the model, specifically if leadership styles predicted unit cohesion which thus predicted TB or PB which in turn predicted SI (See Fig. 1). Analyses resulting in $p < .05$ were considered significant.

3. Results

3.1. Correlates of SI

Forty-two individuals (3.9%) reported “seriously thinking about committing suicide” within the past-year. Logistic regressions were conducted to investigate the relationship between factors of the INQ and past-year SI. For these models, TB (OR = 1.04, 95% CI [1.03, 1.05], $p < .01$) and PB (OR = 1.24, 95% CI [1.18, 1.31], $p < .001$)

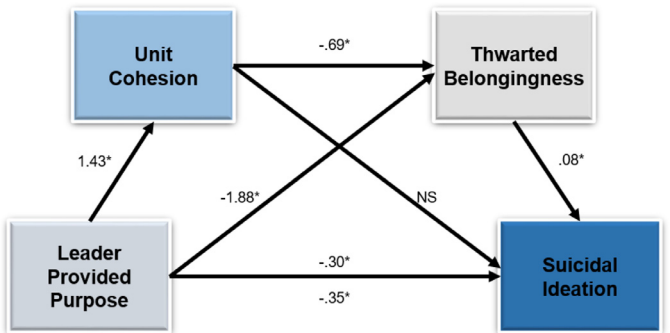


Fig. 1. Purpose Model.

Table 3
Leadership behaviors as related to suicidal ideation.

	O.R.	R.S.E.	z	P-value	95% C.I
Sgthelp01	1.393949	0.2864543	1.62	0.106	0.9318077 2.085295
Sgthelp02	0.8398386	0.217144	-0.68	0.500	0.5059574 1.394048
Sgthelp03	0.9467489	0.2396876	-0.22	0.829	0.5764171 1.555008
Sgthelp04	0.9891579	0.1421027	-0.08	0.940	0.7464174 1.310839
Sgthelp05	1.044206	0.233518	0.19	0.847	0.6736436 1.61861
Sgthelp06	0.650156	0.1154231	-2.43	0.015	0.459095 0.9207307

predicted SI.

In addition to the associations between SI and factors of the INQ, several points of leadership-delivered system intervention were explored. As shown in Table 3, of the six types of supportive leadership behaviors, only the “providing purpose” item predicted decreased likelihood of SI when all items were considered simultaneously (OR = 0.65, 95%, CI [0.46, 0.92], $p < .05$). For a full list of items see Table 3.

3.2. Leader provided purpose

As a result of its relationship with past-year SI, indirect effect analyses were conducted to see if leader provided purpose (LPP) was related to SI through TB and PB. As SI is dichotomous in these data, effect sizes are reported as a range between Cox & Snell and Nagelkerke R^2 . For TB, the overall model was significant ($R^2 = 0.04 - 0.13$, $F(1, 977) = 88.01$, $p < .001$). An indirect effect was found for LPP and SI through TB (point estimate = -0.21 , SE = 0.05, 95% bias-corrected CI [$-0.3147, -0.1274$]), as TB remained significant in the mediation model ($\beta = 0.07$, SE = 0.01, $p < 0.001$), whereas LPP no longer predicted SI ($\beta = -0.18$, SE = 0.13, $p = .15$). For PB, the overall model was also significant ($R^2 = 0.08 - 0.25$, $F(1, 1012) = 14.63$, $p < .001$). An indirect effect was also found between LPP and SI through PB (point estimate = -0.05 , SE = 0.02, 95% bias-corrected CI [$-0.1113, -0.0297$]), with both LPP ($\beta = -0.29$, SE = 0.14, $p < .05$) and PB ($\beta = 0.20$, SE = 0.03, $p < .001$) remaining significant predictors.

3.3. Unit cohesion

To further explore the relationship between important factors that could be influenced by LPP and thus reduce risk for SI, a measure of unit cohesion was added into the indirect effects models. In these models, LPP predicted unit cohesion, which predicted TB (or PB), which in turn predicted SI (See Fig. 1). Specifically, the model identified a significant indirect effect between LPP and SI ($R^2 = 0.05-0.16$, $F(2, 969) = 61.03$ $p < .001$) through TB and unit cohesion. As demonstrated in previous analyses, TB significantly accounted for variance between LPP and SI (point estimate = -0.14 , SE = 0.04, 95% bias-corrected CI [$-0.1225, -0.0418$]). Although unit cohesion did not account for a significant amount of the variance (point estimate = 0.12, SE = 0.09, 95% bias-corrected CI [$-0.0544, 0.2874$]), an indirect

effect was identified when both unit cohesion and TB were considered together (point estimate = -0.08 , SE = 0.02 , 95% bias-corrected CI [-0.1225 , -0.0418]). This relationship was not true for PB. Although PB accounted for variance between LPP and SI (point estimate = -0.05 , SE = 0.02 , 95% bias-corrected CI [-0.0937 , -0.0098]), unit cohesion did not when considered independently (point estimate = 0.09 , SE = 0.10 , 95% bias-corrected CI [-0.0884 , 0.2775]), or simultaneously with PB (point estimate = -0.02 , SE = 0.01 , 95% bias-corrected CI [-0.0481 , 0.0016]).

4. Discussion

In the current study, although a variety of leadership behaviors were examined, only leader provided purpose was associated with past-year SI. Furthermore, it appears that the relationship between LPP and SI may operate through increased sense of belongingness, and a decreased sense of burdensomeness. Although these results can best be described as preliminary, it appears that leaders who reinforce a sense of purpose may lower the likelihood of Soldier SI through reductions in TB and PB.

Certainly, previous research within and outside of the military support the strength of the relationship between PB and SI, especially in comparison to the TB and SI relationship (Chu et al., 2017). Recent research has begun to investigate interventions leveraging the components of the ITS with some success (Allan et al., 2018; Hill and Pettit, 2016). However, there is considerably less research investigating experiences that may inoculate individuals against TB and PB. One potential construct that may be antithetical to TB and PB is the concept of meaning or purpose. Meaning in life has previously been found to be associated with well-being (McMahan and Renken, 2011), positive affect (Hicks and King, 2009), and shown to be a negative correlate of SI (Heisel and Flett, 2004; Kleiman and Beaver, 2013). Our findings are also consistent with literature suggesting that increasing purpose and meaning in-life confer resilience (Heisel and Flett, 2004; Kleiman and Beaver, 2013), and previous research identifying that PB and concepts closely related to TB are associated with meaning in life (Stillman et al., 2009; Van Orden et al., 2012 as cited in Kleiman and Beaver, 2013). Although previous work has focused on feelings of a broad sense of purpose and its relationship to SI, our study demonstrated that, in the specific context of work (i.e., military service), provided purpose may be protective. Future research would benefit from including measures of leader provided purpose as well as Soldiers' own perceptions of their broader purpose in life. It may also be beneficial to attempt to measure the degree to which a Soldier views military service as work, in the traditional sense, or as a broader aspect of their life. To this end, specific interventions have been designed to target meaning in-life to mitigate suicide risk (Lapierre et al., 2007).

Results of the current study also suggest that leadership-provided purpose may reduce risk for the related interpersonal risk factors through increases in unit cohesion. However, the model also indicates that the effect of unit cohesion on SI is only consequential to the degree to which it increases belongingness. This finding is consistent with theoretical conceptualizations regarding the components of unit cohesion (Bollen and Hoyle, 1990; Carron, 1988) and previous research examining the mechanisms of unit cohesion in military samples (Garcia-Guiu et al., 2016). This is of particular relevance, as unit cohesion may be a more accessible mechanism that could be leveraged to more directly target belongingness.

It is also of interest that many of the leadership behaviors identified were not related to SI. One potential explanation for the lack of a relationship between the other leadership behaviors and SI may be that the other behaviors reference help seeking behavior or emotional support that could mitigate the functional impact of stressors, but may not impact the expression of a symptom or negative thought pattern like SI. Future research should carefully consider the types of leadership behaviors assessed. Particularly, viewing mechanisms to prevent symptom

development separately from leadership behaviors that may interrupt the transition from symptom expression to functional impairment.

The current study is unique for two reasons. First, it examined potentially protective factors against predictors of suicide ideation in military service members, and second, it examined whether or not these protective factors were facilitated through an organizational leader. Identifying the potential mechanisms driving the relationships between specific leadership behaviors and adverse outcomes is important as leadership behaviors are teachable. Additionally, Soldier well-being extends beyond the absence of negative risk factors and should include the presence of positive attributes and motivators that potentially reduce risk. This may be particularly effective in conjunction with mitigating risk through mental health literacy and stigma reduction. A more direct assessment of these constructs may serve as the basis for a systems-level intervention geared toward reducing risk for suicide. Furthermore, the findings of this study are particularly interesting as they suggest known mechanisms contained within a modifiable, non-traditional, militarily-relevant form of prevention, rather than burdening Soldiers and units with additional individual-level training as a primary prevention modality.

Although the current study has many strengths, including the uniqueness of the population and the type of leadership behaviors assessed, there are study limitations. First, previous research has indicated that single item measures of SA overestimate the likely prevalence of SA, which may also apply to the single-item assessment of SI used in the current study (Millner et al., 2015). This concern and well as concerns regarding single-item scale reliability (Wanous et al., 1997) may also apply to our measure of leader provided purpose. Burgeoning evidence also supports more nuanced assessment of TB and PB. In particular, directly examining the extent to which individuals view TB and PB as likely to never change (or hopelessness about TB and PB), which has been shown to influence the predictive strength of these constructs (Tucker et al., 2018). The study also did not directly test the relationship between the specific construct of unit support as defined in previous research (Van Epps, 2008) and suicide risk, but included related, modifiable aspects of military service that may promote meaning and purpose in Soldiers. This is important as meaning in life and a sense of purpose broadly appear to confer resilience against SI (Heisel and Flett, 2004; Kleiman and Beaver, 2013). However, it is important to distinguish between a leader behavior meant to confer a sense of purpose and Soldiers feeling an increased sense of purpose. Only the leadership behaviors were measured in this study. This may be one of the reasons the effects sizes in this study were fairly small, which also indicate a need for further elucidation of these constructs or additional multivariate analyses with constructs not assessed in the current study (e.g., broadly defined life meaning; Steger et al., 2006). Furthermore, due to the low base rate of SI and the potential for stigma surrounding the vocalization of SI in this population (Adler et al., 2015; Hoge et al., 2004; Kim et al., 2011), results should be replicated in larger, treatment-seeking samples. Finally, although Soldiers averaged eight months in their respective platoons, they were asked about SI in the previous year. Some Soldiers may have been reporting SI experienced prior to working with their current leaders. Temporal dynamics of this potential relationship should be further studied as SI has been demonstrated to be a highly dynamic construct (Kleiman et al., 2017). Future research should assess suicidal thoughts at multiple time points with short intervals.

Despite these limitations, the findings from the current study may inform future research on feasible methods of intervention, and link these methods to known risk factors for SI. Given the high rate of military suicides compared to the civilian population, researchers should continue to explore factors unique to the military experience that may serve to decrease risk. Future research should also explore alternative methods of intervention delivery such as integrating primary prevention efforts into the training operations of high-risk professions.

In conclusion, this study explored the relationship between military leadership behaviors and SI, and related risk factors, to identify modifiable mechanisms to reduce SI in US Soldiers. To this end, the current study examined the concurrent relationships among leadership behaviors, unit cohesion, TB, PB, and SI in a sample of active duty Soldiers. Results showed that known mechanisms linked to SI could be reliably linked to modifiable constructs relevant to the military experience (i.e., leadership and cohesion). This type of research may inform a future system level intervention with the goal of mitigating risk for suicide in military personnel. In addition to relying on behavioral health services, it is possible that changes in military leadership training and focus could be a straight-forward implementation strategy to reduce later SI. This potential strategy is certainly in-line with the need for public health initiatives for suicide prevention. As previously postulated by others (Adler et al., 2014), educating leaders on empirically validated leadership techniques is a relatively untapped resource for primary prevention efforts. Leveraging military leadership to impact on suicidal ideation is a feasible, ecologically-valid, and cost-effective intervention approach that could enhance unit readiness and Soldier behavioral health. Additional research, with larger samples, is warranted.

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CRedit authorship contribution statement

Benjamin Trachik: Conceptualization, Methodology, Formal analysis, Writing - original draft, Project administration. **Raymond P. Tucker:** Conceptualization, Methodology, Writing - original draft. **Michelle L. Ganulin:** Validation, Formal analysis, Writing - original draft. **Julie C. Merrill:** Investigation, Data curation, Writing - original draft. **Matthew L. LoPresti:** Investigation, Project administration. **Oscar A. Cabrera:** Writing - review & editing, Supervision. **Michael N. Dretsch:** Writing - review & editing, Project administration, Supervision.

Declaration of Competing Interest

The authors have no conflicts of interest to disclose.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.psychres.2019.112722](https://doi.org/10.1016/j.psychres.2019.112722).

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