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MENTAL HEALTH AND IMPLICIT THEORIES OF THOUGHTS, FEELINGS, AND BEHAVIOR IN EARLY ADOLESCENTS: ARE GIRLS AT GREATER RISK?

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Past research suggests that girls, more than boys, tend to act and think in ways consistent with entity theories of personal traits: beliefs that such traits are unchangeable. This study explored how this gender difference might develop and relate to mental health problems in early adolescents across an academic year (N = 59, ages 11–14). Overall, girls endorsed stronger entity theories of thoughts, feelings, and behavior than boys. Further, girls' entity theories grew stronger across the school year, while boys' did not. Additional analyses suggested that entity theories were more strongly associated with mental health problems in girls than in boys. Finally, girls with greater baseline mental health problems were more likely to develop entity theories of feelings six months later.

Beginning in early childhood, girls and boys tend to differ in their self-expectations and evaluations (Herbert & Stipek, 2005; Parsons, Ruble, Hodges, & Small, 1976; Stein & Bailey, 1973). Girls often report lower expectations for personal success, show decreased effort following failure, and more readily assume personal responsibility for failure than same-aged boys (Dweck & Gillard, 1975; Herbert & Stipek, 2005; Skaalvik & Skaalvik, 2004; von Stumm, Chamorro-Premuzic, & Furnham, 2009). One possible explanation for these differences comes from literature on implicit theories: beliefs about whether personal traits and abili-

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ties are relatively static (entity theory) or malleable through effort (incremental theory). Some studies suggest that girls may be more likely than boys to behave and think in ways consistent with an entity theory of personal traits, especially following perceived failure (Alessandri & Lewis, 1993; Dweck, 1986; Dweck, Davidson, Nelson, & Enna, 1978; Siegle, Rubenstein, Pollard, & Romey, 2010). In turn, it has been suggested that girls may tend to view negative feedback as indicative of low ability, which may lead to greater helplessness in the face of setbacks (Dweck et al., 1978). Understanding how these relations develop over time may inform efforts to promote positive development in girls.

WHAT FACTORS MIGHT EXPLAIN GENDER DIFFERENCES IN ENTITY THEORIES?

One proposed explanation for these differences is that, beginning early in life, girls and boys receive conceptually different patterns of feedback from adults (Dweck et al., 1978), with feedback to girls supporting stronger entity beliefs, and feedback to boys, more incremental beliefs. Dweck and colleagues (1978) tested this possibility though several classroom-based studies, finding that teachers verbally attributed failures to insufficient effort more often for boys than girls. This pattern might lead boys, more than girls, to view failure as resulting from inadequate effort. Teachers' negative feedback to girls was less likely to reference low effort as causing failures; this pattern may lead girls to view failure feedback as indicative of low innate ability, which is unalterable through personal effort.

GENDER DIFFERENCES IN ENTITY THEORIES IN OTHER DOMAINS: CONSIDERING THOUGHTS, FEELINGS, AND BEHAVIOR

Most studies examining gender differences in implicit theories have focused on theories of intelligence (Good, Aronson, & Inzlicht, 2003). However, if boys are more likely to receive feedback focused on effort, and girls on global traits, gender differences in these theories may emerge in additional domains: for

instance, thoughts, feelings, and behavior. These domains may be especially important to consider in the context of youth mental health. Youths with internalizing and externalizing problems are more likely to view their thoughts and feelings as uncontrollable and to believe their actions cannot affect their environment (Seligman et al., 1984; Weisz, Southam-Gerow, & McCarty, 2001). Thus, youths' psychiatric difficulties may directly shape their implicit theories of thoughts, feelings, and behavior.

Girls might endorse stronger entity theories of thoughts, feelings, and behavior than boys for several reasons. First, gender differences in sense of mastery might play a role. Feminist theories contend that young girls receive messages that they have limited control over their circumstances and receive fewer opportunities to master their environment; however, boys are taught to expect power and engage in mastery-building experiences (Zalta & Chambless, 2012). Additional research suggests that boys are rewarded for assertive behaviors, whereas girls are often reprimanded (Kerig, Cowan, & Cowan, 1993); parents are more controlling of daughters than sons (Pomerantz & Ruble, 1998); and parents expect boys to perform better on novel tasks, even when no gender difference in actual ability exists (Mondschein, Adolph, & Tamis-LeMonda, 2000). These factors might lead girls to report lower perceived mastery over their environment than boys (Zalta & Chambless, 2012), potentially engendering beliefs that their thoughts, feelings, and behavior are fixed and difficult to alter.

Girls' and boys' reliance on different coping strategies may also reinforce stronger entity theories of thoughts, feelings, and behavior in girls. Boys tend to use problem-solving and distraction-based strategies to reduce negative feelings (e.g., Copeland & Hess, 1995; Kurdek, 1987), whereas girls tend to rely on rumination, which involves focusing attention on one's negative thoughts and feelings (Broderick, 1998; Nolen-Hoeksema, Morrow, & Fredrickson, 1993). Through greater engagement in active coping strategies, boys may have more opportunities to practice changing—and to learn that they can change—their thoughts, feelings, and behavior. Girls' more ruminative coping may limit opportunities to learn that internal states and actions are malleable.

Another factor that might reinforce entity theories of thoughts, feelings, and behavior in adolescent girls is their greater exposure to interpersonal stress, such as conflict with family and friends. Interpersonal stress increases significantly during adolescence (Ge, Lorenz, Conger, Elder, & Simons, 1994), predicting more negative cognitive styles (Abramson, Metalsky, & Alloy, 1989), and increased rumination-based coping (Mezulis, Hyde, & Abramson, 2006; Nolen-Hoeksema, Girgus, & Seligman, 1992). As these stressors grow more frequent, adolescents may have more opportunities to learn and practice making maladaptive inferences for their experiences (Hamilton, Stange, Abramson, & Alloy, 2014). Notably, interpersonal stressors often involve ego-threat—that is, personal rejection or failure—and ego-threatening stress tends to magnify effects of entity beliefs on behavior (Burnette, O'Boyle, VanEpps, Pollack, & Finkel, 2013). Thus, increases in ego-threatening interpersonal stressors during adolescence may make entity theories of thoughts, feelings, and behaviors more likely to emerge. But why might these stressors lead to entity theories in girls more than boys? Research suggests that girls both experience more interpersonal stress than boys (Hamilton et al., 2014), and are more likely to have depressive reactions to these stressors, including rumination and hopelessness (Hankin, Mermelstein, & Roesch, 2007). Over time, this cycle might place girls at risk for developing entity theories of thoughts, feelings, and behaviors in response to setbacks.

IMPLICIT THEORIES OF THOUGHTS, FEELINGS, AND BEHAVIOR: LINKS TO MENTAL HEALTH

Mental health problems are associated with stronger entity theories in youths (Schleider, Abel, & Weisz, 2015). Thus, if gender differences do exist in implicit theories of thoughts, feelings, and behavior, it may be useful to test their relation to girls' and boys' differing mental health trajectories. Beginning around age 13, girls are twice as likely as boys to develop depression (Nolen-Hoeksema, 1990) and are at greater risk for experiencing anxiety disorders (Eaton, Dryman, & Weissman, 1991). It could be help-

ful to know whether adolescent girls' increased vulnerability to these problems relates to gender differences in entity theories of thoughts, feelings, or behavior. Such a relation might manifest in three ways. First, entity theories might be equally associated with mental health problems in girls and boys; in this case, entity theories might be more common in girls due simply to their higher anxiety and depression rates. Second, entity theories might be more strongly linked with mental health problems in boys, although this possibility seems unlikely given evidence reviewed. Third, entity theories might be more strongly linked with mental health problems in girls than in boys. This could result from the compounding of aforementioned factors: differences in adult feedback, exposure and reactivity to interpersonal stress, perceived mastery, and coping strategies. These vulnerabilities might render girls with internalizing problems disproportionately likely to view thoughts, feelings, and behavior as unchangeable.

The Importance of Early Adolescence. In testing gender differences in implicit theories of thoughts, feelings and behavior, early adolescence is an important developmental window to explore. This period is key to identity formation and the solidification of self-relevant beliefs (Paikoff & Brooks-Gunn, 1991). Further, some studies suggest that attributional styles become more negative across early adolescence (Gillham, Reivich, & Shatté, 2001). Thus, other self-relevant beliefs, including implicit theories, may be more liable to change during this period. Additionally, there is reason to predict that these changes may be uniquely pronounced in girls. Early adolescence involves multiple transitions for both girls and boys; however, these transitions may pose greater challenges to girls (Gillham & Chaplin, 2011). For instance, girls are more likely than boys to transition to middle school concurrently with the onset of puberty, spurring increased biological stress reactivity and social challenges (Simmons & Blythe, 1987). These coalescing difficulties may both generate interpersonal stress and amplify girls' sensitivity to these stressors, potentially solidifying maladaptive cognitions. Thus, the changes that characterize early adolescence may indirectly increase girls' risk for

developing entity theories of personal traits, including thoughts, feelings, and behavior.

PRESENT STUDY

Gender differences in entity theories and mental health vulnerabilities raise at least three questions. First, how pervasive are adolescent gender differences in implicit theories across trait domains? Second, can gender-related trends be detected across a key period of developmental transition? Third, might gender differences in implicit theories relate to gender differences in psychopathology? Given the adverse effects of entity theories and psychopathology on youth development and girls' increased risk for anxiety and depression in early adolescence, answers to these questions might help clarify why gender differences emerge in adolescence and how to promote positive development in girls. To test these questions, we used a longitudinal design focused on the theoretically important early adolescent period. First, we assessed whether girls endorsed stronger entity theories of thoughts, feelings, and behavior than boys. Second, we tested for gender differences in these entity theories during early adolescence. Third, we investigated whether entity theories of thoughts, feelings, and behavior were differentially associated with girls' and boys' mental health problems over time.

METHODS

Recruitment Procedures. Youths were recruited from one public middle school and one private K–8 school in a large, northeastern city in the United States. All research procedures were approved by the IRB of Harvard University. Youths were eligible to participate if they were in grades 6–8 at the time of recruitment and were to be excluded if they or their caregivers lacked English fluency needed for informed consent/assent, but no families met these exclusion criteria.

In all, 302 youths were invited to participate in the study via flyers sent home to all families at a public middle school (N =

286) and a private middle school (N = 16). Families could volunteer to participate by mailing a signed consent letter to the research team. The resulting sample included 59 youths (86.44% from the public school). Youths were ages 11–14 (M = 12.30), and 52.54% were girls. No demographic differences emerged between youths in public versus private school. See Schleider & Weisz (in press), for a detailed description of the study sample.

Measures. Each measure described below was completed by all youths at all study assessment points (attrition = 0%). The three assessment points in the study were administered at two-month intervals (62.50 days apart, on average) across an academic year.

The Strengths and Difficulties Questionnaire (SDQ; Goodman, Meltzer, & Bailey, 1998). This 25-item, youth-report behavioral screening tool targets youths' behavior, emotions, and peer relations. It comprises five subscales, each containing five items rated on a 3-point scale: emotional symptoms, conduct problems, hyperactivity, peer problems, and prosocial behavior. A Total Problems Score, ranging from 0–40, representing increasing difficulties, is derived by summing scores on the first four of these subscales; the prosocial behavior subscale was not used in this study. In addition to the Total Problems Scale, the emotional and conduct problems subscales were of particular interest in this study. Examining these subscales individually fits with conceptualizations of internalizing and externalizing problems as the core broadband forms of psychopathology in youths.

Students completed the youth-report version of the SDQ (Goodman et al., 1998), which has shown excellent acceptability, internal consistency, and test-retest reliability in community youth samples (Bourdon, Goodman, Rae, Simpson, & Koretz, 2005; Smedje, Broman, Hetta, & von Knorring, 1999), The SDQ correlates strongly with other instruments of psychological adjustment (e.g., the Youth Self-Report) and discriminates well between children with and without psychopathological symptoms (Goodman, 2001). In this study, alphas for the SDQ total score were .77 at T1, .72 at T2, and .71 at T3.

Implicit Thoughts, Emotion, and Behavior Questionnaire (ITEB-Q; Schleider & Weisz, in press). This study included a scale adapted

from Dweck's work on implicit theories for intelligence (Dweck & Henderson, 1988) to measure implicit theories regarding thoughts, emotions, and behaviors. Implicit theories of personal traits, including intelligence (Blackwell, Trzesniewski, & Dweck, 2007), peer relationships (Rudolph, 2010), emotions (Tamir et al., 2007), and aggression (Yeager, Trzesniewski, Tirri, Nokelainen, & Dweck, 2011), are routinely measured in early adolescent populations via brief self-report measures. In all of these measures, respondents indicate the degree to which they agree with a series of statements describing extreme entity or extreme incremental theories of specific personal traits (e.g., You can always change how intelligent you are; Dweck, 1999). Implicit theories questionnaires administered to early adolescents have shown adequate internal consistency, test-retest reliability, and construct validity across trait domains (e.g., Blackwell et al., 2007; Yeager et al., 2011). Thus, the ITEB-Q was modeled directly after implicit theories measures used previously with youth populations.

The ITEB-Q contains twelve items; four items each address implicit theories regarding thoughts, feelings, and behavior. Items on each subscale present extreme incremental theory beliefs (e.g., When you try, you can control how you feel). Youths are asked to indicate how much they agree with each statement using a four-point scale ranging from 1 (Very False) to 4 (Very True). Exploratory factor analyses detailed by Schleider and Weisz (in press) suggest that the total scale yields three subscales: one each representing theories of thoughts, feelings, and behavior.

Consistent with prior research, implicit theories were measured on a continuous scale: the higher participants' summed scores on each ITEB-Q subscale, the less they believe thoughts, emotions, and behavior are fixed entities, respectively. Cronbach's alphas ranged from .74–.82 for all subscales across times points, consistent with alphas found for previously used youth implicit theories measures (Blackwell et al., 2007; Yeager et al., 2011). Correlations within subscales at T1, T2, and T3 ranged from .46–.60, providing a conservative estimate of test-retest reliability for each subscale.

TABLE 1. Descriptive Statistics for Study Variables at all Time Points, Separated by Youth Gender

	Girls			Boys		
	Mean(*SD*) T1	Mean(*SD*) T2	Mean(*SD*) T3	Mean(*SD*) T1	Mean(*SD*) T2	Mean(*SD*) T3
SDQ-Total youth problems	14.94(4.54)	15.48(5.31)	16.58(6.58)	14.25(3.79)	14.35(4.96)	14.67(5.07)
SDQ-Emotional problems	3.03(2.12)	3.12(2.16)	3.64(2.62)	1.96(1.83)	2.22(1.59)	1.92(2.08)
SDQ-Conduct problems	2.33(1.27)	2.27(1.39)	2.58(2.03)	2.29(1.08)	2.43(1.59)	2.33(1.71)
ITEB-Q: Entity theories-Feelings	7.73(2.74)	7.18(1.89)	7.12(2.82)	7.87(1.42)	7.91(1.54)	8.33(1.20)
ITEB-Q: Entity theories-Thoughts	7.55(2.53)	6.97(1.78)	6.94(2.62)	8.17(1.37)	7.91(1.34)	8.54(1.50)
ITEB-Q: Entity theories-Behavior	7.33(2.31)	7.12(2.07)	6.73(2.66)	8.13(1.75)	7.78(1.34)	8.54(1.50)

RESULTS

Descriptives and Correlations. Means and standard deviations for all variables, across time points, are presented for girls and boys in Table 1. Zero-order correlations among variables across time points are shown in Tables 2a and 2b for girls and boys, respectively. At each time point, greater mental health problems correlated with stronger entity theories of thoughts, feelings, and behaviors in girls, but not in boys. No gender differences emerged on demographic variables.

In all subsequent analyses, several covariates were included. Due to intercorrelations among ethnicity, socioeconomic status (SES), and youth psychopathology (Siegel, Aneshensel, Taub, Cantwell, & Driscoll, 1998), we covaried youth ethnicity and maternal education level, a common SES proxy in youth development research (Reyno & McGrath, 2006). Maternal education level was divided into 5 categories (from less than high school to graduated college) and included as a continuous variable. We also controlled for youth age, given differing ages of onset for various psychiatric problems (Kessler et al., 2005), and school

TABLE 2a. Zero-Order Correlations Among Study Variables Across T1, T2, and T3: Boys Only

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. SDQ T1	—	–.17	–.26	–.19	.66**	–.05	–.12	–.16	.69**	–.04	–.19	–.23
2. ITEB-Q Feelings T1		—	.79**	.59**	-.31	.09	.08	.07	–.48*	.28	.31	.33
3. ITEB-Q Thoughts T1			—	.84**	–.09	.41	.39	.38	–.22	.17	.27	.37
4. ITEB-Q Behavior T1				—	.01	.49*	.49*	.52*	–.10	.02	–.02	.20
5. SDQ T2					—	-.03	–.02	–.02	.86**	–.24	–.22	–.19
6. ITEB-Q Feelings T2						—	.89**	.76**	.02	.35	.23	.26
7. ITEB-Q Thoughts T2							—	.92**	.06	.15	.12	.17
8. ITEB-Q Behavior T2								—	.04	.20	.17	.32
9. SDQ T3									—	–.25	–.30	–.32
10. ITEB-Q Feelings T3										—	.76**	.66**
11. ITEB-Q Thoughts T3											—	.88**
12. ITEB-Q Behaviors T3												—

Note. SDQ: Strengths and Difficulties Questionnaire; ITEB-Q: Implicit Thoughts, Emotions, and Behaviors Questionnaire.
*$p < .05$, **$p < .01$

TABLE 2b. Zero-Order Correlations Among Study Variables Across T1, T2, and T3: Girls Only

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. SDQ T1	—	–.61**	–.66**	–.62**	.78**	–.30*	–.31*	–.33*	.78**	–.60**	–.58**	–.54**
2. ITEB-Q Feelings T1		—	.95**	.89**	–.49**	.58**	.58**	.52**	-.49**	.66**	.62**	.61**
3. ITEB-Q Thoughts T1			—	.94**	–.48**	.43*	.47**	.42*	-.47**	.63**	.59**	.61**
4. ITEB-Q Behavior T1				—	–.47**	.38*	.44**	.43*	-.46**	.65**	.62**	.66**
5. SDQ T2					—	–.44*	–.41*	–.36*	.87**	–.45**	–.46**	–.42*
6. ITEB-Q Feelings T2						—	.92**	.71**	–.38*	.49**	.58**	.52**
7. ITEB-Q Thoughts T2							—	.87**	–.37*	.50**	.58**	.55**
8. ITEB-Q Behavior T2								—	–.32*	.39*	.42*	.42*
9. SDQ T3									—	–.54**	–.53**	–.48**
10. ITEB-Q Feelings T3										—	.96**	.91**
11. ITEB-Q Thoughts T3											—	.97**
12. ITEB-Q Behaviors T3												—

Note. SDQ: Strengths and Difficulties Questionnaire; ITEB-Q: Implicit Thoughts, Emotions, and Behaviors Questionnaire Subscales.
*$p < .05$, **$p < .01$

type (public, private). Reported results include covariates in analyses.

Do Girls Report Stronger Entity Theories of Thoughts, Feelings, and Behavior Than Boys? To address this question, we conducted a series of independent-sample *t*-tests across the three study time points. At T1, girls and boys did not differ in their entity theories of thoughts, feelings, or behavior. At T2, girls reported significantly stronger entity theories of thoughts, $t(58) = 2.26$, $p = .03$, while implicit theories of feelings and behavior did not significantly differ by gender. However, at T3, girls reported stronger entity theories than boys in all three domains: thoughts, $t(58) = 2.91$, $p = .005$, feelings, $t(58) = 2.21$, $p = .03$, and behavior, $t(58) = 3.27$, $p = .002$.

Does Youth Gender Predict Changes in Entity Theories of Thoughts, Feelings, or Behavior? Because gender differences emerged in entity theories of thoughts at T2 and across all domains of entity theories at T3, we conducted four hierarchical linear regressions to test whether youth gender predicted changes in these variables across the school year. In Step 1 of these models, the T1 ITEB-Q thoughts, feelings, or behavior subscale was entered, along with aforementioned covariates (ethnicity, age, maternal education level, school type). In Step 2, a dichotomous youth gender variable was entered. T2 ITEB-Q (Thoughts) subscale score was entered as the dependent variable for the first model; T3 ITEB-Q (Thoughts), for the second; T3 ITEB-Q (Feelings), for the third; and T3 ITEB-Q (Behavior), for the fourth. Results from the first model showed that female gender predicted increases in entity theories of thoughts across three months, $\Delta R^2 = .07$, $F = 5.22$, $p = .03$. Similarly, results from the latter three models indicated that female gender predicted increases in entity theories of thoughts, $\Delta R2 = .10$, $F = 9.31$, $p = .004$, feelings, $\Delta R^2 = .07$, $F = 6.10$, $p = .02$, and behavior, $\Delta R2 = .11$, $F = 10.09$, $p = .003$, across six months. Thus, compared to boys, girls developed stronger entity theories in all three domains of interest over the course of the school year.

Are Entity Theories Differentially Associated with Girls' and Boys' Mental Health Problems? To address this question, we compared the strength of correlations between ITEB-Q subscale scores,

SDQ Total Problems scores, and SDQ emotional and conduct problems scores in girls and boys at each study time point. To conduct comparisons, zero-order correlation coefficients were transformed to standardized *Z* values via Fisher *r*-to-*Z* transformations; we then used *Z* values to test whether correlation coefficients differed significantly from each other. At T1, greater total youth problems correlated with entity theories of feelings, $z = 2.03$, $p = .03$, thoughts, $z = 1.99$, $p = .04$, and behaviors, $z = 2.01$, $p = .04$, more strongly in girls than in boys. These patterns persisted at T2, although differences were marginal (*z*s from 1.69–1.95; *p*s from .05–.09). Regarding specific problem types, greater T1 emotional problems (but not conduct problems) correlated with entity theories of thoughts, $z = 2.67$, $p = .007$, feelings, $z = 1.97$, $p = .04$, and behaviors, $z = 2.76$, $p = .005$, more strongly in girls than in boys. At T2, greater conduct problems (but not emotional problems) correlated more strongly with entity theories of feelings, $z = 2.33$, $p = .01$, and thoughts, $z = 1.98$, $p = .04$, in girls than in boys. No gender differences in entity theories-youth problems links emerged at T3.

Does Youth Gender Moderate Associations between T1 Mental Health Problems and Subsequent Entity Theories? At T1 and T2, entity theories of thoughts, feelings, and behavior were more strongly associated with mental health problems in girls than in boys. Accordingly, we tested youth gender as a moderator of the link between these entity theories and mental health problems over time. Specifically, we tested youth gender as a moderator of a previously observed predictive relation between T1 mental health problems and subsequent increases in entity theories (see Schleider & Weisz, in press). Although another study has found that entity theories of personal traits predicted increases in youth emotional problems (Romero, Master, Paunesku, Dweck, & Gross, 2014), findings from the present dataset supported the opposite pathway: mental health problems predicted increases in entity theories, but not vice-versa. Therefore, moderation analyses in this study focus on this directional pathway only.

Moderation tests followed procedures recommended by Hayes and Matthes (2009). Their SPSS macro yields the significance of

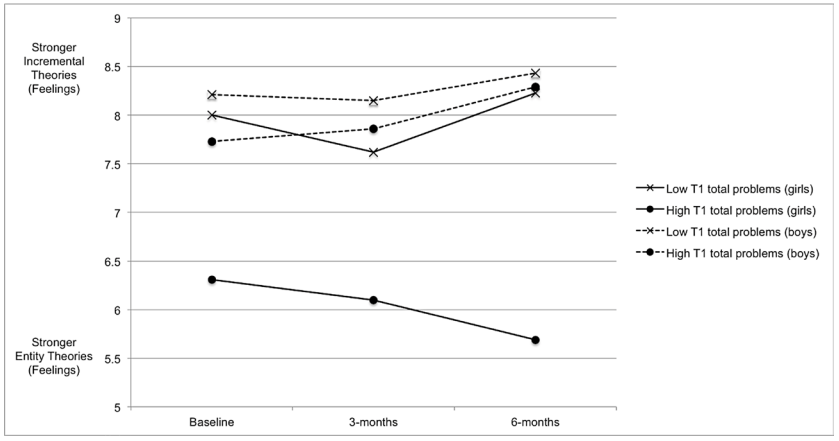

FIGURE 1. Mean youth entity theories of feelings by gender across time points as a function of total youth mental health problems at T1. High versus low youth total problems defined by median split on SDQ Total Problems Score.

the change in R^2 produced by interactions between independent (T1 mental health problems) and moderator variables (youth gender). This value indicates whether the interaction significantly predicted relations between T1 mental health problems and T3 implicit theories (Howell, 2002). The macro also allows examination of links between mental health problems and entity theories at both values of the dichotomous candidate moderator (boys, girls), thus replacing the Baron and Kenny (1986) approach.

The Youth Gender × T1 Total Youth Problems interaction produced a significant change in R^2 for T3 entity theories of feelings, but not of thoughts or behavior, controlling for T1 entity theories of feelings, youth age and ethnicity, maternal education, and school type, ΔR^2=.04, F = 4.31, p = .04 (see Figure 1). Girls with greater overall T1 mental health problems developed stronger entity theories of feelings across the six month study period, $t(48)$ = -2.02, p = .04. However, boys' implicit theories did not change significantly across the study period as a function of T1 mental health problems.

Analyses with specific subscales suggested that this effect was consistent across internalizing and externalizing youth prob-

lems. The Youth Gender × T1 Conduct Problems interaction produced a significant change in R^2 for T3 entity theories of feelings, ΔR^2=.10, F = 10.70, p = .002, as did the Youth Gender × T1 Emotional problems interaction, ΔR^2=.04, F = 4.13, p = .04. That is, girls with greater conduct problems and those with greater emotional problems at T1 developed stronger entity theories of feelings six months later. In contrast, conduct and emotional problems did not predict changes in boys' beliefs about the malleability of emotions.

DISCUSSION

This study used a longitudinal design to explore possible gender differences in implicit theories. Compared to boys, early adolescent girls endorsed stronger entity theories of thoughts, feelings, and behavior at two of three time points during the study period. Further, youth gender significantly predicted increases in entity theories of thoughts, feelings, and behavior across six months. Additional findings suggested the relevance of these gender differences to girls' increased vulnerability to psychopathology during early adolescence. Specifically, entity theories of thoughts, feelings, and behavior were more strongly associated with mental health problems in girls than in boys. Follow-up moderation tests suggested that girls with more severe T1 mental health problems, including emotional and behavioral problems, experienced increases in entity theories of feelings across the study period.

Consistent with prior research on girls' and boys' implicit theories, this study found that girls endorsed stronger entity theories than boys at multiple study time points. However, most studies on this topic have examined gender differences in implicit theories of intelligence. Present findings suggest that these differences may extend to other implicit theory domains. Future studies should assess the pervasiveness of this gender difference, given that girls' stronger entity theories may have implications for their academic and psychosocial development.

Gender differences in entity theories of thoughts, feelings, and behavior were not stable across the study; rather, girls developed stronger entity theories over time, whereas boys' entity theories did not change. Gender differences in the emergence of these entity theories might result, in part, from increases in interpersonal stress during early adolescence, which the stress exposure model suggests are more dramatic for girls than for boys (Hankin, Mermelstein, & Roesch, 2007). For instance, adolescent male friendships are based more on shared activities, whereas adolescent female friendships are rooted in emotional intimacy and self-disclosure (Maccoby, 1990). This may increase girls' involvement in interpersonal conflict and strain. Therefore, normative shifts in boys' and girls' relationships during adolescence may generate more interpersonal stress for girls, in turn creating more opportunities to develop entity theories of their thoughts, emotions, and behavior. In line with this possibility, Hamilton and colleagues (2014) found that early adolescent girls experienced more interpersonal stressors than boys, which explained girls' more negative cognitive styles and increased rumination three years later. Although adolescents' entity theories direct their behavior especially strongly following interpersonal failure (Yeager et al., 2011), interpersonal stress exposure has not been tested as a predictor of entity theory development in girls and boys. Further, such stress was not measured in the present study. Prior findings paired with present results support the value of exploring this relation.

Differences in interpersonal stress exposure might also help explain the second trend observed in this study: mental health problems predicted increases in entity theories of thoughts, feelings, and behavior for girls but not boys. Indeed, adolescents with internalizing and externalizing problems report more frequent, intense interpersonal stress than adolescents with fewer of these problems (Little & Garber, 2005; Rudolph, Hammen, Burge, Hertzberg, & Daley, 2000). Psychologically healthy adolescent girls are already more likely than boys to face interpersonal stress; in turn, girls with mental health problems might experience these stressors at even higher rates. Thus, gender and

related factors, such as interpersonal stress exposure, may interact with existing mental health problems to predict increases in entity theories in girls during early adolescence. For instance, increased interpersonal stress—by leading to negative cognitive styles and reliance on rumination—could lead girls with mental health problems to view their thoughts, emotions, and behaviors as beyond their personal control. For girls experiencing significant psychopathology, the risk of a descent into ever-stronger entity theories may be especially pronounced. Future studies should explore this possibility directly.

Notably, present findings seem somewhat at odds with past conceptualizations of entity theories' relation to youth psychiatric difficulties. That is, studies have typically examined entity theories as causes rather than sequelae of mental health problems. Given the directionality observed in this study, and the gender-specific relations between mental health problems and the development of entity theories, the findings implicate mental health problems as a risk factor for the formation of entity theories—especially in girls. As entity theories have been shown to adversely affect youths' achievement and motivation (Blackwell et al., 2007) and well-being (Romero et al., 2014), this study underscores the need for increased attention to the prevention and treatment of mental health problems in early adolescence.

Based on present findings, at least two strategies might support this goal. The first involves identifying and disseminating effective interventions for youth mental health. In this study, girls with higher T1 mental health problems were more likely to develop entity theories; thus, decreasing mental health difficulties might reduce the emergence of entity theories, which have been linked to a range of adverse academic and social outcomes (Yeager & Dweck, 2012). Because mental health problems tend to increase in boys and girls during adolescence, such interventions would promote positive development in all youths. However, for girls, they may have the added benefit of preventing beliefs that personal traits are fixed and unchangeable. A second strategy might involve promoting adaptive strategies for coping with interpersonal stress. Such efforts may involve, for example,

evidence-based programs to prevent victimization and bullying in schools (see Tfofi & Farrington, 2011, for a meta-analysis of school-based interventions), or efforts to teach primary and secondary coping skills to youths (Weisz, Thurber, Sweeney, Proffitt, & LeGagnoux, 1997). However, prospective relations among interpersonal stress, mental health, and entity theories of thoughts, feelings, and behavior must be more thoroughly explored to assess the viability of this option.

Although this study supports the important role of youth gender in relations between implicit theories and early adolescents' mental health, some caveats warrant attention. First, the sample was not large enough to permit the use of such potentially informative statistical procedures as structural equation modeling, and additional time points would have been required to justify use of other approaches, such as growth curve modeling (Preacher, Wichman, MacCallum, & Briggs, 2008). Use of such procedures, together with replication of our basic findings, could help clarify the magnitude and consistency of observed effects. Additionally, this study used a community sample, so generalizability of effects to clinic-referred youth samples is unclear. This study also used a relatively broad assessment of youth problems, limiting tests of links between implicit theories and more specific youth problem types.

Despite its limitations, this study offers a novel perspective on relations among youth gender, mental health problems, and the development of three kinds of entity theories across early adolescence. Specifically, results suggested that girls endorsed stronger entity theories of thoughts, feelings, and behavior than boys, and female gender predicted increases in entity theories across six months. Second, entity theories of thoughts, feelings, and behavior were more strongly associated with mental health problems in girls than in boys, and girls (but not boys) with greater T1 mental health problems experienced increases in entity theories across the study period. Future research may explore the possible interactive effects of interpersonal stress exposure and mental health problems in the emergence of girls' entity theories. Such investigations may identify how entity theories develop, why girls are more likely to adopt them, and which strategies

show particular promise in reducing or reversing entity theories and related vulnerabilities in early adolescent girls.

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