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The Cost of Believing Emotions Are Uncontrollable: Youths' Beliefs About Emotion Predict Emotion Regulation and Depressive Symptoms

Brett Q. Ford
University of Toronto

Sandy J. Lwi
University of California, Berkeley

Amy L. Gentzler
West Virginia University

Benjamin Hankin
University of Illinois Urbana Champaign

Iris B. Mauss
University of California, Berkeley

As humans, we have a unique capacity to reflect on our experiences, including emotions. Over time, we develop beliefs about the nature of emotions, and these beliefs are consequential, guiding how we respond to emotions and how we feel as a consequence. One fundamental belief concerns the controllability of emotions: Believing emotions are uncontrollable (*entity beliefs*) should reduce the likelihood of trying to control emotional experiences using effective regulation strategies like *reappraisal*; this, in turn, could negatively affect core indices of psychological health, including depressive symptoms. This model holds particular relevance during youth, when emotion-related beliefs first develop and stabilize and when maladaptive beliefs could contribute to emerging risk for depression. In the present investigation, a pilot diary study ($N = 223$, aged 21–60) demonstrated that entity beliefs were associated with using reappraisal less in everyday life, even when controlling for possible confounds (i.e., self-efficacy, pessimism, stress exposure, stress reactivity). Then, two studies examined whether entity beliefs and associated impairments in reappraisal may set youths on a maladaptive trajectory: In a cross-sectional study ($N = 136$, aged 14–18), youths with stronger entity beliefs experienced greater depressive symptoms, and this link was mediated by lower reappraisal. This pattern was replicated and extended in a longitudinal study ($N = 227$, aged 10–18), wherein youth- and parent-reported depressive symptoms were assessed 18 months after assessing beliefs. These results suggest that entity beliefs about emotion constitute a risk factor for depression that acts via reappraisal, adding to the growing literature on emotion beliefs and their consequences for self-regulation and health.

Keywords: beliefs about emotion, depressive symptoms, emotion regulation, reappraisal

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Philosophers—and more recently psychologists—have long theorized about the nature of human emotion. Theorizing about emotion, however, is not the unique purview of philosophers or psychologists. Rather, all humans have the potential to theorize and develop beliefs about emotion. In turn, these beliefs are consequential, guiding whether and how we try to influence our emotions and how we feel as a result. One particularly fundamental belief about emotion concerns whether emotions are relatively controllable or uncontrollable.

Building on recent theorizing and emerging research, we propose that believing emotional experiences are relatively uncontrollable (*entity beliefs*) should reduce individuals' attempts to use forms of emotion regulation that are geared toward helping them change their emotional experiences (i.e., reappraisal). This, in turn,

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Brett Q. Ford, Department of Psychology, University of Toronto; Sandy J. Lwi, Department of Psychology, University of California, Berkeley; Amy L. Gentzler, Department of Psychology, West Virginia University; Benjamin Hankin, Department of Psychology, University of Illinois Urbana Champaign; Iris B. Mauss, Department of Psychology, University of California, Berkeley.

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Correspondence concerning this article should be addressed to Brett Q. Ford, Department of Psychology, University of Toronto, 1265 Military Trail SW427A, Toronto, Ontario M1C 1A4, Canada. E-mail: brett.ford@utoronto.ca

should promote worse psychological health, including, centrally, depressive symptoms. This model holds particular relevance during youth, a time when beliefs about emotions first develop and stabilize and when maladaptive beliefs can contribute to the rising psychological health concerns that characterize adolescence. To examine whether entity beliefs about emotion put youths at risk for worse psychological health, and what role emotion regulation may play in this link, we tested whether youths with stronger entity beliefs exhibit greater depressive symptoms and whether this relationship is accounted for by reappraisal. The present research tested these hypotheses using a multimethod approach across three studies that combined self and informant reports within daily diary, cross-sectional, and longitudinal designs while also addressing possible confounding influences.

Beliefs About Emotion

Emotions are ubiquitous and powerful experiences that are central to how we relate to our environment and each other. It is thus natural that we spend time thinking about, conceptualizing, and developing beliefs about emotions (Ford & Mauss, 2014; Harmon-Jones, Harmon-Jones, Amodio, & Gable, 2011; Mikulincer & Ben-Artzi, 1995; Tamir, 2009; Tsai, 2007). Indeed, our conceptual knowledge about emotion plays a crucial role in how we approach and experience our emotions (Barrett, 2012). One fundamental belief concerns whether emotions can be controlled: to what extent are emotions uncontrollable (arriving unbidden and departing of their own accord) versus controllable (shaped and modulated according to our will)? To begin considering this question, it is useful to return to historical discussions on the topic, given that very few modern empirical investigations have focused on people's beliefs about whether emotions can be controlled. Indeed, much of this discourse has occurred over centuries in philosophy, as various schools (e.g., Stoicism), historical movements (e.g., the enlightenment) and scholars (e.g., Freud) weighed in on each side: Who is in charge – *reason* or *emotion*?

We propose that each individual is an emotion theorist, deciding for her- or himself whether emotions are controllable. In turn, people's theories about emotions may critically shape psychological health because people who believe that emotional experiences are relatively uncontrollable should be *less* likely to use emotion regulation strategies that target emotional experiences (e.g., reappraisal). This should be specific to strategies that are aimed at controlling emotional experiences and should not extend to strategies that are aimed at inhibiting behavioral expressions of emotions (e.g., expressive suppression). Being less likely to use effective forms of emotion regulation should, in turn, worsen domains of psychological health characterized by poor emotion regulation, like greater depressive symptoms (Joormann & Gotlib, 2010).

Defining Terms

Before turning to the empirical literature examining beliefs about the controllability of emotion, it is important to clearly define relevant terms. The present research is rooted in literature that has primarily used the term *implicit theory* (sometimes also *implicit belief, lay* or *folk theory*, or *mindset),* defined as a tacit understanding of how the world works. As Dweck and colleagues phrase it, an implicit theory "can be seen as a core assumption in an individual's world view . . . an assumption that defines the individual's reality and imparts meaning to events" (p. 268, Dweck, Chiu, & Hong, 1995). One particularly consequential type of implicit theory concerns whether a given attribute (e.g., emotion, intelligence, personality) can be controlled: believing that the attribute cannot be controlled has been referred to as an *entity theory* (also *fixed mindset*) and the opposite end of the spectrum has been referred to as an *incremental theory* (or *growth mindset*). Here, we refer to *entity beliefs about emotion*, rather than *entity theories of emotion,* because an entity belief represents a single—though fundamental and influential—belief, and a *theory* typically comprises a set of beliefs.

It is important to note that the term *entity beliefs about emotion* has been used to refer to two different constructs. Sometimes, researchers have assessed general beliefs about emotions by assessing participants' endorsement of third-person items like, "*People have very little control over their emotions"* (Tamir, John, Srivastava, & Gross, 2007). Other times, researchers have assessed personal beliefs with first-person items like, "*I have very little control over my emotions*" (De Castella et al., 2013), similar to the rich program of research examining expectancies for negative mood regulation which uses items like "*I can do something to feel better*" (Catanzaro & Mearns, 1990). Although the difference between these constructs may look subtle—and indeed these constructs are empirically related (De Castella et al., 2013)—there is an important conceptual difference between them: assessing an individual's belief about whether *people* have control over their emotions reflects a core assumption in an individual's world view (i.e., *an entity belief about emotion*); in contrast, assessing an individual's personal belief about whether they themselves can control their emotions reflects an individual's emotion regulation self-efficacy (i.e., *how good am I at attaining my emotion regulation goals*?). Complicating the literature further, additional research has employed a measure that uses a second-person phrasing and is thus ambiguous with respect to the target of the measure (e.g., participants endorse their agreement with the item, "*You have very little control of your emotions,"* Romero, Master, Paunesku, Dweck, & Gross, 2014) which participants could interpret as referring either to people in general (reflecting entity beliefs) or to themselves (reflecting emotion regulation self-efficacy).

These constructs—general entity beliefs about emotion and emotion regulation self-efficacy beliefs—are conceptually distinct and may even be hierarchically organized: general entity beliefs represent a relatively superordinate belief that should have a broad influence on perceptions of the self, others, and the world. As such, entity beliefs may shape individuals' specific beliefs about their own emotion regulation self-efficacy. Supporting this argument, two studies suggest that the link between entity beliefs about emotion and downstream outcomes might be mediated by an individual's emotion regulation self-efficacy beliefs (De Castella et al., 2013; Tamir et al., 2007). Given the burgeoning interest in examining people's beliefs about emotion (Ford & Gross, in press; Howell, 2017; Kneeland, Dovidio, Joormann, & Clark, 2016), we believe it is crucial to maintain conceptual clarity. As such, this literature review and empirical examination focuses on entity beliefs, as a full examination of both constructs is beyond the scope of the present investigation.

Entity Beliefs About Emotion and Psychological Health

Most of the empirical literature on entity beliefs has focused on intelligence (Dweck & Leggett, 1988), demonstrating that stronger (vs. weaker) entity beliefs (i.e., believing intelligence cannot be controlled) promote worse downstream academic outcomes (Aronson, Fried, & Good, 2002; Blackwell, Trzesniewski, & Dweck, 2007). Others have extended this research to examine entity beliefs about other domains, like personality (Miu & Yeager, 2015; Yeager, Lee, & Jamieson, 2016). Importantly, research has demonstrated domain-specificity of these different beliefs: having relatively stronger entity beliefs in one domain—like intelligence or personality—does not necessarily imply stronger entity beliefs in other domains—like emotion (Hughes, 2015; Tamir et al., 2007). Furthermore, entity beliefs appear to be uniquely linked with the outcomes most relevant to those beliefs (e.g., entity beliefs about intelligence predict academic outcomes and not emotional outcomes; Romero et al., 2014). Given that different entity beliefs are distinct, the research on entity beliefs about intelligence or personality does not necessarily speak to beliefs about emotion. Thus, as of yet, we do not know much about entity beliefs about emotion.

To date, only a small number of studies have assessed beliefs about the controllability of emotion. Even fewer studies have assessed these beliefs using measures that precisely assess entity beliefs about emotion (rather than emotion regulation self-efficacy). The first study to examine entity beliefs about emotion found that college freshmen who held stronger entity beliefs at the beginning of the school year experienced higher levels of depression at the end of the school year (Tamir et al., 2007). This longitudinal study also demonstrated that the link with depression was specific to entity beliefs about *emotion* and did not extend to entity beliefs about intelligence, thereby confirming the domain-specificity of entity beliefs.

More recently, researchers have begun to extend this original finding. A laboratory study focusing on shorter-term outcomes demonstrated that when adult participants were exposed to a negative mood induction, those with stronger (vs. weaker) entity beliefs experienced worse mood after the induction (Kappes & Schikowski, 2013). Cross-sectional studies of college students have found that entity beliefs about emotion correlate with lower well-being and greater mood symptoms (e.g., anxiety, depression; De Castella et al., 2013; Schroder, Dawood, Yalch, Donnellan, & Moser, 2015, 2016). An additional study found that entity beliefs about emotion were stronger in adults diagnosed with social anxiety disorder compared with healthy controls (De Castella et al., 2014). Overall, this small body of cross-sectional research suggests that adults who believe emotions are relatively uncontrollable experience worse mood and psychological health.

Entity Beliefs About Emotion, Emotion Regulation, and Psychological Health

Initial research suggests that entity beliefs about emotion may promote worse psychological health, but what mechanism may account for this effect? To identify a mechanism, it is useful to consider that entity beliefs shape one's motivation to control a given attribute: Why would someone invest effort in controlling something they do not believe can be controlled? As such, entity beliefs about emotion should influence whether individuals attempt to control, or, regulate, their emotions (Gross, 2014; Kneeland, Dovidio, et al., 2016; Tamir & Mauss, 2011). Moreover, because entity beliefs concern primarily emotional *experiences* (e.g., "*No matter how hard they try, people can't really change the emotions that they have"*), entity beliefs should specifically predict emotion regulation strategies that target emotional experiences (vs. behavior). A prime example of this type of strategy is *reappraisal*, a commonly used strategy that has been shown to effectively influence emotional experiences and involves reframing the meaning of an emotional event to change its emotional impact (Gross & John, 2003; Webb, Miles, & Sheeran, 2012). Entity beliefs should be less likely to shape the use of strategies that do not target emotional subjective experiences (like suppression—masking one's emotions).

Recent findings have begun to support these hypotheses. For example, a small number of cross-sectional studies found that stronger entity beliefs in adults were linked with less frequent habitual use of reappraisal (De Castella et al., 2013; Schroder et al., 2015; Tamir et al., 2007), but were not linked with the habitual use of expressive suppression (Tamir et al., 2007; Schroder et al., 2015). Two experimental studies have also suggested a causal influence of entity beliefs about emotion on reappraisal: In these studies, adults who were induced to hold stronger (vs. weaker) entity beliefs about emotion by reading a passage describing the fixed (vs. malleable) nature of emotion were less likely to use reappraisal in a subsequent negative mood induction, but were *not* less (or more) likely to use suppression (Kneeland, Nolen-Hoeksema, Dovidio, & Gruber, 2016a, 2016b). Together, these findings suggest that entity beliefs may uniquely predict emotion regulation strategies that target emotional experiences, like reappraisal, but not strategies that target emotional behaviors, like expressive suppression.

Reappraisal, in turn, is considered a "healthy" emotion regulation strategy to use in the long run (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Gross & John, 2003; John & Gross, 2004). Thus, if individuals are less likely to use reappraisal, they should experience worse psychological health as a result. Building on theory and pre-existing literature, we propose a mediational model wherein entity beliefs about emotion shape future psychological health via the reduced use of reappraisal (Figure 1). We also propose that this model is particularly important to test in youth, when emotion-related beliefs first develop and stabilize and when maladaptive beliefs could contribute to emerging risk for depression.

Entity Beliefs About Emotion in Youths

Youth—and particularly the transition from childhood to adolescence typically occurring between 10 and 16 years—is an especially crucial time in which to examine entity beliefs about emotion for at least three reasons. First, entity beliefs about emotion are likely forming during youth. Prior research suggests that children as young as nine years can reliably report other entity beliefs (e.g., about intelligence and personality; Blackwell et al., 2007; Erdley & Dweck, 1993) and that youths approaching adolescence have developed abstract conceptual knowledge about emotions (Harris, Olthof, & Terwogt, 1981). More specifically, children as young as five have developed reliable beliefs about specific forms of emotion regulation (Bamford & Lagattuta, 2012; Davis, Levine, Lench, & Quas, 2010; Waters & Thompson, 2014). Taken together, these findings suggest that relatively young chil-

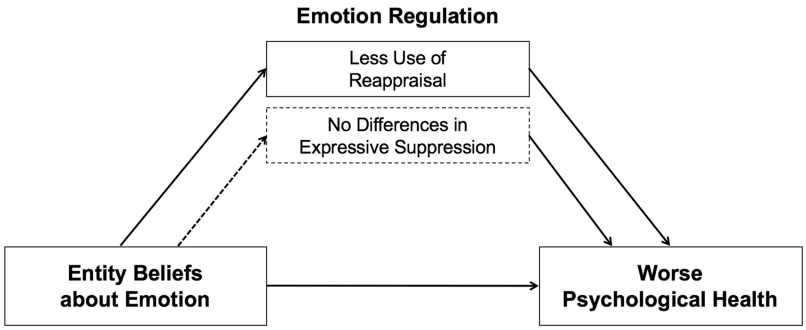

Figure 1. Outline of conceptual model wherein believing emotions cannot be controlled (entity beliefs about emotion) predicts less frequent use of emotion regulation strategies that focus on controlling emotional experiences (reappraisal), but not strategies that focus on controlling the expression of emotions (expressive suppression), which in turn predicts worse psychological health.

dren may already have developed entity beliefs about emotion, setting the stage for examining how these beliefs relate to downstream outcomes.

Second, the transition to adolescence represents a vulnerable period (Arnett, 1999; Hankin & Abramson, 2001). For example, depression rates rise strikingly between 13 and 18 years of age (Hankin et al., 1998) and cognitive risk factors are known to play a role in this increase (Hankin, Snyder, & Gulley, 2016). If entity beliefs discourage healthy emotion regulation, they may represent one of the factors that contribute to depressive symptoms in youth.

Third, using reappraisal less frequently predicts worse psychological health for youths (e.g., age 10), just as it does for adults (Carthy, Horesh, Apter, Edge, & Gross, 2010; Garnefski, Rieffe, Jellesma, Terwogt, & Kraaij, 2007; Hughes, Gullone, & Watson, 2011). Given this, entity beliefs about emotion could set youths down a dangerous path whereby they lose opportunities to practice and gain skill in reappraisal, which could generate effects that persist throughout life. Furthermore, depression during youth strongly predicts depression throughout adulthood (Kessler et al., 2005; Pine, Cohen, Cohen, & Brook, 1999). If entity beliefs about emotions put youths at risk, then these beliefs could represent an important prevention and intervention target with possible cumulative effects across the life span.

Although youth is a particularly important time in which to assess entity beliefs about emotion, we currently know very little about these beliefs in youths. In the only two studies to date that examined these beliefs in youths (Romero et al., 2014; Schleider & Weisz, 2016a, 2016b), entity beliefs about emotion in 11- to 14-year-olds predicted worse psychological health. However, these studies come with the caveat that entity beliefs were assessed using ambiguous items (with endorsement of items like "You have very little control of your emotions") that make it difficult to interpret whether the findings pertain to entity beliefs about emotion versus emotion regulation self-efficacy. Taken together, the small body of available research suggests that it is methodologically viable to assess youths' entity beliefs about emotions and that these beliefs may have important implications for psychological health.

The Current Investigation

The current investigation tested the links between entity beliefs about emotion, emotion regulation, and depressive symptoms. First, a pilot study in adults ($N = 223$) tested whether entity beliefs predicted the use of emotion regulation in individuals' daily lives and whether this link was specific to reappraisal (vs. expressive suppression). Then, Study 1 ($N = 136$) tested whether youths' entity beliefs predicted greater depression and whether this was specifically accounted for by reduced use of reappraisal (vs. expressive suppression). Finally, Study 2 ($N = 227$) replicated and extended Study 1 by assessing depressive symptoms 18 months after the assessment of beliefs and by obtaining both youth and parent reports of depression.

This research makes six key contributions. First, relatively few studies have specifically assessed entity beliefs about emotions (De Castella et al., 2013, 2014; Schroder et al., 2015; Tamir et al., 2007). Given this, we measured participants' endorsement of items like "People have very little control over their feelings," thus unambiguously targeting general entity beliefs about emotion (versus, for example, emotion regulation self-efficacy).

Second, although entity beliefs are especially important to examine in youths, only two studies have assessed youths (Romero et al., 2014; Schleider & Weisz, 2016a) and both studies examined an ambiguous measure of entity beliefs about emotion within relatively small samples (Ns = 113, 59, respectively). We build on these findings by testing whether entity beliefs about emotion predict psychological health in two youth samples of 10- to 18-year-olds (total $N = 363$).

Third, nearly all studies linking entity beliefs about emotion and psychological health have relied on self-reported measures of psychological health. Although self-reported measures provide key insights, correlations between self-reported beliefs and self-reported psychological health may potentially be inflated by common method variance. Given this, we assessed depressive symptoms—a key index of psychological health—using both youths' self reports as well as an informant's reports (i.e., one of their parents).

Fourth, we know quite little about whether entity beliefs about emotion predict *future* psychological health. One study assessed future psychological health (Tamir et al., 2007) but did conduct *prospective* analyses (i.e., examining whether beliefs predict worse psychological health in the future, even when controlling for initial levels of psychological health). Prospective analyses can indicate whether entity beliefs predict change in psychological health, thus speaking to the directionality of the link. Given this, we used a

longitudinal design and tested whether youths' entity beliefs prospectively predicted their future depressive symptoms across 18 months.

Fifth, no research has tested which specific forms of emotion regulation might account for the link between entity beliefs about emotion and worse psychological health. To address this, we first assessed reappraisal and expressive suppression in the Pilot Study using daily diaries, measuring the extent to which participants used the strategies during their day-to-day stressors. In Studies 1 and 2, we assessed habitual reappraisal and expressive suppression using questionnaires.

Finally, by sampling from a wide age range (10–18) of boys and girls, the present investigation was able to examine how entity beliefs varied as a function of age (assessed with school grade and pubertal status) and gender. For example, entity beliefs may be lower in younger (vs. older children) if they have relatively less experience with emotion control, or may be lower in girls (vs. boys) if they are less socialized to control their emotions. Age and gender may also shape the links between entity beliefs, emotion regulation, and depressive symptoms. For example, entity beliefs could more strongly predict depressive symptoms in older (vs. younger) children, who have had more time for their beliefs to shape psychological health.

Pilot Study

An initial pilot study tested the first link in the proposed mediation model—whether entity beliefs predicted less frequent use of reappraisal. This study had three specific aims: first, it examined whether entity beliefs were linked to reappraisal but not expressive suppression. Second, it aimed to provide a novel test of the link between entity beliefs and emotion regulation by measuring participants' reappraisal and suppression use across a week of daily diaries. To our knowledge, all of the prior research examining links between individual differences in entity beliefs about emotion and reappraisal has been conducted using global questionnaire reports of reappraisal. The present diary method thus captured emotion regulation as it is used in daily life while also minimizing inflation of links between entity beliefs and emotion regulation due to using the same measurement approach. Third, we tested whether the link between entity beliefs and the daily use of reappraisal held when controlling for possible confounding factors. Namely, individuals who believe that emotions are relatively uncontrollable may simply feel less efficacious in general or they may be more chronically pessimistic. Additionally, individuals with stronger entity beliefs may experience more stressful daily stressors or could experience chronically heightened emotional reactivity to those daily stressors, either of which could account for why they are less likely to engage in reappraisal (cf. Sheppes, Scheibe, Suri, & Gross, 2011). Thus, we controlled for self-efficacy, chronic pessimism, the stressfulness of individuals' daily stressors, and chronic negative emotional reactivity in response to stressors to isolate the specific impact of entity beliefs about emotion in predicting daily emotion regulation. Little research to date has examined whether the link between entity beliefs and reappraisal is robust when controlling for possible confounds (i.e., see Tamir et al., 2007, for the exception). Thus, by verifying the predictiveness of those beliefs beyond other constructs, this study provides foundational support for the discriminant validity of entity beliefs about emotion.

Method

Participants. A sample of community adults was recruited from the Denver metropolitan area as part of a larger research project.[1] The larger research project began with 339 participants and a subset of those participants completed the daily diary element of the study reported here ($N = 229$). Six participants did not complete the specific diary questions reported here and were thus removed from analyses, resulting in a final sample size of 223 (aged 21–60, $M = 40.6$; 58% female, 42% male). This sample consisted of 84% White, 6% multiple ethnicities, 3% Black or African American, 3% American Indian or Alaskan Native, 2% Asian, and 2% did not report. Because of some missing data, household income was only available for 84% of the sample: 5% <$10,000; 15% $10,000–30,000; 21% $30,000–50,000; 15% $50,000–70,000; 16% $70,000–100,000; 12% >$100,000.

A target sample size of $N = 250$ was identified based on power analyses indicating that a minimum sample size of $N = 200$ was necessary for the primary analyses of the larger project (i.e., how stress and emotion regulation interact to shape psychological health). Analyses were not begun until data collection had been completed.

Measures.

Entity beliefs about emotion. Entity beliefs were measured using the Implicit Theories of Emotion Scale (Tamir et al., 2007). The scale included two items targeting entity beliefs about emotions (*No matter how hard they try, people cannot really change the emotions that they have; The truth is, people have very little control over their emotions*) and two items targeting incremental beliefs about emotions that were reverse scored (*If they want to, people can change the emotions that they have; Everyone can learn to control their emotions*). Responses were rated on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*) and averaged together to create a composite ($M = 3.41$, $SD = 1.32$, $\alpha = .76$).

Daily emotion regulation. Participants completed a series of diaries for 14 consecutive days. Each night, participants were guided through a series of prompts listing different contexts in which stressful events could have occurred within the past 24 hours and were asked to identify which stressors they had experienced. Then, they were asked to report the most stressful event that occurred within the past 24 hours, which could have been one of the prompted stressors or anything else that was not prompted. This guided-recall procedure was used to reduce bias in the types of events that individuals identified as their most stressful event. Participants were then asked to report how much they tried to use

[1] Because these data were part of a larger project designed to assess coping with stress, other variables not central to the present investigation were also assessed (e.g., personality, health, social functioning). Other variables related to emotion regulation were also assessed but we focus on entity beliefs and daily diary use of reappraisal based on our a priori hypotheses regarding the previously untested link between entity beliefs and day-to-day use of reappraisal. Data from the larger data set have been included in other publications (list of publications is available from the authors upon request). These articles are concerned with variables and questions different from the ones addressed in the present article; therefore, there is no conceptual overlap with the present article.

reappraisal and expressive suppression as they "dealt with the stressful event that happened during the last 24 hours and [their] reactions to [that event]" on a scale of 1 (*very slightly or not at all*) to 5 (*very/a lot*). Participants responded to two reappraisal prompts (*thinking about the event in a way that would make you feel better*; *thinking about potential positive outcomes of the event*) and one suppression prompt (*not to show on the outside how you felt*). Because the "feel better" and "positive outcomes" reappraisal prompts were highly correlated, $r = .59$, $p < .001$, and showed the same pattern of associations with entity beliefs ($B = -.13$, $SE = .05$, $p = .011$ and $B = -.15$, $SE = .05$, $p = .004$, respectively), these two items were averaged within each day to create a more reliable measure. On average, participants reported moderate motivation to use reappraisal ($M = 2.81$, $SD = 0.97$, *range* = 1–5) as well as moderate motivation to use suppression ($M = 2.68$, $SD = 1.03$, *range* = 1–5).

Control variables. Four control variables were assessed to address the influence they may have on the link between entity beliefs about emotion and reappraisal, thereby testing the unique predictive validity of the entity beliefs measure: (a) *General self-efficacy* (e.g., "I can solve most problems if I invest the necessary effort"; General Self-Efficacy Scale; Schwarzer & Jerusalem, 1995; $M = 3.16$, $SD = .50$, alpha reliability of 10 items = .90); (b) *Optimism-pessimism* (e.g., "In uncertain times, I usually expect the best"; Life Orientation Test—Revised; Scheier, Carver, & Bridges, 1994; $M = 2.45$, $SD = .99$, alpha reliability of 6 items = .86), (c) *Perceived stressfulness of daily stressors* (assessed during each of the daily diaries with the item "How stressful was this event for you?"; $M = 3.20$, $SD = .78$, alpha reliability across seven diary days = .80); and (d) *Negative emotional reactivity* (e.g., "I get stressed out easily"; Neuroticism subscale of the International Personality Item Pool; Goldberg, 2005; $M = 2.91$, $SD = .92$, alpha reliability of 10 items = .92).

Procedure. Participants first completed an online questionnaire assessing entity beliefs and the control variables and then completed two weeks of daily diaries (80% of participants began the diaries within two weeks of the online questionnaire, 98% began the diaries within one month). The above measures of daily emotion regulation were included on the last seven days of these diaries. Participants completed an average of 5.7 diaries of 7 possible diaries: 80% of participants completed five days or more and 94% of participants completed at least three diaries. All data were retained given that even one or two days of data are informative. The institutional review board at the University of Denver approved all procedures within the "Denver emotional adjustment in response to stress study" protocol (#1017).[2]

Results

Using multilevel modeling, we examined whether entity beliefs about emotions (level 2 variable) predicted daily reappraisal or expressive suppression (level 1 variables). First, we found that individuals with greater entity beliefs were less likely to use reappraisal on a daily basis, $B = -0.14$, $SE = 0.05$, $p = .004$. This link also remained significant when the model included general self-efficacy, pessimism, stressfulness of daily stressors, or emotional reactivity as predictors, Bs > -0.13, ps $< .011$. Second, we found that individuals with greater entity beliefs were neither more nor less likely to use suppression on a daily basis, $B = -0.06$, $SE = 0.05$, $p = .251$. This link also remained null when the model included general self-efficacy, pessimism, stressfulness of daily stressors, or emotional reactivity as predictors, Bs < -0.08, ps $> .124$.

Discussion

This pilot study confirmed that individuals with stronger entity beliefs about emotion were less likely to use reappraisal in daily life. The results also suggest that the link between entity beliefs about emotion and emotion regulation is specific to reappraisal (a strategy that targets subjective emotional experiences) and does not extend to expressive suppression (a strategy that targets behavioral emotional expressions). Prior research also suggests that entity beliefs about emotion predict less reappraisal use (and do *not* predict suppression use) but this research relied on global questionnaire reports of habitual emotion regulation. By finding a link between beliefs and diary assessments of reappraisal use in individuals' daily lives—measures that are separated not only by several days of time but also by different measurement approaches (i.e., focusing on global assessments of beliefs and context-specific assessments of daily reappraisal)—we find support for the validity of the entity beliefs measure while also decreasing the chance that our results are due to global self ratings being used to assess both beliefs and emotion regulation.

Additionally, these data indicate that the link between entity beliefs about emotion and reduced use of reappraisal is not driven by low general self-efficacy, greater pessimism, encountering more stressful stressors, or heightened negative emotional reactivity to stressful experiences. Rather, there appears to be a unique link between believing that emotions are uncontrollable and one's likelihood of using reappraisal. Overall, this pilot bolsters the validity of the present measure of entity beliefs and supports the first link in the proposed model; as such, this pilot study lays the groundwork for the primary hypotheses tested with Study 1 and 2. Given that the pilot study was conducted within an adult sample, it is particularly important to replicate the link between entity beliefs and emotion regulation in youth samples.

Study 1

This study tested whether youths who believe emotions are relatively uncontrollable experience greater depressive symptoms. We also tested whether youths with stronger entity beliefs were less likely to use reappraisal, and whether this statistically mediated the link between entity beliefs and depressive symptoms. We again tested whether this mediation was specific to reappraisal versus expressive suppression. Finally, we tested whether youths' age or gender influenced the levels of or links between entity beliefs, emotion regulation, and depression.

Method

Participants. A sample of 136 youths was recruited as part of a larger study examining children's emotional experiences. Youths were recruited from two high schools in Pennsylvania. Informa-

[2] All data and materials reported within this paper are available from the authors upon request.

tional letters about the study were given to the high school students (to take home to their parents) by research staff. These forms included a contact sheet (so parents could be contacted directly) and parental consent for their adolescent. Approximately 400 letters were distributed. Interested youths and parents returned the contact sheet and parental consent form. Youths completed an assent form before participating in the study ($N = 142$).[3] Six participants were subsequently dropped from the analyses because of incomplete data (i.e., five participants did not complete the measure of entity beliefs about emotion and one participant did not complete the measure of reappraisal), resulting in a final sample size of $N = 136$ (aged 14–18, $M = 15.5$; 39% female, 61% male). This sample consisted of 82% Caucasian, 7% African American, 2% Latino/Hispanic, 4% Asian/Island Pacific, and 5% other/multiracial participants. Parents who chose to participate (80% of the sample had at least one parent participate) reported on the family's annual household income. Because of some missing data, income was only available for 72% of the sample: 4% <$40,000; 20% $40,000–79,999; 21% $80,000–119,999; 21% $120,000–159,999; 13% $160,000–199,999; 21% >$200,000.

A target sample size of $N = 100$ was identified based on power analyses indicating that a minimum sample size of $N = 85$ was necessary for the primary analyses of the larger project (i.e., a regression with 5 predictors estimating medium effect sizes). Because data collection relied on recruiting several classes within the participating schools, additional participants were able to be recruited (final $N = 136$). Analyses were not begun until this final sample size was reached.

Measures.

Entity beliefs about emotion. Youths' entity beliefs were measured using a slightly adapted version of the Implicit Theories of Emotion Scale (Tamir et al., 2007) with simpler language more appropriate for a younger sample. For example, the word "emotion" (appearing in the original scale) was replaced with the word "feelings," to make the items more intuitive for youths. The scale included two items targeting entity beliefs about emotions (*No matter how hard they try, people cannot really change their feelings; People have very little control over their feelings*) and two items targeting incremental beliefs about emotions that were reverse scored (*People can change their feelings if they want to; Everyone can learn to control their feelings*). Responses were rated on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*) and averaged together to create a composite. See Table 1 for all descriptive statistics.

Emotion regulation. Youths' use of emotion regulation was assessed using the validated Emotion Regulation Questionnaire for Children and Adolescents (Gullone & Taffe, 2012), an adapted version of the widely used adult Emotion Regulation Questionnaire (Gross & John, 2003) with simpler language more appropriate for a younger sample that is rated on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). Use of reappraisal was measured with an average of six items (e.g., *I control my feelings about things by changing the way I think about them*). Use of expressive suppression was measured with an average of four items (e.g., *When I'm feeling bad (e.g., sad, angry, or worried), I am careful not to show it*).

Depressive symptoms. Depressive symptoms were assessed using the Center for Epidemiological Studies—Depression scale (Faulstich, Carey, Ruggiero, Enyart, & Gresham, 1986; Weissman, Orvaschel, & Padian, 1980), which contains 20 items summed together assessing the severity of various psychological, social and somatic symptoms of depression (e.g., *I felt sad*) rated on a scale of 0 (*not at all*) to 3 (*a lot*).

Table 1
Study 1: Descriptive Statistics (Mean, Standard Deviation, Alpha) for Primary Study Variables, as Well as Tests of Age and Gender Differences in Primary Study variables ($N = 136$)

Variable	Study 1 Descriptives
Entity beliefs	
Mean (*SD*) [*alpha*]	3.60 (1.20) [.64]
Age	$r = .09$, *n.s.*
Gender	$t = 2.61^*$
Girls *M* (*SD*)	3.93 (1.05)
Boys *M* (*SD*)	3.39 (1.26)
Emotion regulation: Reappraisal	
Mean (*SD*) [*alpha*]	4.49 (1.10) [.82]
Age	$r = -.06$, *n.s.*
Gender	$t < 1$, *n.s.*
Girls *M* (*SD*)	4.54 (1.13)
Boys *M* (*SD*)	4.45 (1.08)
Emotion regulation: Expressive suppression	
Mean (*SD*) [*alpha*]	3.83 (1.50) [.84]
Age	$r = .04$, *n.s.*
Gender	$t = 2.25^*$
Girls *M* (*SD*)	3.47 (1.61)
Boys *M* (*SD*)	4.06 (1.39)
Depressive symptoms	
Mean (*SD*) [*alpha*]	19.38 (8.55) [.83]
Age	$r = -.13$, *n.s.*
Gender	$t = 3.73^*$
Girls *M* (*SD*)	22.64 (10.39)
Boys *M* (*SD*)	17.29 (6.38)

Note. Entity beliefs and emotion regulation were rated on a scale of 1–7 and depressive symptoms were rated on a scale of 0–60.
$^* p < .05$.

Procedure. Upon receiving parents' consent, research staff visited the schools to administer the surveys to the youths (either in the auditorium in a large group or in a specified classroom). Participating students completed an assent form and the above scales using paper and pencil. The youths were compensated monetarily for their participation. The institutional review board at the West Virginia University approved all procedures within the "Beliefs about and regulation of positive affect" study protocol (#1606154867A001).

Results

Preliminary analyses. We first examined how entity beliefs, emotion regulation, and depressive symptoms varied within the sample by age and gender (see Table 1 for these statistics). Age was unrelated to entity beliefs, reappraisal, expressive suppression, and depressive symptoms. These null effects may not be diagnostic, however, given the relatively limited age range in this sample.

[3] These 142 children represent the full sample from the larger study (i.e., they are not a subsample). The larger study included additional scales (e.g., assessing individuals' goals, life events, and decision-making) that were not central to the present hypotheses. Other scales assessing different indices of psychological health (e.g., life satisfaction) were not included in the present investigation as our a priori focus was on depressive symptoms.

Gender was related to entity beliefs, suppression (but not reappraisal), and depressive symptoms: girls (vs. boys) reported stronger entity beliefs, used suppression less frequently, and reported more depressive symptoms.

Testing primary hypotheses. We tested (a) whether entity beliefs were linked with depressive symptoms, (b) whether entity beliefs were linked with emotion regulation, and (c) whether emotion regulation statistically mediated the link between entity beliefs and depressive symptoms (see Table 2 for correlations between all study variables).

As predicted, entity beliefs about emotion were linked with greater depressive symptoms, $\beta = .21$, $p = .016$. Entity beliefs were also linked with less frequent use of reappraisal, $\beta = -.17$, $p = .044$, but were not significantly linked with use of suppression, $\beta = .08$, $p = .354$. Reappraisal was linked with fewer depressive symptoms, $\beta = -.23$, $p = .008$. These associations laid the groundwork for reappraisal to statistically mediate the link between entity beliefs and depressive symptoms. Because entity beliefs were not linked with suppression, suppression was not considered further (see Figure 2 for a summary).

The PROCESS macro (Hayes & Preacher, 2014) was employed to test whether the link between entity beliefs and depressive symptoms was mediated by reappraisal using bias-corrected bootstrapped confidence intervals with 5000 samples to test the indirect effects. As displayed in Table 3, this analysis verified a significant partial mediation.

Supplementary analyses.

Age and gender as moderators. As detailed in the supplementary online materials, age and gender did not moderate any links between entity beliefs, reappraisal, or depressive symptoms, with one exception: The link between reappraisal and lower depressive symptoms was significantly stronger for girls than for boys.

Alternative mediation models. We also tested two reverse mediation models in which depressive symptoms were the predictor (rather than the outcome). In a model wherein depressive symptoms predicted entity beliefs via reappraisal, there was no significant indirect effect, *indirect effect* = .004 (*SE* = .004), CI_{95} [−0.001, 0.01], indicating no significant mediation. In the model wherein depressive symptoms predicted reappraisal via entity beliefs, there was also no significant indirect effect, *indirect effect* = −.003 (*SE* = .003), CI_{95} [−0.01, 0.001], indicating no significant mediation.

Table 2
Study 1: Pearson's r Correlations Between Primary Study Variables (N = 136)

Variable	Entity beliefs	Emotion regulation: Reappraisal	Emotion regulation: Expressive suppression	Depressive symptoms
Entity beliefs	—			
Emotion regulation: Reappraisal	−.17*	—		
Emotion regulation: Expressive suppression	.08	−.07	—	
Depressive symptoms	.21*	−.23*	.26*	—

* $p < .05$.

Discussion

The results of Study 1 indicate that youths who believe emotions are relatively uncontrollable experience higher levels of depressive symptoms. This link was not moderated by age or gender, suggesting that entity beliefs consistently predict depressive symptoms across adolescence (between the ages of 14 and 18), similarly for both boys and girls.

As predicted, youths who believed emotions are relatively uncontrollable were also less likely to use reappraisal, but were not less (or more) likely to use expressive suppression. This pattern suggests that entity beliefs may have unique implications for emotion regulation strategies that target the *experience* of emotions (e.g., reappraisal), but not strategies that target the *expression* of emotions (e.g., suppression).

Study 1 also found support for the proposed mediation model: Youths with stronger entity beliefs experienced greater depressive symptoms in part because they were less likely to use reappraisal. These findings are preliminary given the cross-sectional nature of the study, but they are consistent with the theoretically motivated model (see Figure 1). An alternative model might propose the reverse directionality: that youths with more depressive symptoms may be more overwhelmed by their emotions and *as a result* are less likely to use reappraisal and more likely to hold stronger entity beliefs about emotion. However, we did not find evidence for this reverse mediation model. As such, this study provides preliminary support that youths' entity beliefs may shape their depressive symptoms rather than the other way around.

Although the link between reappraisal and depressive symptoms was not the primary focus of this investigation, it bears noting that gender moderated this link: reappraisal was linked more strongly with depressive symptoms for girls than for boys. This could reflect differences in socialization, where girls may learn how to use reappraisal more effectively than boys, but the pattern requires replication and further study to more fully understand its implications.

Study 1 provided an initial test of the hypothesized model but a second study was necessary to address several limitations. A second study allowed us to test whether the basic pattern of associations we observed in Study 1 would replicate in a second, larger sample. Additionally, the proposed model is directional but Study 1's cross-sectional design does not support directional conclusions. Study 1 also relied on youths' self-reported depressive symptoms, which could potentially inflate links with self-reported entity beliefs due to common method variance or possible self-report biases. Finally, Study 1 contained a relatively small age range (primarily 15- and 16-year-olds), which limited our ability to examine age as a moderator.

Study 2

This study was designed to replicate Study 1 and extend it in several ways. First, Study 2 employed a longitudinal design to test whether entity beliefs about emotion predicted future levels of depressive symptoms (18 months later), even when controlling for earlier levels of depressive symptoms. This design also allowed us to test the reverse causal model wherein depressive symptoms predict future entity beliefs. Second, in addition to youths' reports of their own depressive symptoms, we measured parents' reports

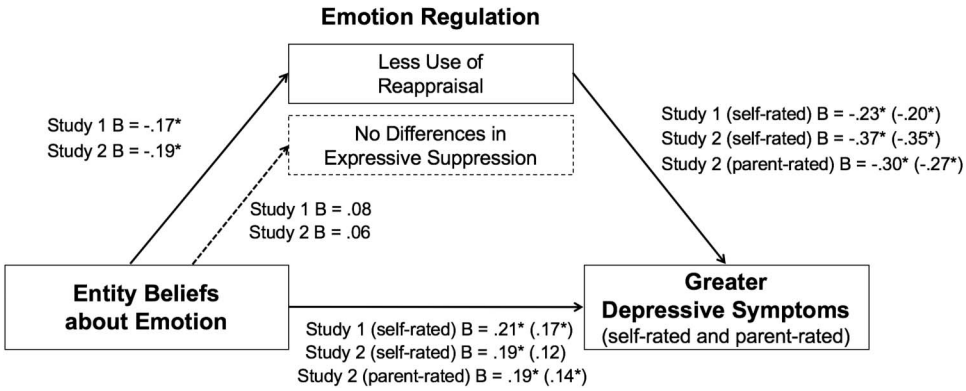

Figure 2. Summary of mediational models wherein entity beliefs about emotion predicted less frequent use of reappraisal (but not suppression), which in turn predicted greater depressive symptoms. * $p < .05$. All values are standardized beta weights. For Study 1, all variables were collected at the same time point and depressive symptoms were self-rated. For Study 2, emotion regulation and depressive symptoms were assessed 18 months after entity beliefs, and depressive symptoms were both self- and parent-rated. For simplicity, the displayed Study 2 statistics do not reflect values that control for earlier measures of depressive symptoms (see Table 3 for more detail). Numbers in parentheses represent values when both reappraisal and entity beliefs are entered in the model together.

of youths' depressive symptoms. Parent-reported depressive symptoms provided a complementary measure of psychological health: it allowed us to test whether effects of entity beliefs extend to an informant's report of symptoms that is less influenced by common method variance and possible self-report biases. To ensure that parents' own depressive symptoms did not unduly influence how they rated their children, we also controlled for parental depressive symptoms. Third, we again assessed youths' use of reappraisal and expressive suppression and tested whether entity beliefs promoted less frequent use of reappraisal (but not suppression), and whether less frequent reappraisal accounted for the link between entity beliefs and future depressive symptoms. Finally, Study 2 provided a larger sample than Study 1 with a wider age range across childhood and adolescence that allowed us to explore how age (school grade), pubertal status, or gender might shape entity beliefs about emotions and its links with emotion regulation and psychological health.

Method

Participants. A sample of 227 youths was recruited as part of a larger study examining depression in childhood (Hankin et al., 2015). Children were recruited from the greater Denver, CO, metro area. In participating school districts, brief information letters were sent home directly to families with a child in 3rd, 6th, or 9th grade. Of the families to whom letters were sent, 508 parents called the laboratory for more information. Parent reports established that both the parent and youth were fluent in English, the youth did not have an autism spectrum or psychotic disorder, and the child had an IQ >70. Of the families who initially contacted the laboratory, 366 (72% participation rate) qualified as study participants. The remaining 142 were not considered participants for the following reasons: 2 (1%) were excluded because the parents reported that their child had an autism spectrum disorder or low IQ, 10 (7%) were non–English-speaking families, 94 (66%) declined after learning about the study's requirements, and 36 (25%) were scheduled but did not arrive for assessment.

We restricted all analyses to include only participants who had complete data for the primary study variables (entity beliefs assessed at Time 1, emotion regulation assessed at Time 2, and depressive symptoms assessed at Time 2; see Procedure section for more details), which resulted in a final sample of $N = 227$ youths (aged 8–16 years at the beginning of the study, $M = 12.13$, 57% female, 43% male).[4] The final sample consisted of 76% Caucasian, 4% African American, 3% Latino/Hispanic, 4% Asian/Island Pacific, and 13% other/multiracial participants. Parents reported on the family's annual household income, and these data were available for 95% of the sample: 14% <$40,000; 32% $40,000–79,999; 29% $80,00–119,999; 12% $120,000–159,999; 4% $160,000–199,999; 9% >$200,000.

An original target sample size of $N = 650$ was identified based on power analyses focused on the primary analyses for the larger project (i.e., gene-by-environment interactions predicting depression outcomes[5]). This data collection was divided across two locations, one centered in the greater Denver, CO area (target $N =$

[4] The final sample did not significantly differ from the excluded participants on entity beliefs at T1 or T2, $ps > .66$, η_p^2s $< .001$, reappraisal at T1 or T2, $ps > .45$, η_p^2s $< .002$, or self-reported depressive symptoms at T0, T1, or T2, $ps > .068$, η_p^2s $< .010$. The final sample used suppression significantly more at T1 (but did not differ at T2, $p = .57$, $\eta_p^2 = .001$) than the excluded participants, $p = .010$, $\eta_p^2 = .025$. The final sample also differed from the excluded participants' parent-reported depressive symptoms at T0, T1, and T2, $ps < .008$, η_p^2s $> .025$, suggesting that parents who perceived their children were feeling worse may have not completed all necessary components of data collection.

[5] The larger study included additional measures (e.g., assessing individuals' goals, personality, life events, and relationships) that were not central to the present hypotheses. Other scales assessing different indices of psychological health (e.g., anxiety symptoms) were not included in the present investigation as our a priori focus was on depressive symptoms.

Table 3
Studies 1 and 2: Mediation Analyses Testing Whether the Link Between Youths' Entity Beliefs and Depressive Symptoms Was Mediated by Reappraisal

	a path	*b′* path	*c′* path	Indirect effect	
Outcome	Entity beliefs predicting reappraisal	Reappraisal predicting depressive symptoms (*controlling for entity beliefs*)	Entity beliefs predicting depressive symptoms (*controlling for reappraisal*)	Statistics	Significant mediation?
Study 1					
Youth-reported depressive symptoms	$B = -.16$, $SE = .08$ CI_{95} [−.31, −.004], $p = .044$	$B = -1.52$, $SE = .66$ CI_{95} [−2.82, −.22], $p = .022$	$B = 1.22$, $SE = .60$ CI_{95} [.04, 2.41], $p = .043$	$B = .24$, $SE = .18$ CI_{95} [.01, .77]	Yes (partial)
Study 2					
Youth-reported depressive symptoms					
Assessed at T2	$B = -.17$, $SE = .06$ CI_{95} [−.29, −.06], $p = .004$	$B = -1.54$, $SE = .28$ CI_{95} [−2.08, −1.00], $p < .001$	$B = .48$, $SE = .25$ CI_{95} [−.02, .98], $p = .059$	$B = .27$, $SE = .13$ CI_{95} [.06, .56]	Yes (full)
Assessed at T2 (Controlling for T0)	$B = -.17$, $SE = .06$ CI_{95} [−.29, −.06], $p = .004$	$B = -.23$, $SE = .05$ CI_{95} [−.33, −.14], $p < .001$	$B = .06$, $SE = .04$ CI_{95} [−.02, .15], $p = .158$	$B = .04$, $SE = .02$ CI_{95} [.01, .09]	Yes (full)
Assessed at T2 (Controlling for T1)	$B = -.17$, $SE = .06$ CI_{95} [−.29, −.06], $p = .004$	$B = -.18$, $SE = .05$ CI_{95} [−.27, −.08], $p < .001$	$B = .02$, $SE = .041$ CI_{95} [−.07, .11], $p = .661$	$B = .03$, $SE = .02$ CI_{95} [.01, .07]	Yes (full)
Parent-reported youth depressive symptoms[a]					
Assessed at T2	$B = -.17$, $SE = .06$ CI_{95} [−.29, −.06], $p = .004$	$B = -1.11$, $SE = .26$ CI_{95} [−1.63, −.59], $p < .001$	$B = .51$, $SE = .24$ CI_{95} [.04, .99], $p = .035$	$B = .19$, $SE = .10$ CI_{95} [.05, .47]	Yes (partial)
Assessed at T2 (Controlling for T0)	$B = -.17$, $SE = .06$ CI_{95} [−.29, −.06], $p = .004$	$B = -.22$, $SE = .05$ CI_{95} [−.32, −.12], $p < .001$	$B = .10$, $SE = .05$ CI_{95} [.01, .19], $p = .030$	$B = .04$, $SE = .02$ CI_{95} [.01, .09]	Yes (partial)
Assessed at T2 (Controlling for T1)	$B = -.18$, $SE = .06$ CI_{95} [−.30, −.06], $p = .004$	$B = -.21$, $SE = .05$ CI_{95} [−.32, −.11], $p < .001$	$B = .07$, $SE = .05$ CI_{95} [−.03, .17], $p = .148$	$B = .04$, $SE = .02$ CI_{95} [.01, .10]	Yes (full)

Note. All *B*s are unstandardized regression weights.
[a] All mediations with parent-reported child's depressive symptoms were significant when controlling for parents' own depressive symptoms.

325) and one centered in the New Jersey area (target $N = 325$). Children's beliefs about emotion were only assessed at the University of Denver location. Analyses were not begun until the final sample size was reached.

Measures.

Entity beliefs about emotion. Youths' entity beliefs were measured using the same scale as Study 1. This scale included two items targeting entity beliefs about emotions (*No matter how hard they try, people cannot really change their feelings; People have very little control over their feelings*) and one item targeting incremental beliefs about emotions that was reverse scored (e.g., *People can change their feelings if they want to).* Responses were rated on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*) and averaged to create a mean score. This scale originally included an additional incremental item, but because including this item reduced the reliability of the overall scale ($\alpha = .58$), the 3-item version was used in all subsequent analyses ($\alpha = .62$). See Table 4 for all descriptive statistics. Analyses using either the 3- or 4-item measure were comparable.

Emotion regulation. Youths' use of emotion regulation was assessed using an adapted version of the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) with simpler language more appropriate for a younger sample,[6] rated on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). Use of reappraisal was measured with an average of six items (e.g., *When I want to feel less bad and not feel sad or angry, I change the way I'm thinking about the situation).* Use of expressive suppression was measured with an average of four items (e.g., *When I'm feeling bad, sad, or angry, I do not show these feelings in my face or my behavior*).

Depressive symptoms. Youth self-reported depressive symptoms were assessed using the Children's Depression Inventory (Kovacs, 1981), which contains 27 items summed together to assess the severity of various psychological, social and somatic symptoms of depression rated on a scale of 0 (e.g., *I am sad once in a while*) to 2 (e.g., *I am sad all of the time*). Parent-reported youths' depressive symptoms were assessed using the Child Depression Inventory–Parent Report (CDI-PR; Wierzbicki, 1987), which consists of the same 27 items used in the child self-reported version of the CDI, but reworded so that parents reported on their child's depressive symptoms. Youths' self-reported depressive symptoms were moderately correlated with the parents' reports of the youths' symptoms at each study time point (see Table 5), indicating that the parent reports were related to but not redundant with youths' self-reports.

Because parents' reports of youths' depressive symptoms could be influenced by their own symptoms, parent self-reported depressive symptoms were also assessed using the Beck Depression Inventory (BDI; Beck, Steer, & Brown, 1996). This scale includes 21 items rated on a scale of 0 (e.g., *I do not feel sad*) to 3 (e.g., *I am so sad or unhappy that I cannot stand it*) that were summed (T0 $M = 5.11$, $SD = 5.72$, $\alpha = .88$; T1 $M = 4.23$, $SD = 6.41$, $\alpha = .92$; T2 $M = 4.71$, $SD = 7.14$, $\alpha = .92$). At each study time point, parents' own depressive symptoms were correlated with their reports of their youths' symptoms, $rs = .21$–$.48$, $ps < .002$, suggesting that parents' own depressive symptoms could influence their reports of their child's symptoms. Thus, in the primary analyses below, we also include analyses that control for parents' symptoms.

Pubertal status. Youths completed the Pubertal Development Scale (Petersen, Crockett, Richards, & Boxer, 1988), which includes five questions about physical development, scored from 1 (no) to 4 (development complete). Reliability and validity of the PDS is high, as it relates significantly with physical examination for pubertal development (Shirtcliff, Dahl, & Pollak, 2009). Standard scoring procedure was followed to create a prepubertal group (i.e., have not begun puberty) and a pubertal (i.e., have begun puberty) group, separately for girls and boys. Youths' pubertal status was established at T1, at the same time point as the first assessment of entity beliefs about emotion.

Procedure. Youths visited the laboratory with a parent for an initial in-person assessment (T0) and returned to the lab 18 months after T0 (T1) and 36 months after T0 (T2). Youths' entity beliefs and emotion regulation were assessed only at T1 and T2; Youths' self-reported and parent-reported depressive symptoms were assessed at all three time points. Parent's self-reported depressive symptoms were also assessed at all time points. All data were collected using paper and pencil. Parents provided informed consent for their child's participation; children also provided their own written assent. Both the youth and the parent were compensated monetarily for their participation. The institutional review board at the University of Denver approved all procedures within the "Gene-Environment Mood Study" protocol (#471805–4).

Results

Preliminary analyses. We first examined how entity beliefs, emotion regulation, and depressive symptoms changed across the study time points. We next tested how entity beliefs, emotion regulation, and depressive symptoms varied as a function of school grade, pubertal status, and gender (see Table 4 for means). We examined school grade rather than chronological age because participants were recruited from 3rd, 6th, or 9th grade, which created three discrete groups of participants in a tri-modal, non-normal distribution of ages. These three discrete groups of participants were recruited to create an accelerated longitudinal design that captured time before, during, and after the pubertal transition (Hankin et al., 2015). Given this, we use school grade as a categorical variable that corresponds closely to age, $r = .98$, $p < .001$, but was more statistically appropriate to use within the present sample. Also, although youths were recruited while they were in 3rd, 6th, or 9th grade, they completed the T1 assessment of beliefs 18 months later, and are thus referred to by their T1 school grade: 4th, 7th, and 10th grade.

Correlations between and changes in entity beliefs, emotion regulation and depressive symptoms across study time points. Youths' entity beliefs at T1 were moderately related to their beliefs at T2, and a comparable pattern was found for T1 and T2 reap-

[6] This longitudinal study was initiated before the ERQ-CA (Emotion Regulation Questionnaire for Children and Adolescents; Gullone & Taffe, 2012), the scale used in Study 1, was published. For Study 2, the authors made subtle modifications to the original ERQ to create more youth-friendly items. Because this questionnaire and the ERQ-CA are both based closely on the original ERQ scale, the present questionnaire is very similar to the ERQ-CA. For example, this suppression item from the ERQ-CA, "When I'm feeling bad (e.g., sad, angry, or worried), I am careful not to show it" reads as follows in the Study 2 scale, "When I'm feeling bad, sad, or angry, I do not show these feelings in my face or my behavior"

Table 4

Study 2: Descriptive Statistics (Mean, Standard Deviation, Alpha) for Primary Study Variables, as Well as Tests of School Grade, Pubertal Status, and Gender Differences in Primary Study Variables (N = 227)

Variable	Study 2 descriptives		
	Time 0 (0 months)	Time 1 (18 months)	Time 2 (36 months)
Entity beliefs			
Mean (*SD*) [*alpha*]	—	3.10 (1.29) [.62]	3.27 (1.22) [.63]
School grade	—	$F = 6.79^{*}$ (4th < 7th = 10th)	$F = 4.54^{*}$ (4th = 7th < 10th)
4th *M* (*SD*)	—	2.68 (1.48)	3.00 (1.25)
7th *M* (*SD*)	—	3.12 (1.24)	3.19 (1.25)
10th *M* (*SD*)	—	3.47 (1.05)	3.60 (1.08)
Pubertal status	—	$t = 3.52^{*}$	$t = 2.70^{*}$
Prepubertal *M* (*SD*)	—	2.79 (1.39)	3.06 (1.24)
Pubertal *M* (*SD*)	—	3.39 (1.12)	3.51 (1.15)
Gender	—	$t = 3.05^{*}$	$t = 2.61^{*}$
Girls *M* (*SD*)	—	3.32 (1.30)	3.45 (1.21)
Boys *M* (*SD*)	—	2.80 (1.22)	3.02 (1.19)
Emotion regulation: Reappraisal			
Mean (*SD*) [*alpha*]	—	4.83 (1.21) [.82]	4.81 (1.18) [.89]
School grade	—	$F = 1.44$, *n.s.*	$F = 1.66$, *n.s.*
4th *M* (*SD*)	—	4.92 (1.31)	4.83 (1.28)
7th *M* (*SD*)	—	4.65 (1.26)	4.65 (1.13)
10th *M* (*SD*)	—	4.95 (1.03)	4.99 (1.15)
Pubertal status	—	$t = 1.65$, *n.s.*	$t < 1$, *n.s.*
Prepubertal *M* (*SD*)	—	4.96 (1.22)	4.84 (1.19)
Pubertal *M* (*SD*)	—	4.69 (1.19)	4.76 (1.20)
Gender	—	$t = 1.10$, *n.s.*	$t < 1$, *n.s.*
Girls *M* (*SD*)	—	4.75 (1.23)	4.77 (1.22)
Boys *M* (*SD*)	—	4.93 (1.18)	4.87 (1.44)
Emotion regulation: Expressive suppression			
Mean (*SD*) [*alpha*]	—	3.47 (1.32) [.71]	3.74 (1.27) [.69]
School grade	—	$F < 1$, *n.s.*	$F < 1$, *n.s.*
4th *M* (*SD*)	—	3.39 (1.39)	3.68 (1.07)
7th *M* (*SD*)	—	3.61 (1.25)	3.86 (1.36)
10th *M* (*SD*)	—	3.38 (1.34)	3.64 (1.32)
Pubertal status	—	$t = 1.78$, *n.s.*	$t = 1.41$, *n.s.*
Prepubertal *M* (*SD*)	—	3.61 (1.29)	3.85 (1.16)
Pubertal *M* (*SD*)	—	3.30 (1.33)	3.62 (1.31)
Gender	—	$t = 2.62^{*}$	$t = 2.79^{*}$
Girls *M* (*SD*)	—	3.28 (1.34)	3.54 (1.24)
Boys *M* (*SD*)	—	3.73 (1.25)	4.00 (1.25)
Depressive symptoms: Youth self report			
Mean (*SD*) [*alpha*]	6.07 (5.28) [.83]	4.70 (5.09) [.85]	4.83 (5.22) [.86]
School grade	$F = 5.68^{*}$ (4th = 7th < 10th)	$F = 6.07^{*}$ (4th = 7th < 10th)	$F = 7.21^{*}$ (4th < 7th = 10th)
4th *M* (*SD*)	5.27 (4.71)	3.28 (4.33)	3.13 (3.95)
7th *M* (*SD*)	5.28 (4.65)	4.53 (5.23)	4.84 (5.35)
10th *M* (*SD*)	7.75 (6.10)	6.20 (5.23)	6.39 (5.64)
Pubertal status	$t = 2.36^{*}$	$t = 3.81^{*}$	$t = 4.25^{*}$
Prepubertal *M* (*SD*)	5.20 (5.33)	3.33 (3.94)	3.33 (4.11)
Pubertal *M* (*SD*)	6.87 (5.21)	5.79 (5.57)	6.18 (5.76)
Gender	$t < 1$, *n.s.*	$t = 1.13$, *n.s.*	$t = 2.25^{*}$
Girls *M* (*SD*)	6.35 (4.94)	5.03 (5.55)	5.50 (5.79)
Boys *M* (*SD*)	5.69 (5.71)	4.26 (4.39)	3.94 (4.19)
Depressive symptoms: Parent report of youth			
Mean (*SD*) [*alpha*]	6.43 (4.56) [.82]	5.34 (4.09) [.83]	4.01 (4.87) [.87]
School grade	$F < 1$	$F = 2.95$, *n.s.*	$F = 1.51$, *n.s.*
4th *M* (*SD*)	6.15 (4.37)	4.82 (3.46)	3.15 (4.16)
7th *M* (*SD*)	6.44 (4.73)	4.94 (2.97)	4.42 (5.43)
10th *M* (*SD*)	6.69 (4.58)	6.29 (5.42)	4.32 (4.71)
Pubertal status	$t < 1$, *n.s.*	$t = 2.03^{*}$	$t = 1.91$, *n.s.*
Prepubertal *M* (*SD*)	6.14 (4.37)	4.76 (3.22)	3.38 (4.10)
Pubertal *M* (*SD*)	6.68 (4.75)	5.87 (4.74)	4.63 (5.50)

(*table continues*)

Table 4 (*continued*)

Variable	Study 2 descriptives		
	Time 0 (0 months)	Time 1 (18 months)	Time 2 (36 months)
Gender	$t < 1$, *n.s.*	$t < 1$, *n.s.*	$t < 1$, *n.s.*
Girls *M* (*SD*)	6.21 (4.52)	5.35 (4.44)	4.22 (5.10)
Boys *M* (*SD*)	6.73 (4.63)	5.34 (3.59)	3.72 (4.54)

Note. There are no data available for cells with dashes (—); The sample size for Study 2 was 227 for all measures except for T1 parent-reported depressive symptoms ($N = 225$) and T2 entity beliefs ($N = 217$). Entity beliefs and emotion regulation were rated on a scale of 1–7, and depressive symptoms were rated on a scale of 0–54.
* $p < .05$.

praisal and expressive suppression (see Table 5). Youths' self-reported depressive symptoms were strongly related to each other at all three time points and a comparable pattern was found for youths' parent-reported symptoms.

From T1 to T2, there was a marginal increase in entity beliefs, $F(1, 216) = 2.81$, $p = .095$, $\eta_p^2 = .013$ (see Table 4 for means), no significant change in reappraisal, $F(1, 226) < 1$, $p = .858$, $\eta_p^2 = .00$, and a significant increase in suppression, $F(1, 226) = 8.07$, $p = .005$, $\eta_p^2 = .03$. Across the three study time points, depressive symptoms tended to decrease: Youths' self-reported symptoms decreased from T0 to T1, $F(1, 226) = 16.31$, $p < .001$, $\eta_p^2 = .07$, but did not change from T1 to T2, $F(1, 226) < 1$, $p = .648$, $\eta_p^2 = .00$; parent-reported youths' symptoms decreased from T0 to T1 and from T1 to T2, $F(1, 224)$s > 13.63, ps $< .001$, η_p^2s $> .06$.

School grade differences in entity beliefs, emotion regulation, and depressive symptoms. School grade was associated with entity beliefs such that the older grades reported stronger entity beliefs than the younger grades (see Table 4 for means and statistical tests). School grade was not associated with reappraisal or suppression. Consistent with prior research, school grade was associated with depressive symptoms, such that older grades reported higher symptoms than younger grades.[7]

Pubertal status differences in entity beliefs, emotion regulation and depressive symptoms. Paralleling the school grade findings, pubertal status was associated with entity beliefs such that pubertal youths reported stronger entity beliefs than prepubertal youths. Pubertal status was not associated with reappraisal or suppression. Pubertal status was also associated with depressive symptoms, such that pubertal youths reported higher symptoms than prepubertal youths.

Gender differences in entity beliefs, emotion regulation and depressive symptoms. Gender was associated with entity beliefs such that girls reported stronger entity beliefs than boys. Consistent with prior research, gender was associated with emotion regulation such that girls used suppression less frequently than boys, but did not differ from boys in reappraisal. Gender was also somewhat associated with depressive symptoms such that girls reported higher levels of depressive symptoms than boys, but this difference was only significant at T2. There were no gender differences in parents' reports of their children's symptoms at any time point.

Exploratory analyses of age versus puberty-related differences in entity beliefs. The design of Study 2 allowed us to tease apart the possible separate influences of age (school grade) and puberty on youths' entity beliefs. Specifically, although the majority of the 4th graders were prepubertal and the majority of the 10th graders were pubertal, there was a split within the 7th graders: about half were prepubertal and half were pubertal. This distribution allowed us to compare entity beliefs in youths who were different ages but had the same pubertal status (i.e., prepubertal 4th vs. 7th graders; pubertal 7th vs. 10th graders) with youths who were the same age but had a different pubertal status (i.e., prepubertal 7th graders vs. pubertal 7th graders). The prepubertal 4th and 7th graders did not differ in their T1 entity beliefs ($M = 2.69$ vs. 2.91), $p = .435$, *Cohen's d* = .16, and the pubertal 7th and 10th graders did not differ in their T1 entity beliefs ($M = 3.35$ vs. 3.47), $p = .601$, *Cohen's d* = .10. However, the difference between the comparably aged prepubertal 7th graders and pubertal 7th-graders approached significance ($M = 2.91$ vs. 3.35), $p = .103$, *Cohen's d* = .36. These analyses have reduced power given that 7th graders only represent one third of the sample and thus, we interpret these marginally significant analyses cautiously. Notably, however, the effect size of the pubertal difference in entity beliefs was 2–3 times larger (.36) than the effect size for the age difference in entity beliefs (.16, .10).

Testing primary hypotheses.

Plan of analysis. As displayed in Figure 1, our model proposes that (a) youths with stronger entity beliefs will experience greater depressive symptoms in the future, (b) youths with stronger entity beliefs will be less likely to use reappraisal in the future, and (c) emotion regulation will account for the link between entity beliefs and future depressive symptoms. Thus, in the primary analyses, we examined (a) how the first assessment of youths' entity beliefs at T1 predicted future depressive symptoms at T2, (b) how the first assessment of entity beliefs at T1 predicted future emotion regulation at T2, and (c) whether future emotion regulation at T2 accounted for the link between T1 entity beliefs and T2 depressive symptoms.

We also tested whether the link between T1 entity beliefs and T2 depressive symptoms was prospective (i.e., held when controlling for earlier assessments of depressive symptoms). To do this, for both self reports and parent reports, we examined T2 depressive symptoms when residualizing out the influence of T0 or T1

[7] Consistent with prior research (Hankin et al., 1998; Hankin et al., 2015), we found that depressive symptoms were higher in the older versus younger youths. Depressive symptoms were also found to decrease across repeated assessments within individuals. This latter finding that has been consistently observed in the developmental psychopathology literature (see Twenge & Nolen-Hoeksema, 2002) but is currently not well understood.

Table 5
Study 2: Pearson's r Correlations Between Study Variables (N = 227)

Variable	Time point	Entity beliefs		Emotion regulation: Reappraisal		Emotion regulation: Expressive suppression		Depressive symptoms: Youth self-report			Depressive symptoms: Parent-report of youth		
		T1	T2	T1	T2	T1	T2	T0	T1	T2	T0	T1	T2
Entity beliefs	T1	—											
	T2	.37*	—										
Emotion regulation: Reappraisal	T1	−.21*	−.11*	—									
	T2	−.19*	−.31*	.33*	—								
Emotion regulation: Expressive suppression	T1	.06	.00	−.12	−.12	—							
	T2	.06	.01	−.13	−.01	.42*	—						
Depressive symptoms: Youth self-report	T0	.14*	.18*	−.18*	−.22*	.06	.10	—					
	T1	.20*	.18*	−.32*	−.28*	.11	.15*	.51*	—				
	T2	.19*	.28*	−.26*	−.37*	.02	.14*	.46*	.63*	—			
Depressive symptoms: Parent-report	T0	.02	.06	−.11	−.05	.02	.11	.34*	.20*	.18*	—		
	T1	.12	.15*	−.13	−.12	.02	.11	.42*	.46*	.40*	.49*	—	
	T2	.19*	.10	−.14*	−.30*	−.05	.08	.32*	.23*	.43*	.41*	.53*	—

Note. The sample size for Study 2 was 227 for all measures except for T1 parent-reported depressive symptoms ($N = 225$) and T2 entity beliefs ($N = 217$).
* $p < .05$.

depressive symptoms.[8] We also controlled for the possible confounding influence of parents' own depressive symptoms by residualizing out their own depressive symptoms from their reports of their children's symptoms within each time point. In sum, we were able to examine depressive symptoms in multiple ways: (a) T2 self-reported depressive symptoms, (b) T2 self-reported depressive symptoms, controlling for T0 self-reported symptoms, (c) T2 self-reported depressive symptoms, controlling for T1 self-reported symptoms (d) T2 parent-reported depressive symptoms, (e) T2 parent-reported depressive symptoms, controlling for T0 parent-reported symptoms, (f) T2 parent-reported depressive symptoms, controlling for T1 parent-reported symptoms, (g) T2 parent-reported depressive symptoms from analyses 4, 5, and 6, also controlling for parents' own depressive symptoms.

Entity beliefs and depressive symptoms. As hypothesized, youths' T1 entity beliefs predicted greater T2 self-reported depressive symptoms, $\beta = .19$, $p = .005$. This link held when controlling for T0 depressive symptoms in a prospective analysis, $\beta = .15$, $p = .024$. This link was weakened when controlling for T1 depressive symptoms, $\beta = .07$, $p = .266$, perhaps due to the strong correlation between T1 and T2 depressive symptoms, $r = .63$.

Also as predicted, youths' T1 entity beliefs predicted T2 parent-reported youths' depressive symptoms, $\beta = .19$, $p = .005$. This link held when controlling for T0 depressive symptoms in a prospective analysis, $\beta = .19$, $p = .004$, and when controlling for T1 depressive symptoms in a prospective analysis, $\beta = .15$, $p = .030$. All links between T1 entity beliefs and T2 parent-reported youths' depressive symptoms also held when controlling for parents' own depressive symptoms, βs $> .15$, ps $< .028$.

Entity beliefs and emotion regulation. As hypothesized, T1 entity beliefs predicted less frequent T2 reappraisal, $\beta = -.19$, $p = .004$, but did not predict T2 suppression, $\beta = .06$, $p = .370$.

Entity beliefs and depressive symptoms: Mediation by reappraisal. T2 reappraisal was linked with fewer T2 self-reported depressive symptoms, $\beta = -.37$, $p < .001$, and fewer T2 parent-reported depressive symptoms, $\beta = -.30$, $p < .001$, even when controlling for parents' own depressive symptoms, $\beta = -.30$, $p < .001$. This pattern of associations laid the groundwork for reappraisal to mediate the link between entity beliefs and depressive symptoms. Because entity beliefs were not linked with suppression, suppression was not considered further (see Figure 2 for a summary).

The PROCESS macro (Hayes & Preacher, 2014) was employed to test this mediation using bias-corrected bootstrapped confidence intervals with 5000 samples to test the indirect effects. As displayed in Table 3, these analyses verified that T2 reappraisal significantly mediated the link between T1 entity beliefs and all measures of T2 depressive symptoms: T2 self-reported depressive symptoms, T2 self-reported depressive symptoms controlling for T0 or T1 self-reported symptoms, T2 parent-reported depressive symptoms, and T2 parent-reported depressive symptoms controlling for T0 or T1 parent-reported symptoms. Because testing an indirect effect does not require a significant direct effect (Hayes, 2009; Shrout & Bolger, 2002), we also found a significant mediation for self-reported depressive symptoms controlling for T1 symptoms. The mediations that included T2 parent-reported depressive symptoms also remained significant when controlling for parents' own depressive symptoms.

Supplementary analyses.

School grade, pubertal status, and gender as moderators. As detailed in the supplementary online materials, school grade, pubertal status, and gender did not consistently moderate any links between entity beliefs, reappraisal, or depressive symptoms, with two exceptions: First, the link between reappraisal and lower parent-reported depressive symptoms was significantly stronger

[8] To residualize out the effect of T0 or T1 depressive symptoms from the T2 report of depressive symptoms, we entered T2 depressive symptoms as the dependent variable of a regression analysis and entered T0 (or T1) depressive symptoms as the predictor variable. We saved the residual from this analysis, which resulted in a new variable that represented T2 depressive symptom scores that have partialed out variability due to T0 (or T1) depressive symptoms.

for pubertal children compared with prepubertal children; Second, the link between reappraisal and lower self-reported depressive symptoms was significantly stronger for girls than for boys.

Alternative directional model. We tested the alternative model wherein depressive symptoms predicted future entity beliefs (rather than beliefs predicting future symptoms, which is reported above). Although T1 self-reported depressive symptoms significantly predicted T2 entity beliefs, $\beta = .18$, $p = .007$, this link became marginal when controlling for T1 entity beliefs, $\beta = .12$, $p = .089$. The link between T1 parent-reported depressive symptoms and T2 entity beliefs, $\beta = .15$, $p = .024$, also became nonsignificant when controlling for T1 entity beliefs and parents' own depressive symptoms, $\beta = .09$, $p = .198$. Thus, the prospective links between depressive symptoms and future entity beliefs (controlling for earlier entity beliefs) were less robust than the prospective links between entity beliefs and future depressive symptoms (controlling for earlier symptoms), lending support for the directional model proposed in Figure 1.

We also proposed there would be an indirect effect between entity beliefs and greater prospective depressive symptoms via emotion regulation because entity beliefs discourage the use of effective strategies like reappraisal. To further rule out the reverse directional indirect effect, we tested whether T2 entity beliefs (controlling for T1 entity beliefs in a prospective analysis) were predicted by prior experiences of T1 depressive symptoms, and whether this link was mediated by prior infrequent use of reappraisal at T1. When considering T1 self-reported symptoms of depressive symptoms as the predictor, the mediation was nonsignificant, *indirect effect* $B = -.001$ ($SE = .01$), CI_{95} [−0.01, 0.01]. When considering T1 parent-reported symptoms of depressive symptoms as the predictor, the mediation was also nonsignificant, *indirect effect* $B = .001$ ($SE = .002$), CI_{95} [−0.003, 0.01], and remained nonsignificant when additionally controlling for parents' own depressive symptoms, $B = .005$ ($SE = .01$), CI_{95} [−0.02, 0.04].

Cross-sectional mediational models. We focus on the longitudinal mediation between T1 entity beliefs and T2 depressive symptoms via T2 reappraisal because it is the strongest test of our theoretical model. When we conduct cross-sectional mediations wherein T1 entity beliefs predict T1 depressive symptoms (both child- and parent-reported) via T1 reappraisal, and wherein T2 entity beliefs predict T2 depressive symptoms (both child- and parent-reported) via T2 reappraisal, the mediational indirect effect is significant (i.e., the bootstrapped indirect effect confidence interval does not include zero) in all cases.

Discussion

Extending the cross-sectional findings from Study 1, the present study provides evidence that youths' entity beliefs promote worse depressive symptoms longitudinally. Even when controlling for initial depressive symptoms in prospective analyses, youths with stronger entity beliefs went on to experience more depressive symptoms 18 months later, suggesting that youths' entity beliefs about emotion may play a lead role in shaping their psychological health. The link between entity beliefs and depressive symptoms was not moderated by age (school grade), pubertal status, or gender, suggesting that entity beliefs consistently predicted symptoms across these youths' development (between the ages of 10–18) similarly for both boys and girls.

The longitudinal design of Study 2 provided a test of both the primary hypothesis that entity beliefs predict depressive symptoms as well as of the reverse relationship: Theoretically, higher levels of depressive symptoms could contribute to stronger entity beliefs. However, we did not find compelling evidence for a prospective link between depressive symptoms and future entity beliefs. These results suggest that entity beliefs about emotions could be a risk factor for worse psychological health, and are not merely an outcome of worse psychological health.

Extending the self-reported depressive symptom ratings utilized in Study 1, we also assessed an informant's report of youths' depressive symptoms: one of their parents. The youths' self-reported depressive symptoms were associated—but far from redundant—with the parent reports of youths' depressive symptoms at each time point ($rs = .34–.46$). Thus, these two reports provide a complementary perspective on youths' symptoms. Supporting the robust link between entity beliefs and depressive symptoms, we observed the same pattern whether we examined self or parent reports: youths' entity beliefs prospectively predicted depressive symptoms. Importantly, the link between entity beliefs and parent-reported depressive symptoms remained unchanged when controlling for parents' depressive symptoms. Thus, although parents' depressive symptoms likely influence their children, parents' symptoms do not account for the links between youths' entity beliefs and youths' parent-reported depressive symptoms.

Finally, consistent with the cross-sectional mediation from Study 1, the longitudinal mediation within Study 2 lends support for the proposed mechanistic model: Youths with stronger entity beliefs go on to experience greater depressive symptoms in the future in part because they are less likely to use reappraisal. These mediations were significant for both self- and parent-reported symptoms and remained significant whether controlling for earlier assessments of symptoms or not. Notably, we did not find consistent evidence for the reverse indirect effect wherein depressive symptoms predicted stronger entity beliefs in the future via less frequent use of reappraisal (i.e., these links became nonsignificant when including the appropriate controls in the model). Rather, the present results provided more consistent support for the conceptual model depicted in Figure 1, wherein entity beliefs significantly predicted less frequent use of reappraisal in the future, which, in turn, accounted for greater future depressive symptoms.

General Discussion

As humans, we have the unique capacity to think and theorize about our experiences, including our emotions. We develop beliefs about the nature of emotions, and these beliefs are likely to be consequential. In the present investigation, we focused on one particularly fundamental belief: whether emotions are viewed as relatively controllable or uncontrollable. We proposed that believing emotions are uncontrollable (*entity beliefs*) may contribute to worse psychological health because these beliefs reduce individuals' attempts to regulate their emotions using strategies such as reappraisal. We tested this model in two samples of youths because the model may hold particular relevance in youth: a time when beliefs about emotions are first developing and when cognitive risk

factors—like maladaptive beliefs about emotion—can profoundly shape emotion regulation and psychological health.

Measuring Entity Beliefs About Emotion

One foundational contribution of the present investigation was to examine the cross-method predictive power of measurements of entity beliefs about emotion by examining associations with methodologically diverse outcomes. Entity beliefs are abstract beliefs about how the world works, and as such, do not have a clear behavioral criterion and should be primarily accessible via global self reports. However, it is still possible to increase one's confidence in a global self-reported measure of beliefs by observing the downstream outcomes of beliefs with measures other than global self-reports (i.e., methods that share less variance with the measure of entity beliefs). To our knowledge, only one other study assessed a correlate of individual differences in entity beliefs about emotion that did not rely on global self-reports: in Tamir et al. (2007), entity beliefs about emotion predicted *peer-reported* depressive symptoms. Given this sparse evidence, the present investigation provides two important contributions: (a) Entity beliefs predicted not only the reappraisal people report habitually using in questionnaires, but also the reappraisal people actually use in daily life (Pilot Study) and (b) entity beliefs predicted not only youths' self-reported depressive symptoms but also predicted youths' *parent-reported* depressive symptoms (Study 2). When entity beliefs predict outcomes that are assessed in everyday life or that are observable by others, it suggests that those links are not due merely to global self-report biases. Together, these findings support the validity of the present measure and suggest that entity beliefs about emotion have a relevant impact on downstream outcomes.

Examining Age and Gender Differences in Entity Beliefs

An additional contribution of the present investigation was its systematic investigation of both age and gender differences in entity beliefs. With regard to age, the present investigation revealed consistent differences in entity beliefs both within individuals over time and across different age groups. Specifically, entity beliefs grew marginally stronger as children aged 18 months between the two assessments points in Study 2. Entity beliefs were also significantly higher in the older versus younger school grades: Overall, entity beliefs were relatively low in 4th graders ($M = 2.68$ on a 1–7 scale) and rose by nearly a full scale-point across adolescence ($M = 3.60$ in 12th graders). Study 2 also provided preliminary evidence that the increase in entity beliefs may be more strongly tied to puberty than to age. Interestingly, comparing the youths' beliefs from Study 2 with adults' beliefs from the Pilot Study—wherein the adults' average ($M = 3.41$) was comparable to the 12th graders' average ($M = 3.60$)—suggests that entity beliefs may remain relatively stable after adolescence. The pattern of rising entity beliefs across puberty coupled with relative consistency in post-pubertal adults could be explained by the biological, psychological, and social challenges that characterize adolescence, such as maturation, greater stress, and relationship changes (Brown, 1990; Cicchetti & Rogosch, 2002; Conley & Rudolph, 2009; Hayward, 2003). However, numerous factors could drive the development-related increase in entity beliefs, and more research is needed to understand these developmental trajectories.

Second, Studies 1 and 2 revealed a consistent gender difference wherein girls reported stronger entity beliefs than boys. One possible reason for this gender difference may be that both gender and entity beliefs are linked with depressive symptoms, a possible confound. However, the gender difference in entity beliefs holds when controlling for depressive symptoms in Study 1 ($p = .051$, $\eta_p^2 = .03$) and in Study 2 (T1 $p = .004$, $\eta_p^2 = .04$; T2 $p = .040$, $\eta_p^2 = .02$). This gender difference could also be explained by early gender socialization. Girls may be taught that emotions are "natural" for females (e.g., the time-worn "women are emotional" trope): when we believe something is natural and essential, perhaps we are less likely to believe it is controllable. Boys may also be taught that emotions should be controlled (e.g., "boys don't cry" is primarily a command to control emotions): when someone receives enough messages that something should be controlled, they may internalize a belief that it is possible to control it. These ideas are particularly important to test in future research because this gender difference has not been consistently observed: it was present in one youth sample (Schleider & Weisz, 2016b), but not a second youth sample (Romero et al., 2014), nor in adult samples (e.g., Tamir et al., 2007), including the present adult pilot study (*gender difference* $F < 1$, $p = .865$, $\eta_p^2 = .00$). It is thus an open question whether females reliably endorse stronger entity beliefs.

Entity Beliefs About Emotion and Depressive Symptoms

The present investigation provided support for our primary prediction in two samples: youths who believed emotions are relatively uncontrollable experienced higher levels of depressive symptoms, whether those symptoms were assessed cross-sectionally, longitudinally, via self report, or via informant report. Although these links had relatively modest effect sizes (rs = .10–.28), even small effects can exert sizable cumulative effects. Moreover, depression is complex and multiply determined, and one would not expect a single factor to explain a large portion of its variance.

Importantly, entity beliefs also *prospectively* predicted greater depressive symptoms 18 months later (i.e., even when controlling for earlier assessments of symptoms). We also found no consistent evidence for the reverse direction that depressive symptoms prospectively predicted future entity beliefs. These findings suggest that entity beliefs about emotion contribute to worse psychological health and are not merely a result of worse psychological health.

Although the present study is the first to test the prospective link between entity beliefs and psychological health using an unambiguous measure of entity beliefs, one other study reported the prospective link between entity beliefs and psychological health using the relatively ambiguous items that could refer to beliefs about emotion or to emotion regulation self-efficacy. Although this study found that entity beliefs did not significantly predict psychological health when controlling for earlier levels of psychological health (Schleider & Weisz, 2016a), the sample size was relatively small ($N = 59$), which may have made it difficult to detect a prospective effect. Also, prospective analyses can underestimate an effect when they control for earlier assessments that are closely related to the later assessments: In the Schleider and Weisz study, initial levels of psychological health were strongly correlated with psychological health four months later ($r = .75$). Within the present Study 2, in contrast, initial levels of psychological health were less strongly correlated with later levels (av-

erage $r = .51$), perhaps because they were assessed up to three years apart.

In the present studies, the link between entity beliefs and depressive symptoms was not moderated by age or gender, suggesting that entity beliefs consistently predict symptoms across adolescence (10–18 years old) for both boys and girls. These findings are consistent with one other youth sample (Romero et al., 2014), but not with a second youth sample (Schleider & Weisz, 2016b), which found a stronger link for girls than boys. This finding is difficult to interpret because it is based on the ambiguous measure of beliefs as well as a relatively small sample (28 boys, 31 girls), compared with the present samples (combined 183 girls, 180 boys). Overall, our findings suggest that entity beliefs emerge early in youth and predict greater depressive symptoms relatively consistently for males and females across childhood, adolescence, and even adulthood.

Entity Beliefs About Emotion and Emotion Regulation

In spite of the sizable literature on the outcomes of emotion regulation (see Webb et al., 2012 for meta-analysis), relatively less research has focused on factors that influence whether, when, and why people—including children—use emotion regulation in the first place (Mischel, Shoda, & Peake, 1988; Tamir & Mauss, 2011). Given the important benefits of emotion regulation, it is crucial to increase our understanding of the antecedents of emotion regulation, such as entity beliefs about emotion.

Believing that emotions are relatively uncontrollable should shape whether individuals attempt to regulate their emotional experiences: why would someone invest effort in controlling something they do not believe can actually be controlled? This idea is consistent with prior work on self-regulation suggesting that people engage in self-regulation when they are motivated to do so (Inzlicht & Schmeichel, 2012; Tamir & Mauss, 2011) and believe it is possible to do so (Job, Dweck, & Walton, 2010). More specifically, because entity beliefs about emotion are centered on emotional experiences, they should primarily shape the use of strategies that target emotional experiences, like reappraisal (vs. strategies that do not target these experiences, like expressive suppression). We found support for these hypotheses across all three studies: individuals who believed emotions were relatively uncontrollable were less likely to use reappraisal (but were not less likely to use suppression). These findings are particularly striking when considering they were demonstrated in youths, given that youths with stronger entity beliefs will likely miss valuable opportunities to practice and gain skill in important emotion regulation strategies.

The pilot study also allowed us to address several possible alternative explanations for the link between entity beliefs and reappraisal. These results suggest that the link is not merely attributable to low general self-efficacy, greater pessimism, experiencing more stressful stressors, or heightened negative emotional reactivity. Rather, these results suggest that it is specifically individuals' entity beliefs about emotion that shape emotion regulation in detrimental ways.

The pilot study also provided evidence that entity beliefs predict individuals' daily use of reappraisal in managing their day-to-day stressors (and not simply the reappraisal that they report using in general). As such, these findings provide an important validation of the link between entity beliefs and reappraisal that bolsters not only Study 1 and 2 in the present investigation, but also future studies that must rely on general reports of emotion regulation.

Being less likely to use reappraisal, in turn, acted as a mediator for further negative outcomes. The proposed mediation model (see Figure 1) was supported in cross-sectional analyses, longitudinal analyses, and prospective analyses: Youths with stronger entity beliefs were less likely to use reappraisal which in turn accounted for greater depressive symptoms. We also did *not* find evidence for the reverse mediation model wherein early depressive symptoms predicted stronger entity beliefs via less frequent use of reappraisal. Thus, the present prospective results provide support for the directionality of this model.

Practical Implications

The proposed model highlights entity beliefs about emotion as a precursor to—and possible risk factor for—worse psychological health. Thus, it may be particularly impactful to change entity beliefs, given they may be a key 'early' step in the process of employing effective forms of emotion regulation. Prior research suggests that targeting entity beliefs can be an effective intervention: for example, improving entity beliefs about intelligence improved downstream academic outcomes (Aronson et al., 2002; Blackwell et al., 2007). Research manipulating entity beliefs about emotion is sparse, but preliminary findings are promising: Three recent experiments induced entity beliefs about emotions in adults and observed consequences for emotion regulation (Kneeland, Nolen-Hoeksema, et al., 2016a, 2016b; Rovenpor & Isbell, 2017). One of these experiments reported manipulation check data indicating that a relatively subtle experimental manipulation of beliefs had a moderately sized effect on individuals' entity beliefs about emotion, at least in the short-term, *Cohen's d* = .34 (Rovenpor & Isbell, 2017). These findings underscore the promise of targeting entity beliefs about emotion: By influencing a relatively early stage in the risk cascade, changing entity beliefs could promote the development of a healthy emotion regulation repertoire and associated beneficial effects.

It is also possible that targeting entity beliefs in young children is particularly fruitful. Because younger (vs. older) children appear to be more optimistic about the controllability of emotions, it may be beneficial to work with young children to keep their entity beliefs about emotion low (i.e., it should be easier to prevent an increase in entity beliefs than to try reducing entity beliefs once they are already elevated). Given the strong links between childhood and adult psychological health (Kessler et al., 2005; Pine et al., 1999), improving entity beliefs in childhood could have considerable cumulative benefits.

Limitations and Future Directions

This research provides novel contributions to our understanding of beliefs about emotion, links to psychological health in youth samples, and the mechanisms through which these beliefs shape psychological health. It also has limitations that suggest directions for future research.

First, the proposed model has a strong theoretical rationale, promising empirical support, and initial converging evidence from experimental research (Kneeland, Nolen-Hoeksema, et al., 2016a,

2016b). However, additional experiments could confirm the directionality of this model.

Second, this investigation's primary focus was to examine links between entity beliefs about emotion and psychological health, but did not address where these beliefs may originate. At least two options are worth investigating. First, entity beliefs may be generated from the bottom up (e.g., youths who experience intense and hard-to-manage emotions may conclude that emotions are relatively uncontrollable). Preliminary findings from Study 2 cast some doubt on this hypothesis, given that initial levels of depressive symptoms did not prospectively predict subsequent entity beliefs. Second, beliefs may be generated from the top down (e.g., youths may learn from adults or other children, either through explicit messages, socialization, or observation; see Halberstadt et al., 2013; Lozada, Halberstadt, Craig, Dennis, & Dunsmore, 2016). Identifying how entity beliefs are generated could lend key insights into effective ways to shape these beliefs.

Third, beliefs about the controllability of emotions may not be the only influential belief that people hold about emotions. It would be useful to develop a taxonomy describing superordinate and subordinate beliefs about emotion, as well as the interrelations between these beliefs (see Ford & Gross, in press). For example, a growing literature has examined another superordinate belief about emotions: whether emotions are good or bad (Ford & Mauss, 2014; Harmon-Jones et al., 2011; Mikulincer & Ben-Artzi, 1995; Tamir, 2009; Tsai, 2007). Some additional research has also focused on beliefs about whether specific emotions can be controlled, like anxiety (De Castella et al., 2014) and happiness (Howell, Passmore, & Holder, 2016).

Fourth, reappraisal and suppression represent just two examples of emotion regulation, and it will be important for future research to consider additional emotion regulation strategies to broaden our understanding and better triangulate the underlying psychological processes that entity beliefs are likely to influence. We proposed that entity beliefs should be more strongly tied to regulation strategies that target emotional experiences—given that this is the domain that entity beliefs appear to be centered on—compared with strategies that focus less on altering the emotional experience itself (like behaviors). However, to confirm this general hypothesis, it is necessary to examine additional strategies. For example, the strategy of distraction can also be used to change internal emotional experiences, like reappraisal, but it differs from reappraisal in that it is considered less adaptive in the long-term, is less cognitively effortful, can be implemented even earlier in the emotion-generation process, and so forth (e.g., Sheppes & Gross, 2011). Conversely, the strategy like expressive enhancement is defined by trying to control external emotional expressions, like suppression, but also differs from suppression in many ways including that is considered somewhat more adaptive in the long-term, it focuses on sharing one's internal experiences with others rather than hiding them, and it is less cognitively effortful (e.g., Bonanno, Papa, Lalande, Westphal, & Coifman, 2004). Examining additional emotion regulation strategies will broaden our understanding and help uncover what underlying factors are driving the links between entity beliefs and emotion regulation (cf. De Castella, Platow, Tamir, & Gross, 2017).

Fifth, it is important for future research to continue examining the role of entity beliefs about emotion in predicting emotion regulation and psychological health, including its unique role above and beyond other theoretically relevant constructs. The Pilot Study provided preliminary evidence that the link between entity beliefs and less use of reappraisal was robust when controlling for low self-efficacy, pessimism, experiencing more stressful stressors, and negative emotional reactivity in response to stressors. However, these results are based on an adult sample and thus need to be replicated within youth samples. Given the associations among entity beliefs about emotion, emotion regulation, and psychological health were comparable across adult and youth samples, there is reason to believe the Pilot Study's results will replicate in a youth sample. However, additional data are necessary to test this prediction.

Finally, although the present effect sizes were consistent across studies and comparable to other work (e.g., Tamir et al., 2007), they were modest. This could be attributable to the multiply determined nature of depression but also to the potential presence of moderators (e.g., within certain contexts, entity beliefs could promote *better* outcomes; see Park & Kim, 2015; Tullett & Plaks, 2016; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). For example, entity beliefs may have interpersonal benefits if they engender empathy for others struggling with overwhelming emotions. Additionally, the nature of the emotional stressors that individuals tend to experience may also moderate the link between beliefs, emotion regulation, and psychological health. For example, the beneficial link between reappraisal and psychological health is known to depend on the broader context in which individuals are using that reappraisal (e.g., Troy, Ford, McRae, Zarolia, & Mauss, 2017; Troy, Shallcross, & Mauss, 2013). Many of these ideas remain to be tested.

Concluding Comment

A small literature has begun to examine individuals' fundamental beliefs about emotion and their effects on health. Building on these early findings, the present research demonstrates that beliefs about whether emotions can or cannot be controlled are not merely intellectual musings—they are core individual differences that develop early in life and shape the emotion regulation process and subsequent psychological health.

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