Received: 17 March 2021 | Accepted: 11 February 2022

DOI: 10.1002/jclp.23331

RESEARCH ARTICLE

WILEY

The relationship between anger and suicidal ideation: Investigations in two samples

Katherine Musacchio Schafer[1] | Allison Daurio[1] | Juliana E. French[1] | Megan L. Rogers[2] | Andrea L. Meltzer[1] | Jesse R. Cougle[1] | Thomas E. Joiner[1]

[1]Department of Psychology, Florida State University, Tallahassee, Florida, USA

[2]Icahn School of Medicine, Mount Sinai Beth Israel, New York City, New York, USA

Correspondence

Katherine Musacchio Schafer, M.E., M.S. 1107 W Call St, Tallahassee, Florida 32306, USA.
Email: kmm16n@fsu.edu

Funding information

U.S. Department of Defense, Grant/Award Number: W81XWH-16-2-0003

Abstract

Objectives: Suicidal ideation (SI) nearly always precedes lethal suicide attempts. Anger may play a role in SI, but this appears to vary by gender and nuances in this relationship are unclear.

Method: We investigated whether levels of (a) anger and (b) SI vary by gender, (c) the cross-sectional relationship between anger and SI, and (d) if gender moderates that relationship in two samples: adults seeking care for excessive anger (Study 1) and undergraduates endorsing previous suicide attempt (Study 2).

Results: In Study 1, anger was more commonly endorsed in women; however, in Study 2, anger did not vary by gender. In both studies, SI did not vary by gender. Further, in both studies, anger and SI were positively related. The relationship between anger and SI did not vary by gender in either study.

Conclusions: The strength of the relationship between anger and SI did not vary by gender.

KEYWORDS

anger, cross-sectional, diverse populations, suicidal ideation

Suicide is a leading cause of death worldwide, killing nearly 800,000 people annually (World Health Organization, 1993). Particularly worrisome, data collected over the course of decades indicate that the suicide rate in America has risen consecutively every year for the past 15 years (Centers of Disease Control and Prevention [CDC], 2021). Furthermore, suicidal ideation (SI) is not uncommon. Whereas more than 45,000 Americans died by suicide

in 2020 (CDC, 2021), an estimated 30 million American adults (10% of the American adult population) reported SI within the last year (CDC, 2021). Beyond the relatively more common nature of SI as compared to suicide attempts and death, SI is of general interest to researchers and clinicians as it is a clinical issue in its own right (Jobes & Joiner, 2019), and it always or nearly always precedes lethal or near-lethal suicide attempts (Klonsky & May, 2010; O'Connor & Kirtley, 2018; Van Orden et al., 2010).

As such, many studies have investigated risk factors for SI. A recent meta-analysis on longitudinal predictors investigated specific risk factors for SI, suicide attempts, and suicide deaths in veterans and service members and found that anger was among the strongest relative predictors of suicide-related outcomes (Schafer et al., 2021). Although this pointed to anger as a significant predictor of SI, it highlighted a notable divergence: the effect of anger on SI was much stronger among veterans and service members than in general samples. For example, in longitudinal studies of a nationally representative sample of adults (spanning 3 years; Dillon et al., 2020), undergraduate students (spanning 8 years; Goldney et al., 1997), and adolescents/young adults (spanning 13 years; Daniel et al., 2009), anger conferred roughly half the risk for SI as it did among veterans and service members. This discrepancy suggests anger may confer varied risk for SI depending on the sample, but it is unclear what specific aspects contribute to this variability. Immediately noticeable, the samples comprised of veterans and service members included much larger proportions of males as compared to samples within the general public. Thus, gender is an obvious choice for follow-up investigations for the differential risk of SI conferred by anger. Importantly, previous literature has not explicitly investigated whether the relationship between anger and SI varies by gender, which could contribute to the specific nature of each sample. However, some literature *suggests* that gender may contribute to this variability, but the directionality of additional risk is unclear.

Specifically, whereas the extant literature consistently indicates that men and women generally do not experience different levels of anger (Cox et al., 2000; Meyer et al., 2005), women are significantly more likely to exhibit SI, yet men are more likely to die by suicide (CDC, 2021). However, anger is more strongly related to SI in samples made up mostly of men, compared to mixed-gender samples (Schafer et al., 2021). Thus, previous literature does not clearly indicate if and how the relationship between anger and SI varies by gender, but it is clear based on previous research that nuances in prevalence rates of anger and SI emerge between genders.

The paucity of investigations into the nuances of the relationship between anger and SI highlights a significant gap in the literature that may have implications for theories of suicide as well as the treatment of diverse patient populations. For example, many theories of suicide (e.g., Interpersonal Theory, Van Orden et al., 2010; Hopelessness Theory, Beck, 1989; Psychache, Schneidman, 1998) propose risk factors that could contribute to the development of SI, and recent work suggests anger is related to many of these theoretically relevant constructs (e.g., perceived burdensomeness, thwarted belongingness, hopelessness, depressive symptoms, and unbearable pain; Anestis & Joiner, 2011; Korkmaz et al., 2019; McKinney et al., 2017). It is possible that, among these commonly studied theories, anger emerges as an important trans-theoretical risk factor, with evidence supporting the widespread involvement of anger in the development and maintenance of SI. Indeed, previous literature suggests that internalized presentations of anger in particular may allow for the transition from SI to suicide attempts (e.g., see Lehnert et al., 1994). Likewise, and with regard to clinical applications, if specific facets of anger are shown to be closely linked with SI—and especially if this link appears particularly strong in certain samples of the population—targeting anger as a possible maintaining factor for SI may be valuable.

1 | THE PRESENT STUDY

The present study examines associations between anger and SI across two different samples: (a) patients seeking treatment for problematic anger and (b) undergraduates with elevated SI. These samples include clinical and nonclinical populations and assess a wide array of facets of anger, including derogation, revenge, hostility, and aggression. Throughout this project, we investigate the strength of the relationship between anger and SI. The aims

of the current study were to investigate the extent to which levels of (a) anger and SI varied by gender, (b) how strong anger was cross-sectionally related to SI, and (c) whether gender moderated the relationship between anger and SI.

Previous literature consistently indicates that anger generally does not vary by gender, that women exhibit more frequent SI than men, and that anger is strongly related to SI in veterans and service members (samples that are often comprised mostly of men). As such we expected that (a) levels of anger would not vary by gender, (b) women would more frequently endorse SI, (c) anger would be positively associated with SI, and (d) anger would be more strongly associated with SI among men than women. While null hypothesis testing presents challenges in its own right, this approach was used in the present study to determine that samples were similar to the broader population (Szucs & Ioannidis, 2017).

Our statistical approach was to assess samples for outliers using Cook's, Mahalanobis, and Leverage approaches. Then, we investigated whether levels of anger and SI varied by gender using Multivariate Analyses of Variance. Next, we examined correlations between all variables to see which, if any, facets of anger were significantly associated with SI. We assessed whether gender moderated the relationships between each anger facet and SI (only within those facets that had a significant bivariate correlation) using Process v3.4.1 (Hayes, 2017). Power analyses indicated both studies were powered to detect moderate effects for a linear regression, fixed model, R-square deviation from zero moderation approach (Fritz & MacKinnon, 2007). All means, standard deviations, and Pearson correlations for study variables are depicted in Tables 1 and 2.

TABLE 1 Study variables, means, and standard deviations

Variable	*M*	(*SD*)	*M*	(SD)	*F*	*p* value
Study 1: Patients with Excess Anger	Male (*n* = 59)		Female (*n* = 70)			
Trait Anger	**24.94**	**4.91**	**27.42**	**5.84**	**5.13**	**0.025**
Hostile Automatic Thoughts	62.28	21.03	68.27	28.20	0.73	0.39
Aggression	16.66	5.91	18.05	8.18	0.36	0.54
Derogation of Others	29.94	10.58	31.68	12.04	0.30	0.58
Revenge	15.67	8.31	18.52	10.86	1.26	0.26
Hostile Attribution of Others	3.72	0.96	3.84	1.10	0.53	0.46
SI	1.40	3.81	0.74	2.06	3.27	0.073
Study 2: Undergraduates	Male (*n* = 32)		Female (*n* = 121)			
Anger Total	26.5	5.10	28.024	5.45	2.40	0.12
Rumination Total	39.65	14.49	37.68	11.71	0.62	0.43
Angry After Thoughts	12.56	5.085	11.79	4.23	0.54	0.46
Angry Memories	10.65	4.27	10.65	3.85	0.002	0.96
Understanding of Causes	8.84	3.38	8.83	2.93	<0.001	0.99
SI	3.43	4.087	3.79	5.51	0.015	0.90

Note: Study 1 Anger Total = 10-Item Anger Subscale from IPIP. Study 2: Trait Anger = STAXI-2, Hostile Automatic Thoughts = HATS Total, Aggression = HATS Aggression Subscale, Derogation = HATS Derogation Subscale, Revenge = HATS Revenge Subscale, Hostile Attributions = WASP-H, SI = BSS Total Score. Study 3: Anger = CAS, Rumination = ARS, Angry Afterthoughts = ARS Angry Afterthoughts Subscale, Angry Memories = ARS Angry Memories Subscale, Understanding of Causes = ARS Understanding of Causes Subscale, SI = BSS Total Score.

TABLE 2 Correlation matrix between all study variables

Correlations							
Study 1: Patients with Excess Anger	1	2	3	4	5	6	7
1. Trait Anger	1						
2. Hostile Automatic Thoughts	0.490**	1					
3. Aggression	0.484**	0.860**	1				
4. Derogation	0.418**	0.881**	0.598**	1			
5. Revenge	0.417**	0.913**	0.780**	0.665**	1		
6. Hostile Attribution	0.434**	0.546**	0.420**	0.512**	0.499**	1	
8. Suicidal Ideation	0.059	0.15	0.163	0.173	0.065	−0.011	1
Study 2: Undergraduates with Elevated Suicidal Ideation	1	2	3	4	5	6	
1. Anger	1						
2. Rumination	0.560**	1					
3. Angry Afterthoughts	0.505**	0.932**	1				
4. Angry Memories	0.581**	0.914**	0.784**	1			
5. Understanding of Causes	0.444**	0.866**	0.759**	0.737**	1		
6. Suicidal Ideation	0.404**	0.321**	0.287**	0.337**	0.279**	1	

**Correlations significant at $p < .05$. Study 1 Anger Total = 10-Item Anger Subscale from IPIP. Study 2: Trait Anger = STAXI-2, Hostile Automatic Thoughts = HATS Total, Aggression = HATS Aggression Subscale, Derogation = HATS Derogation Subscale, Revenge = HATS Revenge Subscale, Hostile Attributions = WASP-H, SI = BSS Total Score. Study 3: Anger = CAS, Rumination = ARS, Angry Afterthoughts = ARS Angry Afterthoughts Subscale, Angry Memories = ARS Angry Memories Subscale, Understanding of Causes = ARS Understanding of Causes Subscale, SI = BSS Total Score.

2 | STUDY 1: PATIENTS SEEKING TREATMENT FOR EXCESSIVE ANGER

2.1 | Study 1 methods

2.1.1 | Participants and procedures

Study 1 was composed of 129 participants enrolled in a randomized control trial for the treatment of anger ($n = 59$ males, $n = 70$ females; McDermott et al., 2017). Participants were recruited online in the United States, and all reported elevated trait anger (score of 19 or greater on the trait subscale of the State-Trait Anger Expression Inventory-2). They ranged in age from 18 to 63 years ($M = 34.06$) and were primarily White (63.2%, Black 15.3%, Hispanic 10.1%, Asian or Pacific Islander 3.4%). Participants provided electronic informed consent before initiating study procedures, which involved completing an online battery of questionnaires. Baseline measures were included in the current analyses, thus data from Study 1 are cross-sectional.

2.1.2 | Study 1 measures

State-Trait Anger Expression Inventory-2 (STAXI-2)

The STAXI-2 (Spielberger, 1999) is a 57-item self-report questionnaire that assesses expression of angry feelings toward other persons or objects in the environment, holding in or suppressing angry feelings, controlling angry

feelings by preventing the expression of anger toward other persons or objects in the environment, and controlling suppressed angry feelings by calming down or cooling off. Participants responded to each item on a 4-point scale. Internal consistency was good ($\alpha = 0.82$).

Hostile Automatic Thoughts Scale (HATS)

The HATS (Snyder et al., 1997) is a 30-item self-report measure of hostile ideation over the past week. Participants rated physical aggression (e.g., "When I get frustrated, I feel like hitting someone"), derogation of others (e.g., "I am secretly quite critical of others"), and revenge (e.g., "I tend to harbor grudges") on a 5-point scale ranging from "not at all" to "all the time." We analyzed data from the total score and all subscales to determine if there were differences in the relationship between SI and the total, as compared to more nuanced, experiences of anger. The HATS demonstrated excellent internal consistency among the full scale ($\alpha = 0.97$) and the subscales: aggression ($\alpha = 0.91$), derogation ($\alpha = 0.95$), and revenge ($\alpha = 0.97$).

Word Sentence Association Paradigm— Hostility (WSAP-H)

The WSAP-H (Dillon et al., 2020) is a 32-item self-report measure of hostile interpretation bias. Participants were presented with 16 interpersonal scenarios (e.g., "Someone gives you a suggestion"), followed by a word interpreting the scenario (e.g., "Disrespectful"). Participants then rated the extent to which each word related to the sentence, using a 6-point scale ranging from "not at all" to "very related." Internal consistency for WSAP-H was excellent ($\alpha = 0.92$).

Beck Scale for Suicide Ideation (BSS)

The BSS (Beck et al., 1988) is 21-item self-report measure of suicidal thinking over the past week. The first nineteen items are summed to comprise the total score. The BSS measures broad spectrum attitudes and behaviors and includes items assessing participants' wish to die, wish to live, active desire for suicide, and passive desire for suicide. In this sample, internal consistency was good ($\alpha = 0.82$).

2.2 | Study 1 results

As expected, due to recruitment based on endorsement of excessive anger, participants endorsed elevated anger across all metrics. Female participants ($M = 27.42$, $SD = 5.85$) endorsed significantly more trait anger than male participants ($M = 24.94$, $SD = 4.91$, $F = 5.137$, $p = 0.025$). SI did not vary between females ($M = 0.74$, $SD = 2.06$) and males ($M = 1.41$, $SD = 3.81$, $F = 3.274$, $p = 0.07$). Relationships between aspects of anger and SI varied (Table 2). Although most facets of anger were not significant correlates of SI (rs ranged from −0.01 to 0.16, $ps > 0.06$), derogation ($r = 0.17$, $p = 0.05$) was significantly associated with SI. The overall model was not significant, $F(3,125) = 2.20$, $p = 0.09$, $R^2 = 0.05$), but gender did not significantly moderate the association between anger derogation and SI ($b = 0.42$, $t = 0.13$, $p = 0.79$).

2.3 | Study 1 discussion

In Study 1, we tested our hypotheses among adults who presented to a randomized controlled trial for the treatment of excessive anger. Men and women reported similar levels of anger (i.e., hostile automatic thoughts, aggression, derogation, revenge, and hostile attribution) and SI, although women displayed significantly elevated rates of trait anger as compared to men. Results further indicated that most facets of anger were *not* significantly associated with SI, although a notable exception was that individuals who endorsed higher levels of derogation (e.g., "I am secretly quite critical of others") also reported higher levels of SI. Finally, we investigated if gender moderated

the relationship between derogation and SI, the only significant relationship in Study 1; it did not. This study was limited by its cross-sectional data and lack of generalizability, caused by the treatment-seeking nature of the sample.

3 | STUDY 2: UNDERGRADUATE STUDENTS OVERSAMPLED FOR PREVIOUS SUICIDE ATTEMPTS

3.1 | Study 2 methods

3.1.1 | Participants and procedures

Participants were 153 students recruited from the undergraduate psychology subject pool at a large, public university located in the Southern United States. These participants were originally from a larger pool of 163 students; however, testing using Cook's, Mahalanobis, and Leverage approaches identified ten participants as outliers across all three metrics and thus they were removed. The 153 participants ranged in age from 18 to 43 years ($M = 19.63$, $SD = 2.74$) and the sample was primarily White (66.7%, Hispanic 22.9%, and Black 17.6%). Notably, the sample was recruited specifically based on history of previous suicide attempt and/or endorsing current SI, which was determined via Beck Scale for Suicide Ideation (BSS $M = 3.67$). To determine the if participants attempted suicide with potentially lethal means, participants provided qualitative account of method of attempt (e.g., attempted hanging, overdose, drowning, etc.). Respondents provided informed consent, completed a series of self-report questionnaires, and were provided with mental health resources during debriefing. Data for Study 2 were obtained as part of a larger study on impulsivity and SI (Rogers et al., 2018).

Participants within this sample were undergraduate students who reported a SI and/or suicide attempt history on a screening questionnaire (i.e., "Have you ever had thoughts of killing yourself?" and "Have you ever made a suicide attempt in which you had at least some intent to die?"). Of the 167 participants, 40.7% reported current (i.e., past week) SI on the BSS, as evidenced by a score greater than zero. Given that participants endorsed past week SI and/or previous suicide attempts this sample represents participants with elevated suicide-related behaviors as compared to the general population. Notably a BSS score of nearly four indicates that on average participants endorsed non-zero intent across four separate indices; on its face, that has considerable clinical implications and severity. Indeed within clinical conceptualization and treatment planning, a BSS of nearly four would indicate elevated risk.

However, to further investigate the role of SI and anger, a more severe subset of this sample was also investigated. Participants who endorsed BSS scores greater than or equal to one were retained for analyses. In all, 68 participants (female, $n = 52$; male, $n = 16$) endorsed elevated SI (BSS $M = 8.85$, $SD = 4.41$) and anger (Clinical Anger Scale $M = 29.61$, $SD = 6.16$; Anger Rumination Scale $M = 42.48$, $SD = 12.96$).

3.1.2 | Measures

Clinical Anger Scale (CAS)

The CAS (Snell et al., 1995) is a 21-item self-report questionnaire that measures symptoms of anger (e.g., impairments to sleep, appetite, and occupational functioning). Each item is rated on a 4-point scale with higher scores indicative of more intense anger symptoms. Internal consistency was good ($\alpha = 0.83$) in this sample.

Anger Rumination Scale (ARS)

The ARS (Sukhodolsky et al., 2001) measures anger rumination or the tendency to focus on angry moods, recall past anger episodes, and think over the causes and consequences of anger episodes. It has 19 items and 4 subscales: Angry Afterthoughts, Thoughts of Revenge, Angry Memories, and Understanding of Causes. Internal consistency was acceptable or better for most scales (Total $\alpha = 0.93$; Angry Afterthoughts $\alpha = 0.86$; Angry Memories $\alpha = 0.87$; Understanding of Causes $\alpha = 0.77$). Because we were interested in the relationship between the total anger score as well as more nuanced subscales, we included total as well as subscales in our analyses. However, internal consistency of Thoughts of Revenge scale ($\alpha = 0.65$) was questionable in the present sample, thus we excluded it from analyses.

BSS. Similar to Study 1, we used the BSS ($\alpha = 0.91$) to measure SI.

3.2 | Study 2 results

Men and women reported similar levels of anger and SI ($Fs > 2.40$, $ps \geq 0.12$). SI was elevated among both men ($M = 3.43$; $SD = 4.08$) and women ($M = 3.79$, $SD = 5.51$). Although elevations on the BSS appear somewhat small, previous research indicates that 10% of the population endorses past year SI (i.e., endorses overall scores on the BSS greater than zero; CDC, 2021) and one recent study of a large and diverse nationally-representative sample indicated that mean scores on the BSS were only 0.22, much lower than within the sample in Study 2 (Kliem et al., 2018). Thus, the BSS scores in the current reflect a greater than the average SI in adult populations, and are clinically significant levels of SI. Every facet of anger measured in Study 2 demonstrated a significant positive correlation with SI ($r = 0.28–0.40$, $ps < 0.05$; see Table 2). We investigated each facet of anger with SI to determine if gender moderated these relationships. Inconsistent with our hypothesis, gender did not significantly moderate the relationships between anger symptoms ($b = -4.60$, $t = -0.90$, $p = 0.37$), anger rumination ($b = -0.83$, $t = -0.27$, $p = 0.79$), angry afterthoughts ($b = -0.57$, $t = -0.21$, $p = 0.84$), angry memories ($b = -0.79$, $t = -0.28$, $p = 0.77$), and understanding of causes ($b = -0.20$, $t = -0.07$, $p = 0.94$) and SI.

Within the more severe subsample, the CAS total score significantly correlated with SI ($r = 0.29$, $p = 0.019$); however, ARS and its subscales did not ($rs \leq 0.196$, $ps > 0.112$). Moderation analyses indicated that gender did not moderate the relationship between anger (CAS total) and SI (BSS total) in the more severe subset of this sample ($b = 0.0028$, $t = 0.0063$, $p = 0.99$).

3.3 | Study 2 discussion

Using a sample that endorsed elevated SI, we found that men and women reported similar levels of anger and SI, every facet of anger was significantly associated with SI, and none of these associations varied between males and females. These findings indicate that, among samples with elevated suicide risk, the correlation between anger and SI is strong across gender. This study was limited by the cross-sectional nature of the data and the lack of generalizability caused by the elevated SI in the sample.

4 | GENERAL DISCUSSION

We investigated the nuances of the relationship between anger and SI in two samples: a sample with elevated anger and a sample with elevated SI. Findings indicated that, (a) anger was elevated among women as compared to men within the treatment-seeking sample with elevated anger (Study 1), anger did not vary by gender in Study 2, (b) SI

did not vary by gender, (c) anger was strongly cross-sectionally associated with SI, and (d) gender did not moderate the relationships between anger and SI. Nuances are discussed below.

Based on previous work (Cox et al., 2000; Hejdenberg & Andrews, 2011; Meyer et al., 2005; Stoner & Spencer, 1987), we expected that anger would not vary by gender. While this pattern was indicated in the sample of participants with elevated SI (Study 2), findings indicated that within the sample of patients with excess anger (Study 1) women endorsed more anger than men. This finding is interesting as it stands at odds with well-established norms in the literature. However, given the nature of participants in Study 1 (i.e., seeking care for excessive anger), it is possible that experiences of anger based on gender greatly diverge from those within the general population. Indeed, all participants in Study 1 endorsed elevated anger, and previous research indicates that women are generally less likely than men to display outward signs of anger, including aggression and violence (Brody et al., 1995). This relatively elevated experience of externalized anger among men could make men more likely to be referred and seek out treatment for anger. Thus, women may need to experience a higher level of anger to result in outward expressions of anger that causes comparable impairment compared to men.

Next, with regard to the second hypothesis we expected to find that female participants would be significantly more likely than male participants to endorse SI (CDC, 2021). Within both samples within our project, SI did not vary significantly by gender. These findings stand at odds with both our hypothesis and previous epidemiological surveys (CDC, 2021). Indeed, our work highlights that risk factors for SI are likely highly variable and are not identical across populations. Furthermore, it is possible that the single effect of gender on SI in our studies was masked by life circumstances of participants in their respective samples. For example, the recruitment of participants based on elevated anger and SI, likely meant that these participants were very similar to other treatment-seeking samples that do not exhibit gender-based differences in SI (Chochinov et al., 1998). Thus, the presenting complaint of excess anger and SI could have could have risen above and beyond any effects that gender may have played on SI. These contextual factors likely increased SI for *all* members of samples, masking the role of gender.

With regard to our third hypothesis, findings converged with our expectations and demonstrated that, across the whole, as anger increased so did SI. Paradoxically, the relationship between anger and SI was strongest among participants with history of suicide attempt (Study 2) and much weaker (and no longer statistically significant) among patients presenting with elevated anger (Study 1). This divergence in the relationship between anger and SI could indicate that anger plays a key role in the transition from SI to suicide attempts. Thus, with regard to clinical applications, when patients present to care with comorbid SI and anger, providers could investigate the role of anger as a maintaining factor for SI. Indeed, if anger is found throughout clinical investigation to likely play a role in the development and maintenance of SI, providers should also work with patients to identify and reduce anger. This is one possible avenue to reduce the likelihood of future suicide attempts in treatment seeking patients with comorbid SI and anger.

Regarding our fourth aim, findings contradicted our expectations and reflected that the relationships between anger and SI did not vary based on gender. These findings provide little clarity as to why anger and SI were so closely linked in Schafer et al. (2021) as those samples were comprised largely of male veterans and service members. It is possible that a strong relationship between anger and SI may be isolated to veteran and service-member population as a function of the roles and duties unique to the military, and that gender truly does not moderate the two. However, data from the present project did not address this interpretation, and future research should continue to investigate differences in the risk of SI experienced among different populations, as differences have been documented in meta-analyses (Schafer et al., 2021).

Together, findings from these two studies broadly support theoretical suppositions regarding the role of anger in SI, and they contribute to the growing body of literature that investigates the theoretical underpinnings of the development of SI. Although guiding theories of suicide do not explicitly hypothesize that anger causes SI, many investigations have evidenced significant correlations between theoretically relevant constructs and anger. For example, the Interpersonal Theory of Suicide (Van Orden et al., 2010) proposes that thwarted belongingness, perceived burdensomeness, hopelessness, and capability for suicide combine to bring about serious and sometimes

lethal suicide attempts. Meta-analytic investigation of cross-sectional and longitudinal studies supported this theory (Chu et al., 2017; Ma et al., 2016). Anger has been found to be correlated with thwarted belongingness (Anestis & Joiner, 2011; Rogers et al., 2017), perceived burdensomeness (Anestis et al., 2011), acquired capability (Hirsch et al., 2012). Further, some have suggested that anger could contribute to the development of SI by exacerbating thwarted belongingness and perceived burdensomeness, and intensifying hopelessness about these states (Hawkins et al., 2014). Specifically, anger, especially when extreme or problematic, could cause strain in interpersonal relationships, and people prone to excessive anger may be more likely to engage in disputes and arguments. Beyond increased frequency in altercations, people prone to excessive anger may be more likely to experience the negative consequences of these unpleasant altercations.

Likewise, our findings contribute to an understanding of the role that anger may play in the etiology of SI, as proposed by the Hopelessness Theory of Suicide (Beck, 1976). The Hopelessness Theory posits that thoughts of hopelessness serve as an avenue towards SI in depressed patients. Anger has been found to contribute to both theoretical constructs, depression and hopelessness, of the Hopelessness Theory. For example, previous research indicates that anger is closely related to (and a DSM-5 symptom criteria for) depression (McKinney et al., 2017) and hopelessness (Korkmaz et al., 2019). Finally, the Psychache Theory of Suicide (Schneidman, 1998) proposes that unbearable pain, when perceived as stable, unchanging, or unending, leads to the development of SI. Again, there is a significant body of research that conceptualizes anger as an emotional state that can perceived as considered unbearable (Lök, Bademli, & Canbaz, 2018), which perhaps could lead to the development of SI. Our findings closely link intense anger with SI.

Although our study does not directly test any of the mechanisms proposed by the Interpersonal, Hopelessness, and Psychache theories of suicide, it leaves open the distinct possibility that anger can function to support or even aid in the development of SI by way of thwarted belongingness, perceived burdensomeness, hopelessness, depression, or unbearable pain. It is possible that anger increases these theoretically relevant constructs thus increasing the likelihood of suicide-related outcomes. As such, anger may provide substantial source of study and potentially potent treatment targets, for researchers and clinicians alike.

Beyond theoretical contributions, this work nods to research that indicates anger as a particularly important symptom in the association between PTSD and SI. Previous work (Holliday et al., 2020; Panagioti et al., 2009) identified PTSD as a significant risk factor for SI. However, the relationship between PTSD and SI varies in strength, based on sample. It is possible that the broad nature and often varied clinical presentation of PTSD (i.e., comprised of many symptoms) contributes to this variability. (See Brown et al., 2020 for an in-depth discussion of the varied risk of SI conferred by symptom clusters of PTSD.) In other words, it is possible that patients with PTSD whose symptom presentations are characterized by intense anger (assessed in Criteria D and E of PTSD) are at significantly heightened risk of SI, even beyond the risk conferred by PTSD, broadly defined. Indeed, recent work among veterans (McKinney et al., 2017) indicated that anger among veterans with PTSD was significantly elevated as compared to those without PTSD. Further, anger among veterans with PTSD was strongly linked with follow-up SI, much stronger than within veterans without PTSD. Future research should seek to identify if, within the context of PTSD, anger as compared to other symptoms of PTSD (e.g., hypervigilance, "flashbacks", avoidance, etc.) confers significant risk of SI.

5 | STRENGTHS, LIMITATIONS, AND FUTURE DIRECTIONS

This multistudy project had many notable strengths. Patients were diverse across many metrics including age, clinical presentation, race, and level of anger and SI. Recruitment varied across participants and allowed for specific investigations into elevations of constructs of interest. For example, we began our investigations with a sample who were recruited based on elevated on anger (Study 1), and then moved to investigate the relationship between anger, SI, and gender in a sample with elevated on SI (Study 2). Samples were also measured across many facets of anger ranging from broad metrics (e.g.,

anger) to more nuanced facets of anger (e.g., hostility, angry memories, and revenge). Further, we employed follow-up analyses to investigate the role of gender in the relationship between anger and SI. However, our findings should be interpreted in light of limitations. Our samples did not include studies with longitudinal data. Thus, we were not able to investigate the short-term or long-term risk of SI conferred by anger. Further, it is possible, yet untested, that anger and SI promote each other over time, in a bidirectional fashion. For example, although the field often assumes that anger precedes SI, it is possible that SI could confer risk for future anger. That is, SI can lead to interpersonal, occupational, and academic turmoil which could in turn lead to anger, either externalized or internalized. Future research should measure both anger and SI at baseline and at follow-up. Doing so would allow for investigation into the bidirectional nature of the relationship between anger and SI.

Further, both the samples in the present study employed self-report metrics to study anger and SI. Future research should investigate both anger and SI using multiple metrics methods (e.g., physiological metrics, implicit, and behavioral) to determine if any particular aspects of anger account for substantial variability in its relationship with SI. Finally, given the relatively small sample sizes within our study, we still cannot rule out small effects, which would expected and are quite common in investigations of correlates of SI (see e.g., Schafer et al., 2021). Increasingly large sample sizes allow for detection, and subsequent investigation, of small effects which could be of interest in the efforts of identifying and reducing risk factors related to SI.

6 | CONCLUSIONS

Our findings indicated that while SI did not vary by gender, anger was significantly elevated in women as compared to men among treatment-seeking patients with excessive anger (Study 1). Anger and SI were cross-sectionally correlated, but there was substantial variability in strength in this relationship. Further, the link between anger and SI did not vary based on gender. There does not seem to be a single effect between anger and SI across the entire population. Instead, this value seems to vary based on different factors such as recruitment strategy (i.e., elevated SI). Generally, our findings dovetail with popular theories of suicide, and could indicate that anger is a significant contributor to the development and maintenance of SI. Finally, our findings highlight that anger may be an important symptom in the link between PTSD and future SI.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ORCID

Megan L. Rogers http://orcid.org/0000-0002-4969-7035
Thomas E. Joiner http://orcid.org/0000-0001-6798-9085

PEER REVIEW

The peer review history for this article is available at https://publons.com/publon/10.1002/jclp.23331

REFERENCES

Anestis, M. D., Bagge, C. L., Tull, M. T., & Joiner, T. E. (2011). Clarifying the role of emotion dysregulation in the interpersonal-psychological theory of suicidal behavior in an undergraduate sample. *Journal of Psychiatric Research*, *45*, 603–611.

Anestis, M. D., & Joiner, T. E. (2011). Examining the role of emotion in suicidality: Negative urgency as an amplifier of the relationship between components of the interpersonal– psychological theory of suicidal behavior and lifetime number of suicide attempts. *Journal of Affective Disorders*, *129*, 261–269.

Beck, A. T., Steer, R. A., & Ranieri, W. F. (1988). Scale for SuicidalIdeation: Psychometric properties of a self- report version. *Journal of Clinical Psychology*, *44*(4), 499–505.

Beck, A. T., Brown, G., & Steer, R. A. (1989). Prediction of eventual suicide in psychiatric inpatients by clinical ratings of hopelessness. *Journal of Consulting and Clinical Psychology*, *57*(2), 309.

Brody, L. R., Lovas, G. S., & Hay, D. H. (1995). Gender differences in anger and fear as a function of situational context. *Sex Roles*, *32*(1-2), 47–78.

Brown, L. A., Chen, S., Narine, K., Contractor, A. A., & Oslin, D. (2020). DSM-5 PTSD symptom clusters and suicidal ideation in veterans. *Psychiatry Research*, *288*, 112942.

Chochinov, H. M., Wilson, K. G., Enns, M., & Lander, S. (1998). Depression, hopelessness, and SI in the terminally ill. *Psychosomatics: Journal of Consultation and Liaison Psychiatry*, *39*(4), 366–370. https://doi.org/10.1016/S0033-3182(98)71325-8

Chu, C., Buchman-Schmitt, J. M., Stanley, I. H., Hom, M. A., Tucker, R. P., Hagan, C. R., Rogers, M. L., Podlogar, M. C., Chiurliza, B., Ringer, F. B., Michaels, M. S., Patros, C. H. G., & Joiner, Jr. T. E. (2017). The interpersonal theory of suicide: A systematic review and meta-analysis of a decade of cross-national research. *Psychological Bulletin*, *143*(12), 1313.

Cox, D. L., Stabb, S. D., & Hulgus, J. F. (2000). Anger and depression in girls and boys: A study of gender differences. *Psychology of Women Quarterly*, *24*(1), 110–112.

Daniel, S. S., Goldston, D. B., Erkanli, A., Franklin, J. C., & Mayfield, A. M. (2009). Trait anger, anger expression, and suicide attempts among adolescents and young adults: A prospective study. *Journal of Clinical Child & Adolescent Psychology*, *38*(5), 661–671.

Dillon, K. H., Van Voorhees, E. E., Dennis, P. A., Glenn, J. J., Wilks, C. R., Morland, L. A., Beckham, J. C., & Elbogen, E. B. (2020). Anger mediates the relationship between posttraumatic stress disorder and suicidal ideation in veterans. *Journal of Affective Disorders*, *269*, 117–124.

Dillon, K. H., Van Voorhees, E. E., & Elbogen, E. B. (2020). Associations between anger and SI and attempts: A prospective study using the national epidemiologic survey on alcohol and related conditions. *Journal of Psychiatric Research*, *122*, 17–21.

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science*, *18*(3), 233–239.

Goldney, R., Winefield, A., Saebel, J., Winefield, H., & Tiggeman, M. (1997). Anger, suicidal ideation, and attempted suicide: A prospective study. *Comprehensive Psychiatry*, *38*(5), 264–268.

Hawkins, K. A., Hames, J. L., Ribeiro, J. D., Silva, C., Joiner, T. E., & Cougle, J. R. (2014). An examination of the relationship between anger and suicide risk through the lens of the interpersonal theory of suicide. *Journal of Psychiatric Research*, *50*, 59–65.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications

Hejdenberg, J., & Andrews, B. (2011). The relationship between shame and different types of anger: A theory-based investigation. *Personality and Individual Differences*, *50*(8), 1278–1282.

Hirsch, J. K., Webb, J. R., & Jeglic, E. L. (2012). Forgiveness as a moderator of the association between anger expression and suicidal behaviour. *Mental Health, Religion & Culture*, *15*(3), 279–300.

Holliday, R., Borges, L. M., Stearns-Yoder, K. A., Hoffberg, A. S., Brenner, L. A., & Monteith, L. L. (2020). Posttraumatic stress disorder, suicidal ideation, and suicidal self-directed violence among US military personnel and veterans: A systematic review of the literature from 2010 to 2018. *Frontiers in Psychology*, 1998.

Jobes, D. A., & Joiner, T. E. (2019). Reflections on suicidal ideation. *Crisis*, *40*(4), 227–230.

Kliem, S., Lohmann, A., Mößle, T., & Brähler, E. (2018). Psychometric properties and measurement invariance of the Beck hopelessness scale (BHS): Results from a representative population sample. *BMC Psychiatry*, *18*(1), 1–11.

Klonsky, E. D., & May, A. (2010). Rethinking impulsivity in suicide. *Suicide and Life-Threatening Behavior*, *40*(6), 612–619.

Korkmaz, H., Korkmaz, S., & Çakar, M. (2019). Suicide risk in chronic heart failure patients and its association with depression, hopelessness and self esteem. *Journal of Clinical Neuroscience*, *68*, 51–54.

Lehnert, K. L., Overholser, J. C., & Spirito, A. (1994). Internalized and externalized anger in adolescent suicide attempters. *Journal of Adolescent Research*, *9*(1), 105–119.

Lök, N., Bademli, K., & Canbaz, M. (2018). The effects of anger management education on adolescents' manner of displaying anger and self-esteem: A randomized controlled trial. *Archives of Psychiatric Nursing*, *32*(1), 75–81.

Ma, J., Batterham, P. J., Calear, A. L., & Han, J. (2016). A systematic review of the predictions of the Interpersonal–Psychological Theory of Suicidal Behavior. *Clinical psychology review*, *46*, 34–45.

McDermott, K. A., Smith, H. L., Matheny, N. L., & Cougle, J. R. (2017). Pain and multiple facets of anger and hostility in a sample seeking treatment for problematic anger. *Psychiatry Research*, *253*, 311–317.

McKinney, J. M., Hirsch, J. K., & Britton, P. C. (2017). PTSD symptoms and suicide risk in veterans: Serial indirect effects via depression and anger. *Journal of Affective Disorders*, *214*, 100–107.

Meyer, C., Leung, N., Waller, G., Perkins, S., Paice, N., & Mitchell, J. (2005). Anger and bulimic psychopathology: Gender differences in a nonclinical group. *International Journal of Eating Disorders*, *37*(1), 69–71.

O'Connor, R. C., & Kirtley, O. J. (2018). The integrated motivational–volitional model of suicidal behaviour. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *373*(1754), 20170268.

Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner, T. E. (2010). The Interpersonal theory of suicide. *Psychological Review*, *117*(2), 575–600.

Panagioti, M., Gooding, P., & Tarrier, N. (2009). Post-traumatic stress disorder and suicidal behavior: A narrative review. *Clinical Psychology Review*, *29*(6), 471–482.

Rogers, M. L., Hom, M. A., Dougherty, S. P., Gallyer, A. J., & Joiner, T. E. (2018). Comparing suicide risk factors among individuals with a history of aborted, interrupted, and actual suicide attempts. *Archives of suicide research*

Rogers, M. L., Kelliher-Rabon, J., Hagan, C. R., Hirsch, J. K., & Joiner, T. E. (2017). Negative emotions in veterans relate to suicide risk through feelings of perceived burdensomeness and thwarted belongingness. *Journal of Affective Disorders*, *208*, 15–21.

Schafer, K. M., Duffy, M., Kennedy, G., Stentz, L., Leon, J., Herrerias, G., Summer, F., & Joiner, T. E. (2021). Suicidal ideation, suicide attempts, and suicide death among Veterans and service members: A comprehensive meta-analysis of risk factors. *Military Psychology*, 1–18.

Shneidman, E. S. (1998). Perspectives on suicidology: Further reflections on suicide and psychache. *Suicide and Life-Threatening Behavior*, *28*(3), 245–250.

Snell, W. E. Jr., Gum, S., Shuck, R. L., Mosley, J. A., & Kite, T. L. (1995). The clinical anger scale: Preliminary reliability and validity. *Journal of Clinical Psychology*, *51*(2), 215–226.

Snyder, C. R., Crowson, J. J., Houston, B. K., Kurylo, M., & Poirier, J. (1997). Assessing hostile automatic thoughts: Development and validation of the HAT scale. *Cognitive Therapy and Research*, *21*(4), 477–492.

Sukhodolsky, D. G., Golub, A., & Cromwell, E. N. (2001). Development and validation of the anger rumination scale. *Personality and Individual Differences*, *31*(5), 689–700.

Spielberger, C. D. (1999). *Sate-Trait Anger Expression Inventory-2: STAXI-2*. PAR, Psychological Assessment Resources.

Stoner, S. B., & Spencer, W. B. (1987). Age and gender differences with the Anger Expression Scale. *Educational and Psychological Measurement*, *47*(2), 487–492.

Szucs, D., & Ioannidis, J. (2017). When null hypothesis significance testing is unsuitable for research: A reassessment. *Frontiers in Human Neuroscience*, *11*, 390.

World Health Organization. (1993). Composite international diagnostic interview (CIDI), version 1.1. Composite International Diagnostic Interview (CIDI), Version 1.1.

How to cite this article: Schafer, K. M., Daurio, A., French, J. E., Rogers, M. L., Meltzer, A. L., Cougle, J. R., & Joiner, T. E. (2022). The Relationship between Anger and Suicidal Ideation: Investigations in Two Samples. *Journal of Clinical Psychology*, 78, 1866–1877. https://doi.org/10.1002/jclp.23331