

Immersive and Reflective Recall of a Suicidal Episode: Implications for Assessing and Treating
Suicidal Adolescents

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Please note the following changes in author affiliation since the time the research was conducted: Abigail Zisk is now at Children's Hospital of Philadelphia, Caroline H. Abbott is now at VA Boston Healthcare System, and Megan Haley Fitter is now at the U.S. Food and Drug Administration.

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Abstract

Objective: The current study tested the validity and clinical utility of adolescents' reports of two distinct modes of processing during the recall of a suicidal episode in the Suicide Narrative Interview (SNI). Recall Intensity (RI) items were designed to capture a tendency to become immersed in thoughts and feelings during the interview, while Meaning Making (MM) items were designed to assess more distant and reflective processing. **Method:** The construct and predictive validity of pre-treatment MM and RI was tested in a 16-week randomized clinical trial (RCT) for depressed and suicidal adolescents ($N = 113$, $M_{age} = 14.95$, 84.1% female, 51.8% Black/African American). Adolescents rated MM and RI immediately following the SNI during a baseline assessment. **Results:** Baseline MM was associated with protective factors related to reduced suicidality, and RI was associated with several risk factors for suicidal symptoms. Adolescents who reported high MM and low RI reported greater reductions in both suicidal ideation and depressive symptoms during the RCT. **Conclusions:** The results support MM and RI as two distinct modes of how adolescents process memories of suicidal episodes and highlight the potential clinical utility of RI and MM in assessing and treating suicidal adolescents.

Keywords: adolescence, suicide, meaning making, suicide narrative, treatment response

Public Health Significance Statement: Identifying both risk and protective factors for adolescent suicidality is imperative for effective assessment and treatment. The current study extends prior research by testing the validity of Meaning Making (MM) and Recall Intensity (RI) as two modes of processing while recalling a past suicidal episode. Results support MM as a protective factor and RI as a risk factor and demonstrate that Attachment-Based Family Therapy and Family-Enhanced Non-Directive Supportive Therapy were particularly effective in reducing suicidal ideation and depression in teens reporting high MM and low RI at the start of treatment.

Immersive and Reflective Recall of a Suicidal Episode: Implications for Assessing and Treating Suicidal Adolescents

Given increased suicide rates among adolescents (Curtin et al., 2017), assessment of both risk and prognostic indicators of suicidal adolescents' treatment response is imperative. A growing literature supports narrative procedures that elicit the recall of stressful events as promoting adaptive outcomes across multiple domains, including metabolic functioning, academic and occupational performance, and mood (for review, see Pennebaker & Chung, 2011). However, individual differences in the benefit derived from these recall procedures have received less attention. Kross, Ayduk, and colleagues have distinguished two modes of processing narratives of negative events that we term *reflective* processing, or an adaptive more distanced perspective, and *immersive* processing, or a first-person self-referential perspective (for review, see Kross & Ayduk, 2011). Experimental and naturalistic studies of narrative recall of events involving sadness, anger, or interpersonal rejection have linked reflective processing to decreased distress and immersive processing to increased distress (Kross & Ayduk, 2011). Drawing on this literature, the current study developed and tested the validity of adolescents' post-interview reports of immersive processing, or Recall Intensity (RI), and reflective processing, or Meaning Making (MM), following the Suicide Narrative Interview (SNI; Zisk et al., 2017) during a baseline assessment. We then examined the clinical utility of these two modes of processing as indicators of suicidal adolescents' response to treatment in a randomized clinical trial (RCT).

Narrative Recall of Suicidal Episodes

A suicidal episode, defined here as a period of time during which an individual thinks about or acts on thoughts of killing oneself, represents a more extreme, life-threatening exemplar

of the upsetting events recalled in the initial studies of immersive and reflective processing. Clinical work with suicidal patients has indicated that the recall of a suicidal episode varies in both intensity and the extent to which the individual maintains a sense of control or perceived ability to manage or exit from the suicidal thoughts and feelings (Allen, 2011; Michel & Valach, 2011). As the frequency and intensity of suicidal thoughts and feelings increase, individuals become more vulnerable to remaining immersed or entrapped in a first-person perspective and less able to shift attention to more distanced perspectives. This increases the risk for suicidal behavior, which may be perceived as the only viable exit strategy or escape (Baumeister, 1990).

Clinicians have begun to examine the therapeutic benefits of interviews designed to elicit patients' narratives of past suicidal episodes. By helping individuals articulate suicidal thoughts and feelings to an empathic and reflective listener, narrative interviews may reduce the intensity and sense of isolation that accompanies entrapment in a suicidal state of mind and enhance patients' sense of agency and mastery over their suicidal thoughts and feelings (Michel & Valach, 2011). This also likely facilitates mentalization of the suicidal state by opening the possibility of deriving new perspectives and understandings of self and others (Allen, 2011; Fonagy, 1989). Systematic efforts to enhance reflective processing in mentalization-based therapy have been associated with reductions in suicidal behavior among patients with borderline personality disorder (Bateman & Fonagy, 2008), and similar efforts have garnered preliminary support with suicidal adolescents (Sharma & Fowler, 2018).

The SNI, a structured interview protocol designed to elicit and encourage adolescents to elaborate on the recall of a severe suicidal episode, has demonstrated utility as an assessment procedure (Zisk et al., 2017) and presents an opportunity to measure individual differences in immersive and reflective processing while narrating a suicidal episode. The current study

adapted and supplemented items that have differentiated between immersive and reflective processing in narrative recalls of upsetting events (Ayduk & Kross, 2010). The overall aims of the current study were to examine the construct validity of RI and MM as indicators of immersive and reflective processing during the SNI and to test these pre-treatment constructs as predictors of treatment benefit for depressed and suicidal adolescents.

Sketching the Nomological Network for Recall Intensity and Meaning Making

Indicators of immersive processing have generally been conceived as intensifying negative emotion and increasing risk for maladaptation (Kross & Ayduk, 2011; Margola et al., 2010; Rude et al., 2004; Tausczik & Pennebaker, 2010). In our view, adolescents who report more RI following the SNI are likely to report more severe suicidal symptoms. A corollary of this view is that RI should be associated with other established risk factors for suicidality, including social isolation and hopelessness (for review, see Glenn et al., 2018). These constructs are central to the Interpersonal Theory of Suicide (Joiner, 2005; Van Orden et al., 2010), which focuses specifically on the two constructs of thwarted belongingness (TB; i.e., a feeling of social disconnectedness) and perceived burdensomeness (PB; i.e., a view of the self as a social liability). Additional vulnerabilities, including excessive reliance on self-referential or self-focused perspectives (Alarcón et al., 2019), neuroticism or negative affect (Enns et al., 2003; Xavier et al., 2015), and difficulties regulating negative emotions (Weinberg & Klonsky, 2009), have also been linked to risk for adolescent suicidality and self-harm. These vulnerabilities may perpetuate immersion in suicidal states by absorbing attention to negative self-focused states, making it difficult to shift attention to more positive and distanced perspectives.

In our view, MM requires a capacity to shift attention to more distant or alternative views of personal experience that may provide insight, new understandings, and some degree of control

over suicidal thoughts and feelings. This reflective capacity may be supported by personality factors such as optimism and self-efficacy (King et al., 2006; Park, 2010) as well as by resiliency and effective coping with stress (Folkman & Moskowitz, 2000). Interpersonal factors such as social connectedness may also enhance reflective meaning-making capacities (van Tilburg et al., 2019). Together, these indicators of positive intrapersonal and interpersonal functioning may promote reflective processing and meaning making by supporting attentional flexibility and a more distanced consideration of negative states and experiences.

Recall Intensity and Meaning Making as Predictors of Treatment Response

Extant research has linked indicators of both reflective and immersive processing to individuals' response to treatment. For instance, reconceptualization (e.g., deriving new understandings about intrapersonal change) predicted symptom reduction in depressed adults (Fernández-Navarro et al., 2018), and evidence of processing leading to new meanings and a capacity for coherent personal narratives was associated with sudden gains in adults receiving routine clinical care (Adler et al., 2013). More generally, protective factors associated with meaning making such as adaptive coping and social connectedness have predicted better treatment response for depressed and suicidal adolescents (Feeny et al., 2009; Rohde et al., 2006). Conversely, risk indicators of RI, including symptom severity (Asarnow et al., 2009), hopelessness (Rohde et al., 2006), avoidant coping (Becker-Weidman et al., 2010), and interpersonal dysfunction (Feeny et al., 2009; Rohde et al., 2006), have predicted less treatment benefit for depressed and suicidal adolescents.

The constructs of MM and RI have not yet been assessed during the recall of a suicidal episode nor have they been systematically tested as predictors of treatment benefit. Further, nothing is known about whether MM moderates the effect of RI on treatment response. Although

we generally conceive of MM as a protective factor and RI as a risk factor and therefore expect high MM and low RI to support treatment benefit, it may be that some degree of RI, in the presence of high MM, also promotes treatment gains, as this may combine a tolerance of emotional arousal (Carrier & Greenberg, 2010) with an attentional capacity to step back, exit from immersive suicidal states, and derive new meanings. A first step in testing this is to determine if MM and RI are orthogonal constructs.

The Current Study

The current study examined the measurement, construct, and predictive validity of pre-treatment assessments of RI and MM during the SNI in a 16-week RCT comparing Attachment-Based Family Therapy (ABFT) and Family-Enhanced Non-Directive Supportive Therapy (FE-NST) for depressed and suicidal adolescents (Diamond et al., 2019). ABFT links adolescents' suicidality and depression to ruptures in the parent-teen relationship and facilitates reparative conversations to increase the adolescent's confidence in the parent as a resource for affect regulation and symptom management. FE-NST emphasizes individually-focused reflective and empathic listening to provide teens with opportunities to articulate their own perspectives, thoughts, and feelings, with supplemental sessions for parental psychoeducation. Adolescents in both conditions experienced significant reductions in depression and suicidal ideation but did not differ in their treatment benefit (Diamond et al., 2019).

The current study had three aims. First, we tested the latent structure of the SNI self-report items as indicators of RI and MM, which were hypothesized to be distinct orthogonal constructs. Second, we examined the hypothesized nomological network of the MM and RI constructs by testing their convergent and divergent associations with standardized self-report and interview measures. Third, MM and RI were examined as pre-treatment predictors of

adolescents' treatment response. Adolescents who reported higher ratings of MM were expected to experience steeper reductions in depression and suicidal ideation over the course of treatment, and adolescents who reported higher levels of RI were expected to experience slower declines in symptoms. An interaction between MM and RI was also anticipated, with adolescents reporting high levels of MM and low levels of RI expected to derive the most treatment benefit.

Interactions with treatment condition were explored for moderation effects across ABFT and FE-NST.

Method

Adolescents were recruited to participate from a variety of sources (e.g., emergency departments, inpatient and outpatient psychiatric facilities, schools, self-referrals). Inclusion criteria required that adolescents report severe suicidal ideation (score ≥ 31 on the Suicidal Ideation Questionnaire-Junior; SIQ-JR; Reynolds, 1988) and at least moderate depression (score ≥ 20 on the Beck Depression Inventory-II; BDI-II; Beck et al., 1996) and have a caregiver participate. Families were excluded if the adolescent displayed imminent risk of harm to self or others, psychotic symptoms, or severe cognitive impairment; initiated anti-depressant medication within three weeks of the first assessment; or was non-English speaking.

One hundred and twenty-nine adolescents (82.9% female) ages 12 to 18 years ($M = 14.96$, $SD = 1.66$) enrolled in the study. The current study's sample includes the 113 adolescents (84.1% female; $M_{age} = 14.95$, $SD_{age} = 1.73$) enrolled once the SNI was introduced into study protocol at the seventeenth subject's baseline assessment. Among this sample, 51.8% of the adolescents self-identified as Black/African American, 30.4% reported White/Caucasian racial status, and 17.9% identified as another race (e.g., Asian, Native Hawaiian or Other Pacific

Islander, American Indian or Alaskan Native, “other,” or multiracial). Almost a third (32.7%) of families reported living below the poverty line at an income-to-needs ratio of 1.0 or lower.

Procedure

The Institutional Review Boards of all participating institutions approved the study. Consent was obtained from caregivers, and consent or assent was obtained from adolescents. At the pre-treatment baseline assessment, adolescents and caregivers completed a battery of measures, including audio-recordings of adolescents’ SNI. Families were then randomly assigned to receive 16 weeks of either ABFT or FE-NST. Outcome measures of suicidal ideation and depressive symptoms were collected on a monthly basis from baseline to Week 16 (post-treatment) by study staff who were blind to treatment condition.

During the SNI, adolescents were prompted to recall “a time when you had very strong thoughts or feelings about killing or harming yourself.” Additional interview questions probed for details about the circumstances surrounding the episode, what the adolescent did during the episode, and whether the adolescent shared the thoughts and feelings with another person. Immediately following these prompts, adolescents completed self-report items assessing their experience of the narrative recall. After those items, the SNI then prompted adolescents to imagine a future suicidal episode and discuss their expectations about how they would cope. A coding system was developed to rate individual differences in SNI transcripts. The study’s first author and an independent rater who was blind to all other study information coded the transcripts. An intraclass correlation coefficient (*ICC*) for each variable calculated reliability based on 20% of the transcripts.

Baseline Suicide Narrative Assessments

Suicide Narrative Interview Self-Reports

Meaning Making (MM). Immediately following the SNI, adolescents rated their agreement with four items assessing reflective processing using a 7-point scale (1 = “completely disagree,” 7 = “completely agree”). Two items were derived from Ayduk and Kross’s (2010) conceptualization of reconstrual, which they have defined as “subjective perceptions of insight and closure, and realizations that made participants think and feel differently about their experience” (p. 812). These items were: “Thinking about the event has led me to having a clearer understanding of my experience,” and “I see my suicidal feelings very differently now than I did when the event occurred.” As reconstrual is thought to rely on broad perspective-taking (Kross & Ayduk, 2008), two additional items were included in the current study to expand the measurement of this wider perspective: “I have some new thoughts about myself,” and “I have some new thoughts about my relationships with other people.” These four items demonstrated adequate baseline internal consistency (Cronbach’s $\alpha = 0.74$).

Recall Intensity (RI). Four self-report items assessed immersive processing during the SNI. Two items were derived from Ayduk and Kross’s (2010) index of emotional reactivity (i.e., reexperiencing emotions and physical reactions originally triggered by the upsetting event): “I re-experienced the feelings I originally felt when the event occurred,” and “As I think about the event now, my feelings and physical reactions are still pretty intense.” Two additional items were: “As you recalled the event, how vividly did it come to mind?” and “How frequently have you thought about the event since it happened?” Cronbach’s alpha for these four items was 0.74.

Attempted Avoidance. Following the SNI, adolescents rated their agreement, using a 7-point scale (1 = “completely disagree,” 7 = “completely agree”), with an item derived from Ayduk and Kross’s (2010) measure of avoidance: “When asked to recall this experience, I try to avoid thinking about it.”

Suicide Narrative Coding System

Anticipated Future Coping. SNI transcripts were coded to assess adolescents' expectations for coping with a future suicidal episode (1 = "expects to repeat the suicidal thoughts or behaviors," 2 = "uncertainty or denial of any clear expectations regarding future coping responses," 3 = "clear plan to engage in adaptive coping strategies to reduce future suicidal thoughts or behaviors"), with high interrater agreement ($ICC = 0.97$).

Additional Coded Variables. To account for the severity and type of episode recalled, SNI transcripts were coded to differentiate those discussing suicidal ideation from those discussing self-harming behaviors ($ICC = 1.00$). Transcripts were also coded for the degree to which adolescents described discrete versus temporally undefined suicidal events ($ICC = 0.78$), as temporal characteristics such as the ability to locate an event in time and specify the event's duration have been identified as indicators of coherence in adolescent narratives (Habermas & de Silveira, 2008). However, neither of these coded variables was significantly related to MM or RI or to any other suicide narrative variables, suicide risk or protective factors, or severity of suicidal or depressive symptoms. They were therefore excluded from the present study.

Linguistic Inquiry and Word Count (LIWC)

LIWC computer software (Tausczik & Pennebaker, 2010), which has previously demonstrated strong psychometric properties (Pennebaker et al., 2001), provided linguistic indicators of word count and percentage of first-person singular pronouns in SNI transcripts. Word count was included as an exploratory indicator of immersion during narrative recall (Römisch et al., 2014), and percentage of first-person singular pronouns was included as an index of self-focused or self-referential perspectives (Rude et al., 2004).

Other Baseline Self-Reports

Interpersonal Needs Questionnaire (INQ)

The INQ (Van Orden et al., 2012) assessed PB with six items (e.g., “These days, the people in my life would be better off if I were gone”) and TB with nine items (e.g., “These days, I feel disconnected from other people”), all rated on a 7-point scale (1 = “not at all true for me,” 7 = “very true for me”). PB and TB yielded Cronbach’s alphas of 0.92 and 0.76, respectively.

The Difficulties in Emotion Regulation Scale (DERS)

The DERS (Gratz & Roemer, 2004) is a 36-item self-report that assesses a range of difficulties in regulating emotions. Items, which are rated on a 5-point scale (1 = “almost never,” 5 = “almost always”), showed high reliability in the current sample (Cronbach’s $\alpha = 0.90$).

Life Orientation Test-Revised (LOT)

The revised version of the LOT (Scheier et al., 1994) uses a 5-point scale to rate level of agreement (1 = “strongly agree,” 5 = “strongly disagree”) with 12 statements designed to assess optimism. Cronbach’s alpha for this scale was 0.75 in the current sample.

Demographic Variables

Baseline demographic surveys included adolescent-reported age, gender, and racial identity as well as parent-reported family income-to-needs ratios (calculated by dividing the household income by the poverty threshold for family size).

Positive and Negative Affect

Positive and Negative Affect Schedule (PANAS)

Adolescents completed the PANAS (Watson et al., 1988) immediately following each therapy session. Positive affect (e.g., “excited,” “proud”; Cronbach’s $\alpha = 0.88$) and negative affect (e.g., “upset,” “guilty”; Cronbach’s $\alpha = 0.86$) were measured using 10 items each, rated on a 5-point scale (1 = “very slightly or not at all,” 5 = “extremely”). Weekly measures of positive

and negative affect were relatively stable during the first month of treatment ($r = 0.71-0.84$ for positive affect and $r = 0.70-0.80$ for negative affect). To account for missing data, adolescents' reports across the first four weeks of treatment were averaged, creating one aggregate score for positive affect and one aggregate score for negative affect.

Monthly Symptom Assessments

Beck Depression Inventory-II (BDI-II)

Adolescents completed the BDI-II (Beck et al., 1996), a 21-item self-report measuring the severity of a range of depressive symptoms (e.g., sadness, worthlessness, loss of interest), every four weeks from baseline to Week 16. Items, rated on a 4-point scale (0 = absence of symptom, 3 = most severe symptom), demonstrated a Cronbach's alpha of 0.86.

Suicidal Ideation Questionnaire-Junior (SIQ-JR)

Adolescents completed the SIQ-JR (Reynolds, 1988), a 15-item self-report assessing the severity of suicidal ideation, on a monthly basis from baseline to Week 16. Items, rated on a 7-point scale (1 = absence of the thought, 7 = the thought has occurred almost every day for the past month), demonstrated adequate reliability (Cronbach's $\alpha = 0.84$).

Data Analytic Plan

Preliminary Analyses to Inform Coding of Adolescent Racial Identity

Prior research from this RCT revealed a significant relationship between adolescent racial identity and symptoms during treatment (Zisk et al., 2019). To inform coding of adolescent racial identity for the current study, analysis of variance (ANOVA) with post hoc Tukey tests was conducted using SPSS Version 28.0 to assess for mean differences on pre- and post-treatment depression and suicidal ideation as well as on pre-treatment MM and RI based on adolescent racial identity (coded as 1 = Black/African American, 2 = White, 3 = another race [Asian, Native

Hawaiian or Other Pacific Islander, American Indian or Alaskan Native, “other,” or multiracial]). For these analyses, MM was calculated by averaging the ratings of the four MM SNI items, and RI was calculated by averaging the ratings of the four RI SNI items.

Measurement Model Using CFA

Structural equation modeling (SEM) in Mplus Version 7 (Muthén & Muthén, 1998-2015) examined the construct validity of the two modes of processing during the SNI. A confirmatory factor analysis (CFA) tested a measurement model of MM and RI items as indicators of MM and RI as latent variables. These latent variables were allowed to covary to test the orthogonality of the two constructs. Adequate fit was defined by Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values of at least 0.90-0.95, standardized root mean square residual (SRMR) and root mean squared error of approximation (RMSEA) values less than 0.08, and a non-significant chi-square (Kaplan, 2000).

Convergent and Divergent Validity

The CFA measurement model was used to examine the convergent and divergent associations between latent MM and RI variables and concurrent adolescent-reported suicide risk and protective factors as well as attempted avoidance of suicidal thoughts during the SNI, variables rated from SNI transcripts, and demographic variables. Zero-order correlations informed subsequent analyses in which each of the observed variables was regressed onto latent MM and RI constructs to test convergent and divergent associations (Van Orden et al., 2012).

Predictive Validity

Hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) tested baseline MM and RI (calculated by averaging the ratings of the four SNI items for each construct) as indicators of intercepts (i.e., baseline symptom severity) and slopes (i.e., symptom reduction during

treatment). Separate models examined trajectories of depression and suicidal ideation as the outcome. Consistent with previous analyses from this RCT (Zisk et al., 2019), each model used a log-10 transformation of the time variable to accommodate non-linear trends (i.e., faster rates of change earlier in treatment) in depression and suicidal ideation. Resulting slopes therefore indicate symptom change during log-10 transformed four-week intervals across 16 weeks of treatment. Average change in symptoms from the beginning to end of treatment was also calculated to enhance interpretation of treatment benefit.

Each HLM model estimated time as a within-subjects (Level-1) predictor of depression and suicidal ideation across the 16 weeks of treatment, with baseline (Week 0) coded as 0. MM and RI were then tested as between-subjects (Level-2) predictors of Level-1 trajectories of symptom change during treatment. The interaction between Level-2 MM and RI as well as interactions between these variables and treatment condition were then entered as moderators of treatment benefit. Estimations of random intercepts and random slopes were included. Error terms were all allowed to vary, and final estimation of fixed effects included robust standard errors to account for any outliers and non-normality in the data (Raudenbush & Bryk, 2002).

Missing Data

Eleven adolescents (9.7% of the sample) had missing SNI self-reports, and nine adolescents (8.0% of the sample) were missing reports of positive and negative affect. Most (71.7%) adolescents completed all five monthly assessments of suicidal ideation and depressive symptoms, 12.4% completed four, 5.3% completed three, and 10.6% completed one. Missing data on each of these variables was not significantly associated with any study variables and was therefore assumed to be missing at random. Mplus accounted for missing data using maximum likelihood estimation and by specifying the predictors' variances in each model. In HLM,

restricted maximum likelihood estimation was used for all analyses, providing fixed effects and variances for the 102 adolescents who had complete Level-2 data.

Transparency and Openness

Please refer to the primary outcomes paper for discussion of how sample size was determined. We report all data exclusions, manipulations, and measures in the study. The current study design and secondary analyses reported here were not preregistered. Materials and analysis code for this study are not currently available via a repository; please contact study authors if interested in accessing the data. Data from the SNI has previously been published in one prior manuscript (Zisk et al., 2017), which utilized an attachment framework and focused on only one pre-treatment SNI variable, adolescents' expectancies for the availability and responsiveness of the caregiver during the suicidal episode. Cross-sectional baseline analyses found that adolescents' negative expectancies for caregiver availability were associated with attachment insecurity and more intense suicidal ideation at the start of treatment.

Results

Preliminary Analyses to Inform Coding of Adolescent Racial Identity

ANOVAs indicated that adolescents who identified as Black/African American, White, or another race (Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaskan Native, "other," or multiracial) did not significantly differ in their reports of pre-treatment MM ($F[2, 98] = 1.38, p = 0.26$) or RI ($F[2, 98] = 0.06, p = 0.94$), pre-treatment depression ($F[2, 109] = 1.63, p = 0.20$) or suicidal ideation ($F[2, 109] = 0.75, p = 0.47$), or post-treatment depression ($F[2, 91] = 1.71, p = 0.19$). There was a significant difference in post-treatment suicidal ideation ($F[2, 91] = 9.13, p < 0.001$). Post hoc Tukey tests indicated that White adolescents reported higher suicidal ideation at the end of treatment compared to Black/African American adolescents

($p < 0.001$, 95% CI = [6.87, 24.31]) and compared to adolescents who identified as a race other than White or Black/African American ($p = 0.04$, 95% CI = [0.44, 21.74]). When comparing the two groups of adolescents identifying as youth of color, there was no significant difference in mean levels of post-treatment suicidal ideation between Black/African American adolescents and adolescents who identified as Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaskan Native, “other,” or multiracial ($p = 0.51$, 95% CI = [-14.14, 5.14]). The adolescent racial identity variable was therefore coded as 1 = White, 0 = youth of color for all subsequent analyses.

Measurement Model Using CFA

The CFA measurement model (Figure 1) specifying two latent constructs (MM and RI) indicated by the SNI self-report items yielded adequate fit. Covariances between items’ residual terms were not specified. The relation between RI and MM trended in a positive direction but was not significant.

FIGURE 1 HERE

Convergent and Divergent Validity

Descriptive statistics and zero-order correlations (Table 1) provided an initial examination of the pre-treatment associations between the latent SNI constructs and putatively related observed variables. As expected, MM positively correlated with optimism, positive affect, and self-efficacy in coping with a future suicidal episode and negatively correlated with TB. These observed variables were not significantly associated with RI. Conversely, suicidal ideation, depressive symptoms, difficulties in emotion regulation, negative affect, avoidance of suicidal thoughts and feelings during the SNI, and SNI word count were positively correlated with RI but not associated with MM. PB was associated with both MM and RI, although this

correlation was negative for MM and positive for RI. Younger adolescents reported more MM than older adolescents, and females reported more RI than males. Adolescents' reported race and family income-to-needs ratios were non-significant and were not included in Table 1.

TABLE 1 HERE

Observed variables with significant zero-order correlations were each regressed on MM and RI. The standardized regression coefficients (Figure 2) indicated that positive affect, self-efficacy in coping with a future suicidal episode, TB, and adolescent age were associated with MM but not RI. Negative affect, attempted avoidance of suicidal thoughts and feelings, SNI word count, and adolescent gender were uniquely associated with RI. MM and RI showed a pattern of inverse relations with optimism, PB, and difficulties in emotion regulation. Specifically, PB and difficulties in emotion regulation related negatively to MM and positively to RI, while optimism was positively associated with MM and negatively associated with RI.

FIGURE 2 HERE

Predictive Validity

Descriptive Analyses

Descriptive statistics and zero-order correlations in Table 2 show associations between baseline RI and MM, demographics, and pre- and post-treatment symptoms. Higher baseline RI was associated with more pre-treatment suicidal ideation and depression, while higher baseline MM was associated with less post-treatment suicidal ideation and depression. On average, female adolescents reported higher baseline RI and more baseline depressive symptoms than male adolescents, and White adolescents reported more suicidal ideation at the end of treatment than youth of color. Treatment condition was not related to any study variables.

TABLE 2 HERE

Suicidal Ideation

The *ICC* of an unconditional HLM model of suicidal ideation over the 16 weeks of treatment indicated that between-subject variability accounted for 38.5% of the variance in suicidal ideation, while 61.5% of the variance was related to within-subject variability. A within-subjects (Level-1) model indicated a fixed intercept of 47.52 ($t[101] = 31.66, p < 0.001$) and a fixed slope of -40.39 ($t[101] = -14.14, p < 0.001$), corresponding to an average total decrease of 28.27 points on the SIQ-JR from baseline to Week 16. Random effects in the intercept ($SD = 11.83, \chi^2 [90] = 233.57, p < 0.001$) and slope ($SD = 19.13, \chi^2 [90] = 173.76, p < 0.001$) revealed significant between-subject variability in baseline levels and rates of decline for these symptoms.

When MM, RI, treatment condition, and demographic variables were added as Level-2 predictors, neither MM ($B = -4.54, t[94] = -1.49, p = 0.14$) nor RI ($B = 0.30, t[94] = 0.15, p = 0.89$) had a significant main effect on reductions in suicidal ideation during treatment. However, the interaction between MM and RI, presented in Table 3, predicted rates of change in suicidal ideation ($B = 2.81, t[93] = 2.04, p = 0.04$). Racial status was also a significant predictor, with White adolescents reporting slower declines in suicidal ideation than youth of color ($B = 17.35, t[93] = 3.07, p = 0.003$). None of the Level-2 variables were associated with starting levels of suicidal ideation. Neither treatment condition nor interactions between treatment condition and the SNI variables had a significant effect on change in suicidal ideation.

TABLE 3 HERE

To interpret the interaction of MM and RI on trajectories of suicidal ideation, “High” and “Low” MM and RI were each zero-centered one standard deviation above the mean and one standard deviation below the mean, respectively. The effects of the four combinations of High and Low MM and RI on rates of change in suicidal ideation are graphed in Figure 3. All four

groups displayed significant rates of symptom decline. On average, adolescents who reported High MM and Low RI had the fastest rate of decline in suicidal ideation ($B = -50.46$, $t[93] = -10.50$, $p < 0.001$), with an average total reduction of 35.32 points on the SIQ-JR from baseline to post-treatment. Adolescents reporting Low MM and High RI demonstrated a slower but significant decline in suicidal ideation ($B = -42.22$, $t[93] = -7.58$, $p < 0.001$; total decline of 29.55 SIQ-JR points), followed by adolescents reporting High MM and High RI ($B = -40.27$, $t[93] = -7.59$, $p < 0.001$; total decline of 28.19 SIQ-JR points). Adolescents with Low MM and Low RI reported the slowest reductions in suicidal ideation ($B = -34.74$, $t[93] = -6.61$, $p < 0.001$; total decline of 24.32 SIQ-JR points).

FIGURE 3 HERE

Depressive Symptoms

The ICC of an unconditional HLM model of depressive symptoms over the course of treatment revealed that between-subject variability accounted for 49.8% of the variance in depression, while within-subject fluctuations accounted for 50.2% of the variance. A within-subjects (Level-1) model indicated a fixed intercept of 35.54 ($t[101] = 35.11$, $p < 0.001$) and a fixed slope of -24.57 ($t[101] = -13.46$, $p < 0.001$), corresponding to an average total decrease of 17.20 points on the BDI-II from baseline to Week 16. Random effects in the intercept ($SD = 8.04$, $\chi^2 [90] = 240.18$, $p < 0.001$) and slope ($SD = 11.47$, $\chi^2 [90] = 157.20$, $p < 0.001$) suggested significant between-subject variability in baseline levels and rates of decline in depression.

When MM, RI, treatment condition, and demographic controls were added as Level-2 predictors, the main effects of MM ($B = -3.19$, $t[95] = -1.68$, $p = 0.10$) and RI ($B = -0.25$, $t[95] = -0.19$, $p = 0.85$) on trajectories of depression were not significant. However, the interaction between MM and RI, presented in Table 3, significantly predicted rates of change in depression

($B = 2.58$, $t[94] = 2.97$, $p = 0.004$). White adolescents reported slower rates of decline in depressive symptoms than youth of color ($B = 7.91$, $t[94] = 2.36$, $p = 0.02$). No Level-2 variables significantly predicted starting levels of depression. Neither treatment condition nor the interactions between treatment condition and the SNI variables had any significant effects.

Four models estimated the effect of the interaction between MM and RI on trajectories of depressive symptoms, specified following the same procedures for suicidal ideation and graphed in Figure 4. All four groups displayed significant rates of symptom decline. On average, adolescents who reported High MM and Low RI had the fastest rates of decline in depression ($B = -31.57$, $t[94] = -11.14$, $p < 0.001$), with an average total reduction of 22.10 points on the BDI-II from baseline to post-treatment. Adolescents who reported Low MM and High RI showed a slower but significant decline in depression ($B = -27.59$, $t[94] = -7.18$, $p < 0.001$; total decline of 19.31 BDI-II points), followed by adolescents with High MM and High RI ($B = -23.54$, $t[94] = -6.69$, $p < 0.001$; total decline of 16.48 BDI-II points). Adolescents who reported Low MM and Low RI displayed the slowest rates of decline in depressive symptoms ($B = -19.44$, $t[94] = -6.76$, $p < 0.001$; total decline of 13.61 BDI-II points).

FIGURE 4 HERE

Discussion

The current study tested the construct and predictive validity of two distinct modes of processing suicidal thoughts and feelings during the SNI. The findings provide initial support for the validity of adolescents' reports of RI and MM. The measurement model of MM and RI items yielded good fit and indicated the orthogonality of the two constructs. Tests of theoretically related constructs further supported expectations of RI as a risk for suicidality and MM as a protective factor. Although neither RI nor MM produced a main effect on treatment response, the

interaction between MM and RI indicated that adolescents who reported high MM and low RI at baseline experienced the greatest symptom declines during treatment.

The construct validity of RI as a risk factor was supported by convergence with more severe suicidal and depressive symptoms, more perceptions of burdening others, more negative affect, more difficulties with emotion regulation, and less positive views of the future.

Adolescents reporting higher RI also responded at more length to the SNI questions and reported more avoidance of suicidal thoughts and feelings during the SNI. Contrary to expectation, RI was not associated with the use of first-person pronouns during the interview. However, prior research linking first-person pronouns to symptoms of depression and suicide (Rude et al., 2004; Tausczik & Pennebaker, 2010) has primarily relied on undergraduate community samples, limiting generalizability to the current study.

Overall, the findings suggest that adolescents who report more RI during the SNI may be predisposed to a “downward spiral” associated with ruminating on negative emotions (Garland et al., 2010). This process is thought to constrict and narrow the individual’s attention, particularly toward negatively-valenced stimuli, in ways that perpetuate negative thoughts about the future and one’s ability to effectively manage negative emotional states. These negative ruminative cycles increase vulnerability to interpersonal difficulties (Gross & John, 2003) and may keep individuals “stuck” or absorbed in negative states of depression (Holtzheimer & Mayberg, 2011) or grief (Michael & Snyder, 2005). Immersion in negative states may, in turn, increase vulnerability to ineffective coping (e.g., avoidance) as well as suicidal behaviors as ways of reducing painful emotions (Garland et al., 2010).

In contrast, MM during the SNI was associated with baseline protective factors. Higher levels of MM were associated with more positive affect and optimism and fewer difficulties

regulating emotions. Coding of SNI transcripts indicated that raters viewed adolescents who reported more MM as more confident in their abilities to effectively cope with future suicidal episodes. These associations suggest that adolescents who experienced higher levels of MM reported more positive functioning across several personality, affective, and interpersonal dimensions and viewed themselves as more capable of managing suicidal thoughts and feelings.

MM capabilities may therefore contribute to “upward spirals” of positive emotions (Garland et al., 2010) and formation of new ideas and social connections that build the individual’s psychosocial resources and promote effective coping with suicidal symptoms (Fredrickson, 2004). Additional considerations when interpreting these results are the content and valence of meanings made, as these factors may differentiate adaptive meaning making from more maladaptive processes such as experiential avoidance or rumination (Watkins, 2008, 2011). Although measurement of the specific meanings derived during the SNI was outside the current study’s scope, the present findings align with prior research linking reconstrual of negative events to several positive outcomes, including lower levels of depressed affect (Kross & Ayduk, 2008), suggesting that the process of deriving new insights and understandings, particularly from a broad and distanced perspective, is an important component of adaptive reflection and reappraisal of upsetting events. The current study provides initial evidence that MM similarly supports adaptive functioning, as it links MM to established protective factors and differentiates it from adolescents’ reports of avoidance during the SNI. Future research should continue to explore this to refine our understanding of adaptive versus maladaptive processing of suicidal episodes.

Although the current findings support MM and RI as distinct modes of processing, results point to the interaction between these constructs as impacting treatment response. Adolescents

with elevated capacities for MM and lower levels of RI during the SNI displayed the most treatment benefit. The clinical significance of these findings is highlighted by examining post-treatment symptom levels, which provides additional support for MM as a protective factor and RI as a risk factor. Adolescents who reported high MM and low RI at the start of treatment reported the lowest levels of suicidal ideation and depression post-treatment. In fact, this was the only group that reached the minimal symptom range on the BDI-II by the end of treatment, and these adolescents reported an average post-treatment SIQ-JR score more than 15 points below that of any other group. Notably, differences in post-treatment symptoms were most pronounced when comparing adolescents who reported high MM and low RI with adolescents who reported low MM and high RI. At the end of treatment, adolescents with low MM and high RI reported the highest depressive and suicidal symptoms, with their BDI-II score in the moderate range and their SIQ-JR score approximately 25 points higher than adolescents with high MM and low RI. Although adolescents with low MM and high RI displayed the second fastest rate of symptom decline, this may be attributable, in part, to their relatively high pre-treatment symptom levels.

There were no moderation effects across treatment condition. Different treatment elements in the two conditions may account for the findings. ABFT encourages adolescents to access, express, and derive meaning from previously avoided emotions while also encouraging new-found understandings about unmet attachment needs and effective communication of these needs to a caregiver, while FE-NST incorporates components similar to mentalization-based therapy, where reflective communication with an empathic therapist is thought to enhance the patient's sense of self, self-efficacy, and regulation skills (Diamond et al., 2019). These emotionally-focused and relationship-oriented treatment processes may be particularly helpful for adolescents who entered treatment with more capacity for MM or reflection and less

vulnerability to RI or immersion in suicidal states. In contrast, adolescents who reported low MM and low RI experienced the slowest symptom declines. These low ratings across the two modes of processing may indicate a general lack of readiness or openness to approach or reflect upon past suicidal experiences, which may preclude these adolescents from deriving as much benefit from emotionally- or relationship-focused treatments. Similarly, adolescents who reported high RI in combination with either low MM or high MM showed less response to treatment compared to adolescents with high MM and low RI. Interventions for these teens may be enhanced with skills-based approaches to support management of suicidal and depressive symptoms and reduce vulnerability for immersion in suicidal states.

The current study also revealed a number of demographic findings. First, youth of color responded better to both ABFT and FE-NST than did White adolescents. Given that youth from racial minority families are more likely to face barriers to treatment attendance and engagement (Alegria et al., 2010, Young & Rabiner, 2015), youth of color in the current study may have particularly benefited from several components shared by both treatment conditions, including the high level of symptom monitoring, access to crisis hotlines and safety planning, and the focus on therapist engagement to promote participant retention in the RCT. For a more thorough discussion of this finding, please refer to a prior publication from this RCT (Zisk et al., 2019), which presents and comments on this important result in more detail. Second, younger adolescents surprisingly reported higher pre-treatment MM than older adolescents. Older age may reflect other risk factors such as symptom chronicity or history of treatment resistance, which, in turn, may hinder older adolescents' engagement in reflective processing or ability to derive new meanings while recalling suicidal episodes. Future research that tests this more directly is warranted. Third, female adolescents reported higher baseline RI and higher baseline

depressive symptoms than male adolescents. Although not surprising, as females are at greater risk for depression than males during adolescence (Avenevoli et al., 2015), these results highlight the vulnerabilities that may place female teens at particular risk for depression and suicidality and emphasize the importance of understanding factors and processes that promote treatment benefit for these adolescents.

Limitations and Future Directions

The findings lend support for the construct and predictive validity of MM and RI, extending previous research on reflective and immersive processing to the problem of assessing and treating suicidal adolescents. The cross-sectional design of baseline convergent and divergent associations with RI and MM precluded conclusions about direction of effects. A critical question is whether modes of processing predict change in symptoms or other indicators of treatment response or engagement (e.g., therapeutic alliance, emotion regulation, positive and negative affect) or vice versa. Although beyond the scope of the current study, future analyses such as those using cross-lagged panel designs should test these effects over time. Future research should also test convergent and divergent associations of MM and RI with additional risk and protective factors. For instance, establishing associations between RI and suicide risk factors such as suicide imagery and intrusive thoughts will be an important step in continuing to elucidate RI as a risk for immersion in suicidal states.

Future versions of the SNI would benefit from adaptations that may allow for more nuanced assessments of the recalled suicidal episode and modes of processing during the recall procedure. Although the current findings suggest that whether the adolescent discussed an episode of ideation versus behavior was not related to modes of processing during the SNI, future iterations of the interview would benefit from prompts that more clearly assess the

severity of the recalled episode (e.g., suicidal intent, lethality of behavior). Additionally, the current study was limited by an inability to measure how recently the recalled episode occurred. As this may have important implications for understanding levels of processing, future versions of the interview should include an item that more clearly assesses recency of the episode. Finally, as discussed above, future research can examine the content and valence of meanings made to advance our understanding of the role of MM in adaptive versus maladaptive processing of negative experiences.

Ultimately, the value of these constructs as indicators of treatment benefit or as potential targets for intervention relies on replication in other samples and in other treatments for depressed and suicidal adolescents. Although there were no moderating effects of gender in the current study, the sample was predominantly female, which reduces our ability to detect gender differences. It will also be important to test how MM and RI impact treatment benefit in more skills-based interventions. Further testing of these constructs in other treatments and demographic groups can ultimately inform more personalized treatments for depressed and suicidal adolescents.

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PROCESSING SUICIDE NARRATIVES

Table 1. Means, standard deviations, and zero-order correlations of baseline variables

| | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | |
|---|--------|--------|------|------------------|--------|-------------------|--------|--------|--------|--------|-------------------|------|--------|-------------------|-------------------|------------------|-------------------|------------------|-------|------|
| Suicide Narrative Interview Self-Reports | | | | | | | | | | | | | | | | | | | | |
| 1. Meaning Making | ---- | ---- | ---- | .21 ⁺ | .02 | -.19 ⁺ | -.25* | -.25* | -.15 | .41*** | .34** | .24* | .01 | -.13 | -.19 ⁺ | -.12 | -.29** | -.02 | | |
| 2. Recall Intensity | ---- | ---- | ---- | ---- | .49*** | .39*** | .55*** | .13 | .41*** | -.05 | -.21 ⁺ | .02 | .35*** | -.21 ⁺ | .31** | .32** | .11 | -.28* | | |
| 3. Attempted Avoidance | 4.69 | 1.87 | ---- | ---- | ---- | .26* | .27** | .09 | .25* | .08 | -.09 | .11 | .05 | .01 | .11 | .26* | -.04 | -.20* | | |
| Self-Reports of Suicide Risk and Protective Factors | | | | | | | | | | | | | | | | | | | | |
| 4. DERS | 3.11 | 0.55 | ---- | ---- | ---- | ---- | .44*** | .26** | .43*** | -.12 | -.44*** | -.02 | .20* | -.06 | .22* | .50*** | .20* | -.08 | | |
| 5. INQ PB | 3.89 | 1.57 | ---- | ---- | ---- | ---- | ---- | .42*** | .37*** | -.15 | -.37*** | -.12 | .06 | -.02 | .34*** | .43*** | .06 | -.07 | | |
| 6. INQ TB | 3.95 | 1.06 | ---- | ---- | ---- | ---- | ---- | ---- | .20* | -.29** | -.49*** | -.09 | -.10 | .27** | .12 | .29** | .17 ⁺ | -.12 | | |
| 7. Negative Affect | 2.59 | 0.80 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | -.08 | -.32** | .08 | .08 | -.03 | .24* | .58*** | .23* | -.15 | | |
| 8. Positive Affect | 2.38 | 0.78 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | .35*** | -.02 | .04 | -.03 | -.10 | -.24* | -.19 ⁺ | .06 | | |
| 9. LOT | 1.50 | 0.57 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | .13 | -.04 | -.15 | -.28** | -.50*** | -.22* | .15 | | |
| Variables Coded from Suicide Narrative Interview Transcripts | | | | | | | | | | | | | | | | | | | | |
| 10. Anticipated Future Coping | 2.43 | 0.78 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | -.10 | -.14 | -.10 | .14 | -.08 | -.05 | |
| 11. Word Count | 455.88 | 376.82 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | -.24* | -.03 | -.04 | .08 | -.23* | |
| 12. 1 st -Person Singular Pronouns | 12.95 | 2.75 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | .17 ⁺ | -.04 | .02 | -.06 | |
| Self-Reports of Symptom Severity | | | | | | | | | | | | | | | | | | | | |
| 13. SIQ | 48.71 | 14.74 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | .42*** | .04 | -.06 | |
| 14. BDI | 35.50 | 9.50 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | .16 ⁺ | -.22* | |
| Demographics | | | | | | | | | | | | | | | | | | | | |
| 15. Age | 14.95 | 1.73 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | -.07 |
| 16. Gender | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |

Note: Meaning Making is a latent variable derived from the four Meaning Making Suicide Narrative Interview items (item 5: $M = 4.51$, $SD = 1.38$; item 6: $M = 4.37$, $SD = 1.59$; item 7: $M = 4.82$, $SD = 1.35$; item 10: $M = 4.43$, $SD = 1.68$); Recall Intensity is a latent variable derived from the four Recall Intensity Suicide Narrative Interview items (item 1: $M = 4.79$, $SD = 1.51$; item 2: $M = 3.68$, $SD = 1.54$; item 3: $M = 3.88$, $SD = 1.77$; item 4: $M = 3.66$, $SD = 1.80$); DERS = Difficulties in Emotion Regulation Scale; INQ PB and INQ TB = perceived burdensomeness and thwarted belongingness from the Interpersonal Needs Questionnaire; LOT = optimism as measured by the Life Orientation Test-Revised; Negative and Positive Affect are aggregated across the first four weeks of treatment; SIQ = suicidal ideation; BDI = depressive symptoms; adolescent gender coded 1 = male, 0 = female; ⁺ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

PROCESSING SUICIDE NARRATIVES

Table 2. Means, standard deviations, and zero-order correlations of baseline Suicide Narrative Interview (SNI) variables, demographics, and pre- and post-treatment symptoms

| | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|-------------------------------------|-------|-------|------|------------------|-------|-------|------|---------|------|------|------------------|------------------|------------------|
| 1. SNI Meaning Making | 4.54 | 1.13 | ---- | .19 ⁺ | -.24* | -.08 | -.05 | -.05 | .06 | -.12 | -.08 | -.41*** | -.27* |
| 2. SNI Recall Intensity | 3.74 | 1.39 | | ---- | .06 | -.25* | -.05 | -.14 | -.01 | .25* | .29** | .17 | .15 |
| 3. Age | 14.95 | 1.73 | | | ---- | -.07 | .12 | -.01 | -.06 | .04 | .16 ⁺ | .17 | .13 |
| 4. Gender ^a | ---- | ---- | | | | ---- | -.08 | .001 | .03 | -.06 | -.22* | -.06 | -.16 |
| 5. Race ^b | ---- | ---- | | | | | ---- | .44**** | .07 | -.07 | .11 | .39*** | .18 ⁺ |
| 6. Income-to-needs ratio | 2.05 | 1.45 | | | | | | ---- | .07 | -.13 | -.11 | .18 ⁺ | .02 |
| 7. Treatment condition ^c | ---- | ---- | | | | | | | ---- | .01 | .02 | -.09 | -.05 |
| 8. Baseline SIQ | 48.71 | 14.74 | | | | | | | | ---- | .42*** | .28** | .21* |
| 9. Baseline BDI | 35.50 | 9.50 | | | | | | | | | ---- | .33** | .45*** |
| 10. Week 16 SIQ | 20.60 | 16.34 | | | | | | | | | | ---- | .68*** |
| 11. Week 16 BDI | 18.48 | 13.92 | | | | | | | | | | | ---- |

Note: ^a 1 = male, 0 = female; ^b 1 = White, 0 = youth of color; ^c 1 = ABFT, 0 = FE-NST; ⁺ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3. Final estimation of fixed effects (with robust standard errors) for SIQ-JR and BDI-II

| Fixed Effects | SIQ-JR | | | | BDI-II | | | |
|----------------------------------|---------------------|------|-----------------|-----------------|--------------------|------|-----------------|-----------------|
| | Coefficient | S.E. | <i>t</i> -ratio | <i>p</i> -value | Coefficient | S.E. | <i>t</i> -ratio | <i>p</i> -value |
| Intercept | | | | | | | | |
| Intercept | 47.48*** | 1.36 | 34.99 | <0.001 | 35.51*** | 0.89 | 39.86 | <0.001 |
| SNI Recall Intensity (RI) | 5.51 | 4.01 | 1.37 | 0.17 | 3.67 | 2.65 | 1.39 | 0.17 |
| SNI Meaning Making (MM) | -2.28 | 3.06 | -0.75 | 0.46 | -0.82 | 1.99 | -0.41 | 0.68 |
| SNI RI x MM | -0.28 | 0.89 | -0.31 | 0.76 | -0.23 | 0.58 | -0.39 | 0.70 |
| Age | 0.26 | 0.74 | 0.36 | 0.72 | 0.89 | 0.62 | 1.44 | 0.15 |
| Gender ^a | 4.24 | 3.47 | 1.22 | 0.23 | -3.04 | 2.30 | -1.32 | 0.19 |
| Race ^b | 0.19 | 3.07 | 0.06 | 0.95 | 0.41 | 1.97 | 0.21 | 0.84 |
| Income-to-needs ratio | -0.29 | 1.01 | -0.29 | 0.77 | ---- | ---- | ---- | ---- |
| Treatment condition ^c | 2.02 | 2.66 | 0.76 | 0.45 | 2.29 | 1.80 | 1.28 | 0.21 |
| Slope | | | | | | | | |
| Intercept | -41.09*** | 2.46 | -16.70 | <0.001 | -24.77*** | 1.60 | -15.49 | <0.001 |
| SNI Recall Intensity (RI) | -12.28 ⁺ | 6.66 | -1.84 | 0.07 | -11.70** | 4.01 | -2.92 | 0.004 |
| SNI Meaning Making (MM) | -13.57* | 5.48 | -2.48 | 0.02 | -11.42*** | 2.85 | -4.00 | <0.001 |
| SNI RI x MM | 2.81* | 1.38 | 2.04 | 0.04 | 2.58** | 0.87 | 2.97 | 0.004 |
| Age | 1.21 | 1.31 | 0.92 | 0.36 | -0.50 | 1.05 | -0.47 | 0.64 |
| Gender | -5.41 | 7.98 | -0.68 | 0.50 | -4.29 | 3.80 | -1.13 | 0.26 |
| Race | 17.35** | 5.65 | 3.07 | 0.003 | 7.91* | 3.36 | 2.36 | 0.02 |
| Income-to-needs ratio | 3.02 | 2.10 | 1.44 | 0.16 | ---- | ---- | ---- | ---- |
| Treatment condition | -6.32 | 5.18 | -1.22 | 0.23 | -6.36 ⁺ | 3.30 | -1.93 | 0.06 |

Note: $N = 102$, $df = 93$ for model of SIQ-JR; $N = 102$, $df = 94$ for model of BDI-II; SNI = Suicide Narrative Interview; ^a1 = male, 0 = female; ^b1 = White, 0 = youth of color; ^c1 = ABFT, 0 = FE-NST; ⁺ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$. Unstandardized coefficients are reported.

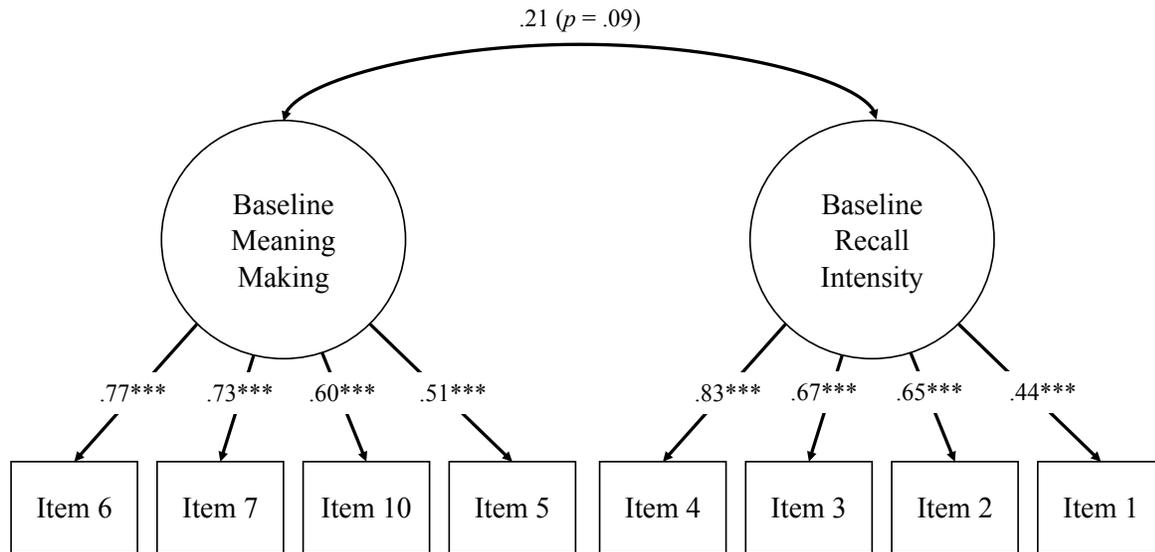


Figure 1. CFA measurement model of baseline Meaning Making and Recall Intensity, with standardized beta weights reported ($X^2 [19] = 19.71, p = 0.41$; RMSEA = 0.02, 90% CI [0.00, 0.09]; SRMR = 0.06; TLI = 0.99; CFI = 0.996)

Note: Meaning Making is indicated by the following Suicide Narrative Interview self-report items: Item 5 = thinking about the event has led to a clearer understanding of the experience; Item 6 = new thoughts about self; Item 7 = new thoughts about relationships with others; Item 10 = suicidal feelings are seen differently now compared to when the event occurred. Recall Intensity is indicated by the following Suicide Narrative Interview self-report items: Item 1 = vividness of event when recalled; Item 2 = frequency of thoughts of event since it happened; Item 3 = original feelings associated with the event are re-experienced when recalling the event; Item 4 = feelings and physical reactions are still intense when recalling the event now. *** $p < .001$.

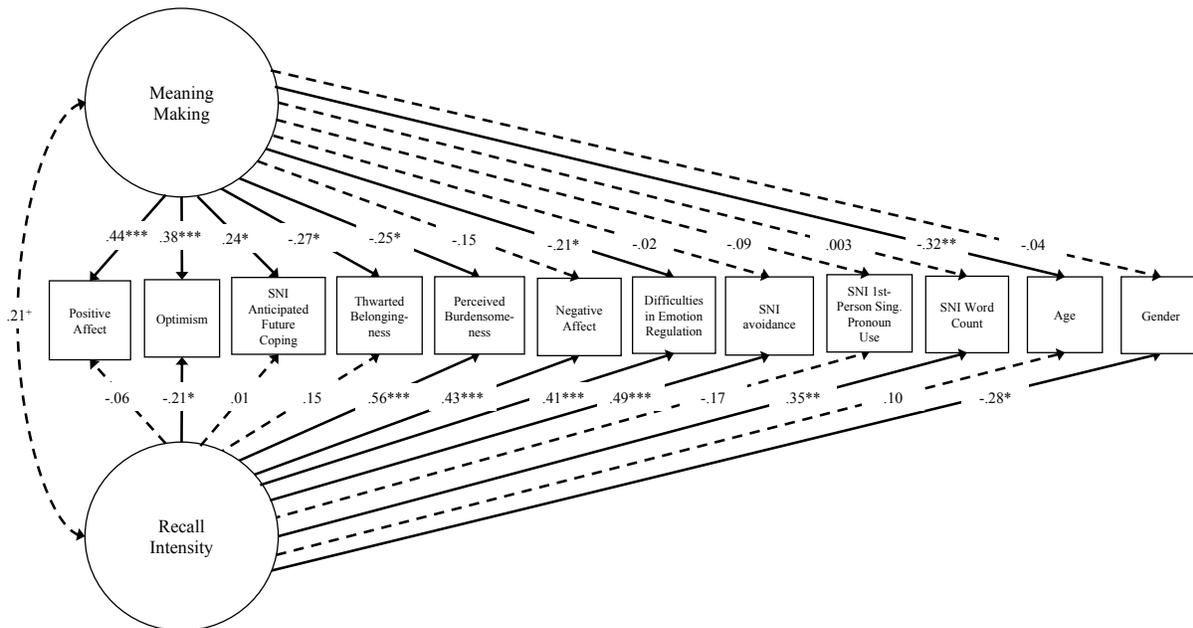


Figure 2. Baseline SEM regressions examining discriminant associations of observed variables with latent Meaning Making and Recall Intensity

Note: SNI = Suicide Narrative Interview. Meaning Making and Recall Intensity are latent variables, indicated by SNI items (items are not displayed here for simplicity). Standardized regression coefficients are presented. Solid lines indicate significant predictors; dotted lines indicate non-significant predictors. Adolescent gender was coded 1 = male, 0 = female. ⁺ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

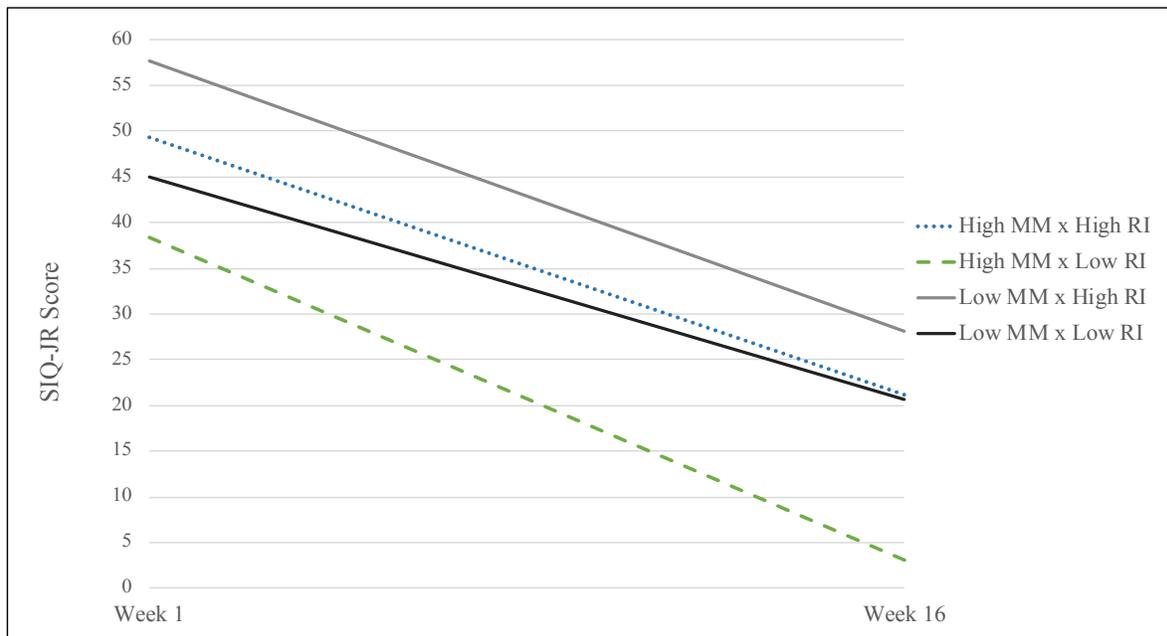


Figure 3. Rates of change in suicidal ideation over the course of treatment (TimeLg10) at High and Low baseline Meaning Making (MM) and Recall Intensity (RI)

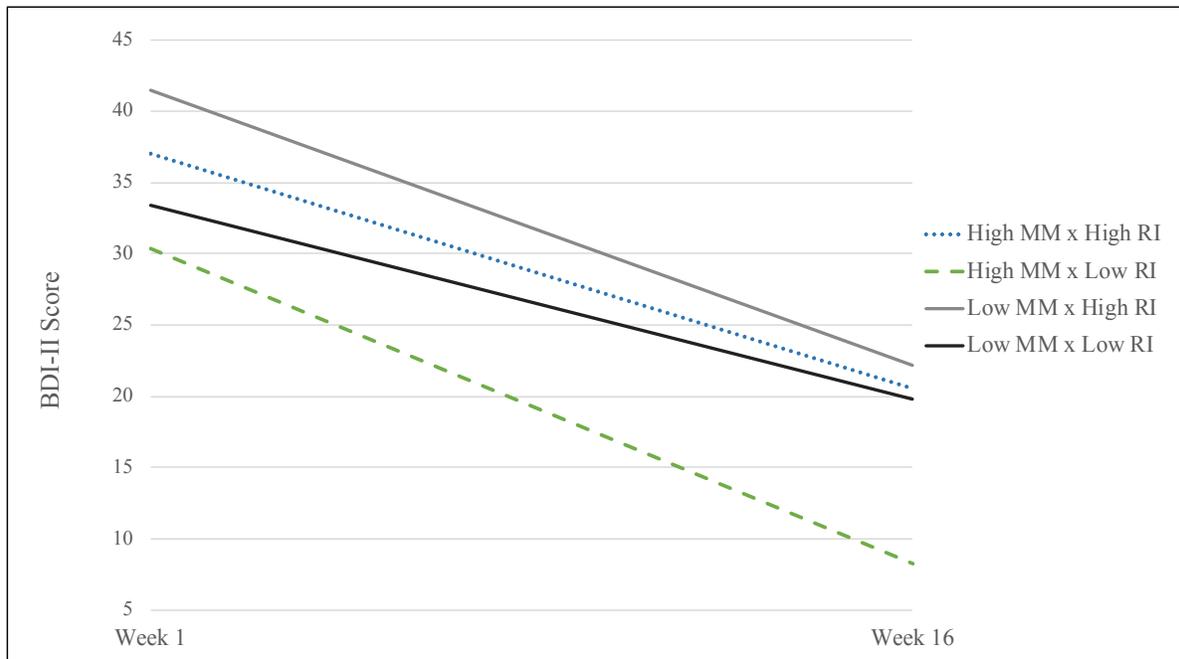


Figure 4. Rates of change in depressive symptoms over the course of treatment (TimeLg10) at High and Low baseline Meaning Making (MM) and Recall Intensity (RI)

Appendix

Data Transparency

The data reported in this manuscript were collected as part of a randomized clinical trial (RCT). Primary and secondary analyses from this RCT have been published in separate manuscripts. Manuscript (MS) 1 reported primary outcomes testing for differences in reductions in suicidal and depressive symptoms between the two treatment conditions. One prior manuscript (MS2) has published data using the Suicide Narrative Interview (SNI); this manuscript focused on only one SNI variable (adolescents' expectancies for the availability and responsiveness of the caregiver during the suicidal episode), with cross-sectional baseline analyses indicating that adolescents' negative expectancies for caregiver availability were associated with attachment insecurity and more intense suicidal ideation at the start of treatment. The current study addresses questions not previously examined in this prior publication by uniquely assessing the construct and predictive validity of adolescents' reports of two modes of processing during the SNI.

The current study also addresses questions unrelated to those explored in the other publications from this RCT. MS3 and MS4 conducted cross-sectional analyses to examine pre-treatment associations between adolescents' social networks, peer deviance, and suicide ideation intensity (MS3) and between attachment, suicidal ideation and depressive symptoms, and discrepancies between parent and adolescent reports of family functioning (MS4). MS5 and MS6 examined baseline predictors (observational and self-reported measures of family functioning and demographic variables in MS5, and non-suicidal self-injurious behavior, pessimism, Major Depressive Disorder diagnosis, and perceived burdensomeness in MS6) of treatment response. MS7 tested a moderated mediation model of anxiety diagnosis, difficulties with goal-directed

behavior, suicidal ideation, and attachment to parents. MS8 examined baseline difficulties with emotion regulation and weekly assessments of interpersonal events, negative affect, and session insight to test spillover effects on adolescents' derived insight during therapy. MS9 and MS10 focused on therapeutic alliance, with MS9 examining relations between therapeutic alliance, therapist treatment adherence, family conflict and cohesion, and suicidal ideation, and MS10 testing adolescent attachment styles as predictors of early gains in therapeutic alliance. MS11, MS12, and MS13 focused on the Interpersonal Needs Questionnaire (INQ), with MS11 testing the predictive validity of the INQ in this sample, MS12 testing bidirectional relations between the INQ variables and suicidal ideation, and MS13 testing associations between attachment styles, perceived burdensomeness, and suicidal ideation.