

The relationship between growth mindset and suicidal ideation or behaviors

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Kailyn Fan, B.A.* (ORCID: 0000-0002-8044-436X)

Chloe Hudson, Ph.D. (ORCID: 0000-0002-6954-4247)

Hans Schroder, Ph.D. (ORCID: 0000-0002-1162-6581)

Elizabeth Kneeland, Ph.D. (ORCID: 0000-0001-9070-3225)

Courtney Beard, Ph.D. (ORCID: 0000-0002-8321-8712)

Thröstur Björgvinsson, Ph.D. (ORCID: 0000-0001-9353-3663)

*Corresponding Author: Kailyn Fan, B.A. (kfan4@mgb.org; 115 Mill St., Belmont, MA 02478)

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Data Availability

The data that support the findings of this study are openly available on [OSF](#).

Abstract

Background: Suicide research has focused on identifying risk factors for suicide, but potential resilience factors remain relatively unexplored. The current study examined whether *growth mindset of emotions*, or beliefs in emotion malleability, is a protective factor against suicidal ideation and/or behaviors. We also examined whether growth mindset of emotions moderates the relation between suicidal ideation and suicidal behaviors.

Method: Our sample included 514 patients with acute psychiatric symptoms enrolled in a partial hospital program between September 2017 and August 2018. Participants completed the 4-item Theories of Emotion Scale that assessed growth mindset and the Columbia Suicide Severity Rating Scale interview to measure severity of past-month suicidal ideation and presence of past-month suicidal behaviors.

Results: Consistent with our hypotheses, stronger growth mindset was associated with lower levels of past-month suicidal ideation ($\beta = -.12, p = .009$) and lower odds of past-month suicidal behaviors ($\text{Exp}[B] = 1.06, p = .009$). However, these effects were no longer significant when controlling for depressive symptoms ($\beta = -.05, p = .29; \text{Exp}[B] = 0.85, p = .11$). Past-month suicidal ideation significantly interacted with growth mindset to predict past month suicidal behaviors ($\text{Exp}[B] = 1.21, p = .004$). Unexpectedly, past-month suicidal ideation was a stronger predictor of past-month suicidal behavior at high levels of growth mindset ($b = .87, p < .001$) relative to moderate ($b = .65, p < .001$) or low levels ($b = .51, p < .001$).

Conclusion: Our findings suggest that while growth mindset does not predict overall suicidality above and beyond depressive symptoms, it paradoxically may increase risk of suicidal thoughts progressing into suicidal behaviors. It may be worthwhile for existing ideation-to-action frameworks to consider growth mindset as a potential moderator.

Keywords: growth mindset, suicidal ideation, suicidal behaviors, implicit theories, emotion malleability

Despite increased public awareness, treatment research, and prevention efforts, suicide remains as one of the leading causes of death in the United States (Centers for Disease Control and Prevention, 2022). Suicidality can vary in intensity—from thoughts of weariness about life to death wishes, to actively planning a suicide attempt, to carrying out such a plan (Pokorny, 1974). The dangerous transition from suicidal thoughts to behaviors has been shown to occur over a relatively short time period, most commonly within a year of the first onset of ideation (Nock et al., 2008). Both the prevalence and the progression of suicidality underscore the importance of evaluating key characteristics in suicidal individuals before ideation potentially results in irreversible loss of life. Nevertheless, even in light of the past 50 years of accumulated suicide research, our ability to predict suicidal thoughts and behaviors has not significantly improved (Franklin et al., 2017), thus emphasizing the need for further examination of risk or protective factors for suicide.

Two landmark theoretical models have highlighted cognitive factors that may contribute to suicidality. The Interpersonal-Psychological Theory of Suicidal Behavior, was the first theory to outline potential stages from ideation to action (Ribeiro & Joiner, 2009). This model proposes that suicidal ideation stems from 1) the belief that one's existence is a burden on one's family, friends, and/or society (i.e., perceived burdensomeness) and 2) feelings of alienation within one's social circles (i.e., thwarted belongingness). More recently, the Integrated Motivational-Volitional Model of Suicidal Behavior posited that feelings of defeat and the belief that there is no chance of escape or rescue from psychological pain (i.e., entrapment) as cognitive constructs that may lead to increased suicidal ideation (O'Connor & Kirtley, 2018). In support of these theories, several studies provided evidence for an association between higher perceived burdensomeness, thwarted belongingness, defeat, and entrapment with increased suicidal

ideation (Forkmann & Teismann, 2017; O'Connor et al., 2013; Owen et al., 2018; Roeder & Cole, 2018; Taylor et al., 2011; Woodward et al., 2014). Moreover, high levels of related cognitive processes, such as perfectionism and cognitive inflexibility, are associated with more severe suicidal ideation (Beevers & Miller, 2004; Miranda et al., 2011). Collectively, existing research showcases how specific internalized beliefs may contribute to greater suicidality.

Although several theories highlight specific cognitions underlying suicidality, such theories do not consider cognitions that are adaptive, and therefore may be leaving out potential resilience factors for people at risk of suicidality. Dweck and Leggett's proposed *implicit theories* (1988) offers the possibility of adopting a strength-based perspective when considering cognition. Implicit theories emerged as a framework to describe the formation of goal-oriented behaviors and motivations. First introduced into the academic setting, implicit theories are conceptualized as one's beliefs about the malleability of their own traits. Specifically, *growth mindset* refers to the belief in one's ability to change a characteristic about themselves. In contrast, *fixed mindset* refers to the contrary, that human qualities or traits are immutable.

Implicit theories of intelligence have been the most well-studied domain of implicit theory, albeit with findings on the benefits of promoting growth mindset of intelligence being somewhat inconsistent. While some studies have found that stronger growth mindsets predict better academic achievement (Blackwell et al., 2007; Claro et al., 2016), other research has found little to no support for the efficacy of related growth mindset interventions in promoting cognitive ability, grittiness, or other precursors of academic achievement (Burgoyne et al., 2018; Sisk et al., 2018). These mixed results speak to a need to clarify the potential for growth mindset of emotions to promote resilience surrounding mental health. Tamir and colleagues (2007) were the first to propose expanding Dweck's implicit theories beyond intelligence to malleability

beliefs around emotions. Empirically, meta-analytic evidence suggests that a stronger growth mindset of emotions is associated with lower psychological distress and more active coping (Burnette et al., 2020), whereas a more fixed mindset of emotions is associated with less frequent use of cognitive reappraisal and other emotion regulation strategies (Burnette et al., 2020; Schroder, 2015). Taken together, research suggests that stronger growth mindsets are associated with better mental health outcomes; however, such trends should be considered with caution and deserve further inquiry.

To date, few studies have directly related growth mindset to suicidal thoughts and behaviors, even in light of its applications to other mental health variables. Psychic pain typically leads to suicidal thoughts and behaviors (Ducasse et al., 2017), possibly because the sufferers feel as though the psychic pain is immutable. By definition, a growth mindset entails believing that characteristics, including psychic pain, are malleable. As such, a growth mindset may protect against suicidality by leading to experiences of hope and alternative resolutions to psychic pain. To date, only one study to our knowledge has examined the association of growth mindset to suicidality. In a longitudinal design of middle school students, stronger growth mindset about depression, anxiety, and stress predicted less frequent suicidal ideation (Zhu & Wong, 2022). However, given that this study focused on an adolescent community sample, it is unclear whether these results would generalize to adult psychiatric populations characterized by high levels of suicidality.

The present study sought to extend our knowledge of growth mindset in hopes of identifying protective factors for suicide. Specifically, we investigated growth mindset as a potential predictor of suicidal ideation and behaviors in a sample of treatment seeking adult patients with diverse clinical presentations. We hypothesized that individuals with stronger

growth mindsets will 1) report lower levels of past-month suicidal ideation and 2) be less likely to report past-month suicidal behaviors.

We also explored how growth mindset can potentially impact the association between suicidal ideation and action. Previous studies have found a strong association between suicidal ideation and suicidal behaviors, suggesting that patients with suicidal ideation should be closely monitored and offered early interventions (Reinherz et al., 2006; Mundt et al., 2013). However, recent research has showed greater variability in how suicidal ideation may correlate to suicidal behaviors (Wastler et al., 2021). For instance, some individuals with a history of suicide attempts may deny ever experiencing suicidal thoughts, and many individuals who experience suicidal ideation do not engage in suicidal behaviors. Clearly, we still know relatively little about the nature of the association between suicidal thoughts and suicidal behaviors, including potential moderators that may strengthen or mitigate this relation. We can theorize, nevertheless, that growth mindset, through instilling greater flexibility in thinking, may shield an individual from seeing suicide as the only option for escape from psychic pain. Based on this rationale, we hypothesized that stronger growth mindsets would be associated with a weaker relation between suicidal ideation and suicidal behaviors.

Method

Participants

Our sample included 514 adult patients enrolled in the *<blinded for review>* between September 2017 and August 2018. Participants ranged from 18 to 76 years old ($M = 32.73$, $SD = 13.47$). Most participants identified as non-Hispanic White (83.9%), followed by Hispanic and/or Latino/a (4.9%), multiracial (3.9%), Asian (3.7%), Black (2.5%), and American Indian or Alaskan Native (0.2%). A further 0.8% reported not knowing their ethnoracial identity. In terms

of gender, 54.6% of participants identified as female, 43.5% identified as male, and 1.9% identified as gender-queer or nonbinary¹. Clinical characteristics of participants can be found in Table 1.

Measures

Theories of Emotion Scale

The Theories of Emotion Scale (Tamir et al., 2007) measured participants' beliefs about the malleability of emotions (i.e., strength of growth mindsets about emotions). The Theories of Emotion Scale is a 4-item questionnaire adapted from the Theories of Intelligence Scale (Dweck, 1999), a widely administered scale that assesses the fixed versus malleable nature of intelligence. Similar to the original scale, the Theories of Emotion Scale taps into an individual's belief in their ability to change or control – in this case, their emotions. Scores for each statement ranged from 1 (*strongly disagree*) to 6 (*strongly agree*), with a higher average score indicating a stronger overall growth mindset. This scale has demonstrated high internal consistency in previous research (Doyle & Thompson, 2021), and in the current sample ($\alpha = .76$, $\omega = .73$).

Columbia Suicide Severity Rating Scale

We used the Columbia Suicide Severity Rating Scale (Posner et al., 2011) to measure severity of past-month suicidal ideation and presence or absence of past-month suicide attempt or behavior. The interview includes five questions regarding past-month suicidal ideation that correspond to an increasing level of severity: 1) wish to be dead 2) non-specific active suicidal thoughts 3) active suicidal ideation with any methods, without intent to act 4) active suicidal ideation with some intent, without specific plan 5) active suicidal with specific plan and intent.

¹ Although female and male typically refer to biological sex, the hospital offered these as options to assess gender at the time of data collection..

For the present study, the highest level of severity endorsed was noted. The Columbia Suicide Severity Rating Scale also assesses for the following types of suicidal behaviors: actual suicide attempt, interrupted attempt, aborted attempt, preparatory acts, and non-suicidal self-injury. For the present study, suicidal behaviors were coded as present if any of these types of behaviors were reported in the past month. This interview has demonstrated acceptable concurrent and predictive validity in previous research (Madan et al., 2016) and in the current sample ($\alpha = .84$, $\omega = .84$).

Procedure

The *<blinded for review>* program is structured to take on average 7 to 10 days and aims to stabilize patients with a wide variety of psychiatric diagnoses (e.g., mood, anxiety, psychotic-spectrum, and personality disorders). The program administers a range of self-report and interview measures designed to inform case conceptualizing, treatment planning, and program evaluation. On their day of admission, patients completed the Theories of Emotion Scale, among other questionnaires. The Columbia Suicide Severity Rating Scale was conducted on patients' second day of treatment by a trained advanced clinical psychology doctoral student, postdoctoral fellow, or staff psychologist. This study was reviewed and approved by the *<blinded for review>* Institutional Review Board as being exempt from participant consent, given the use of an existing, de-identified dataset. All data were collected and managed via Research Electronic Data Capture (REDCap; Harris et al., 2009).

Statistical Analyses

Pre-registered Analyses

Analyses were pre-registered after data collection and can be found via Open Science Framework (link [here](#)). To assess the relation between growth mindset and severity of suicidal

ideation, we conducted a linear regression. To assess the relation between growth mindset and presence or absence of past-month suicidal behaviors, we conducted a binary logistic regression. We deviated from our pre-registered analysis by including past-month suicidal behaviors as the outcome variable, rather than past-month suicide attempts, after identifying that we did not have sufficient variance in past-month suicide attempts in our sample (i.e., only 5.1% of participants reported a past-month suicide attempt). Finally, we also investigated whether the association between suicidal ideation and suicidal behaviors was moderated by growth mindset. This research question was exploratory and not included in our pre-registered aims. We tested each model with the inclusion of demographic and clinical covariates. The pattern of results did not change with the inclusion of demographic covariates; as such, only the model with depressive symptoms as a covariate is presented below.

Results

Preliminary Analyses

Approximately one third of the sample (34.2%, $n = 175$) reported no suicidal ideation in the past month. A large proportion of the sample reported a wish to be dead (18.8%, $n = 96$), non-specific active suicidal ideation (8.8%, $n = 45$), active suicidal ideation with methods but no plan or intent (20.1%, $n = 103$), active suicidal ideation with some intent but no specific plan, (6.1%, $n = 31$), or active suicidal ideation with specific intent and plan (12.1 %, $n = 62$). In the past month, 28.7% ($n = 146$) of our sample reported engaging in some type of suicidal behavior, while 71.3% ($n = 363$) did not.

Neither age nor ethnoracial identity was associated with growth mindset, suicidal ideation, or suicidal behavior ($p > .08$). The presence of past-month suicidal behavior approached a significant difference by gender, $\chi^2(4) = 9.38$, $p = .052$. Follow-up analyses revealed that

people who identified as female were less likely to experience past-month suicidal behavior compared to others ($p = .02$), and people who identified as non-binary were more likely to experience past-month suicidal behavior compared to others ($p = .03$). Neither growth mindset nor suicidal ideation varied as a function of participants' gender identity ($p > .09$).

Growth Mindset and Suicidality

Consistent with our hypotheses, stronger growth mindset was significantly associated with less severe past-month suicidal ideation, $b = -.20$, $p = .009$, and lower odds of past-month suicidal behavior, $b = -.26$, $SE = .10$, $Wald = 6.76$, $Exp(B) = .77$, $p = .009$.

To examine whether the effect of emotional growth mindset could be explained by depressive symptoms, we analyzed the effect of emotional growth mindset on suicidality controlling for depressive symptoms. Greater depressive symptoms were significantly associated with more severe past-month suicidal ideation, $b = .10$, $p < .001$, and greater odds of past-month suicidal behavior, $b = .09$, $Wald = 21.05$, $Exp(B) = 1.10$, $p < .001$. The effect of emotional growth mindset on past-month suicidal ideation behavior was no longer significant when controlling for depressive symptoms, $b = -.08$, $p = .29$ and $b = -.17$, $Wald = 2.53$, $Exp(B) = 0.85$, $p = .11$, respectively. Notably, stronger growth mindsets were significantly associated with less severe depressive symptoms, $b = -.27$, $p < .001$.

Exploratory Moderation

When entered simultaneously into the regression model, more severe past-month suicidal ideation was significantly associated with greater odds of past-month suicidal behavior, $b = .63$, $Wald = 87.48$, $Exp[B] = 1.88$, $p < .001$. Growth mindset was not a significant predictor of past-month suicidal behavior when controlling for past-month suicidal ideation, $b = -.19$, $Wald = 2.95$, $Exp[B] = 0.82$, $p = .09$. However, these effects were qualified by a significant suicidal

ideation by growth mindset interaction, $b = .19$, Wald = 8.39, $\text{Exp}(B) = 1.21$, $p = .004$. Follow-up analyses revealed that past-month suicidal ideation was a stronger predictor of past-month suicidal behavior at high levels of growth mindset ($b = .87$, $p < .001$) relative to those with moderate ($b = .65$, $p < .001$) or low levels of growth mindset ($b = .51$, $p < .001$). This interaction remained significant when controlling for depressive symptoms, $b = .18$, Wald = 6.60, $\text{Exp}[B] = 1.19$, $p = .01$.

Discussion

The present study evaluated growth mindset as a potential predictor of suicidal ideation and behaviors. Consistent with hypotheses, we found that stronger growth mindsets were indeed associated with less severe past-month suicidal ideation, as well as lower likelihood of past-month suicidal behaviors (i.e., actual attempts, aborted attempts, interrupted attempts, preparatory behaviors, and NSSI). However, these results were not significant when we controlled for depressive symptoms, suggesting that the variance in patients' suicidality is better accounted for by individual differences in depressive symptoms. This interpretation aligns with prior literature that has found that elevated depressive symptoms are a robust predictor of suicidal ideation and behaviors (Hatchel et al., 2019; Melham et al., 2019). Additionally, considering the significant association between strong growth mindsets and less severe depressive symptoms, it may be the case that growth mindset is a state-dependent characteristic that fluctuates with mood changes. In theory, this would make sense, as the definition for a fixed mindset of emotions closely aligns with that of depressive cognitions (e.g., beliefs of failure, feelings of worthlessness). Ultimately, while these cognitions might be an aspect of what predicts suicidal ideation or behaviors, suicidal risk may be better predicted by considering the

individual's overall depression, including the affective components (e.g., feeling down or hopeless).

Contrary to our hypothesis, we found that suicidal ideation was the strongest predictor of suicidal behaviors at high levels of growth mindset compared to moderate or low levels, and remained significant when controlling for depressive symptoms. We speculate that it is possible that self-blame, a construct we did not assess in our sample, could better account for this association. Research on growth mindset induction suggests that higher levels of growth mindset are also associated with higher levels of self-blame, and that self-blame is associated with suicide completion (Kneeland et al., 2016; Yen & Siegler, 2010). Indeed, growth mindset has been previously found to have unintended consequences amidst initial psychological benefits, with attribution of responsibility increasing blame placed onto ourselves or others (Hoyt et al., 2021). With these outcomes in mind, we could infer that stronger growth mindsets among our sample could be associated with greater self-blame, thus tipping individuals with underlying suicidal ideation over the edge to engage in suicidal behaviors. In essence, when someone overvalues the need to expand their ability to control emotions, it may paradoxically discourage them and make them more vulnerable to succumbing to suicidal thoughts.

Our study contained notable strengths; for one, our sample was clinically representative with high rates of suicidal ideation and behaviors, which ensures that our results are generalizable to real world patient populations. Additionally, our use of the Columbia Suicide Severity Rating Scale assessed severity level of suicidal ideation, as well as multiple types of suicidal behaviors. As such, we have expanded on previous research that exclusively focused on suicidal ideation (Zhu et al., 2022) by examining the multifaceted nature of suicidality.

There were also several limitations to our study. Due to the demographics of the hospital, our sample was lacking in racial/ethnic and gender diversity, so our results may not necessarily translate to those with minoritized identities. Secondly, due to suicide being a low base rate event, we were unable to study suicide attempts as an isolated outcome. Our study also was cross-sectional, which prevents us from drawing evidence for any causal relations between growth mindset and suicidal experiences. Future suicide research exploring growth mindset may seek to incorporate more inclusive samples and utilize a longitudinal design to establish more conclusive evidence for this construct as a predictor. Finally, our study did not assess for other variables that may help to explain the relation of growth mindset, suicidal ideation, and suicidal behavior. Future research is needed to clarify the role of self-blame and other related constructs in this association.

Overall, our findings suggest growth mindset may offer a unique and effective lens to better understand the nature of suicidal ideation and behaviors in psychiatric populations. While depressive symptoms may play a more meaningful role in predicting suicide-related outcomes, our results suggest that growth mindset may exacerbate the pathway from suicidal thoughts to behaviors, as there is potential harm in overemphasizing one's ability to control their emotions. Future studies using prospective and experimental designs could help elucidate the interaction between growth mindset and other cognitive constructs like self-blame, and continue more nuanced discussions of the effects of promoting malleability of emotions. Such evidence could potentially pave way for novel or existing interventions to reduce risk of suicide.

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Table 1*Psychiatric Conditions Assessed by the Mini International Neuropsychiatric Interview*

Psychiatric Conditions	Current <i>n</i> (%)	Lifetime <i>n</i> (%)
Major Depressive Episode	314 (61.1)	471 (91.6)
Manic Episode	12 (2.3)	120 (23.3)
Hypomanic Episode	0 (0)	3 (0.6)
Borderline Personality Disorder	–	116 (22.6)
Generalized Anxiety Disorder	224 (43.6)	–
Panic Disorder	77 (15.0)	130 (25.3)
Agoraphobia	42 (8.2)	–
Social Anxiety Disorder	165 (32.1)	–
Obsessive Compulsive Disorder	65 (12.6)	–
Alcohol Use Disorder	116 (22.6)	–
Substance Use Disorder	112 (21.8)	–
Mood Disorder with Psychotic Features	15 (2.9)	58 (11.3)
Psychotic Disorder	16 (3.1)	22 (4.3)

Note. Diagnoses were obtained from structured diagnostic interviews conducted at intake by advanced clinical psychology doctoral students, postdoctoral fellows, and/or staff psychologists.