

**EMOTIONAL CLARITY DEVELOPMENT AND PSYCHOSOCIAL
OUTCOMES DURING ADOLESCENCE**

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ABSTRACT

Emotional Clarity and Psychosocial Outcomes During Adolescence

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Past research on emotional clarity (EC), the ability to identify and label one's own emotions, has illustrated a connection between EC deficits and poor psychosocial outcomes during the adolescent years. For youth ages 12-17, low EC is associated with internalizing problems, dysfunction in peer and parental relationships, and risky behavior such as substance use. Likewise, high EC is linked with positive outcomes, such as psychosocial maturity and adaptive emotion regulation skills. Although past research has connected EC to psychosocial outcomes during adolescence in cross-sectional and longitudinal designs, no studies have traced the trajectory of EC over time to determine the developmental course of the construct during adolescence. Thus, this study investigated how EC developed over five years during adolescence and what factors were associated with the developmental trajectory of emotional clarity. Results indicated that EC tended to decrease over adolescence, and females, on average, had a steeper decline of EC over time than males. The trajectory of EC change predicted psychosocial outcomes, including depression, family functioning, well-being, and the trajectory of peer victimization over time. Results are discussed with the ultimate goal of informing novel prevention and intervention programs to promote adaptive emotional functioning during an influential time in human development.

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I dedicate this work to my father, who had a passionate interest in the advancement of science and inspired me to always be curious.

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CHAPTER 1

MANUSCRIPT IN JOURNAL ARTICLE FORM

Introduction

Adolescence is a formative time in development, marked by much physical and mental maturation. Specifically, adolescence is an important time for the development of emotion skills; maladaptive emotional development during adolescence can have serious negative consequences, leading to psychopathology (e.g. Hofmann et al., 2012), risky behavior, and poor social relationships (for review, see Zeman et al., 2006). Inasmuch as emotion regulation is a multi-faceted construct, and broadly, emotional processing can have a profound impact on psychosocial outcomes, it may be important to examine how deficits in specific emotion abilities are associated with negative outcomes, and how adaptive emotion regulation is linked with mental health and resilience. Understanding how particular facets of emotion regulation are related to adolescent adjustment will help to clarify which emotional factors are particularly salient, valuable targets for psychological intervention.

Emotional Clarity

The present study focused on emotional clarity (EC), the capacity to identify, understand, and discriminate among one's own emotional experiences (Gohm & Clore, 2000). EC is considered to be a facet of emotional intelligence that plays an important role in emotional processing (Salovey & Mayer, 1990). Specifically, EC is essential because an individual must be able to identify the particular emotion he or she is experiencing before engaging in any further emotion modulation strategies (Denham, 2007). Lacking EC is also associated with alexithymia, a broader construct of emotional

dysfunction that is defined by poor imagination, difficulties experiencing empathy, and problems distinguishing bodily sensations and emotional arousal (Bankier et al., 2001; Boden et al., 2013; Venta et al., 2012). Although EC is often associated with related factors of emotional processing, studies have differentiated EC from emotional repair, emotional attention, ambivalence over emotional expressiveness, emotional reactivity, emotional intensity, and emotional inhibition (Gohm & Clore, 2000; Salovey & Mayer, 1990). Emotional clarity also has emerged as a separable factor from emotional acceptance, differentiation, and control (Boden et al., 2013; Gratz & Roemer, 2004), and EC may be connected to other factors related to the self, such as beliefs about one's identity (Boden et al., 2013). Thus, having meta-knowledge about one's own mood, in conjunction with reflecting on other emotion regulation strategies and the self, might shape an individual's emotional clarity (Boden et al., 2013; Gratz & Roemer, 2004).

In children and adults, deficits in EC have been linked to poor outcomes, such as depressive symptoms and maladaptive behaviors (e.g., Dvorak et al., 2014; Flynn & Rudolph, 2010, 2014; Salovey et al., 1995). Interestingly, deficits in emotional clarity in adults can be seen as transdiagnostic risk factors for a variety of psychopathologies, including depression, borderline personality disorder, binge eating, social anxiety disorder, and alcohol use (Vine & Aldao, 2014). Thus, the present study sought to understand what impact EC has on adolescent mental health, based on its nature as a specific emotional factor associated with psychosocial outcomes across development.

Emotional Clarity Development During Adolescence

Because adolescence is a time of rapid and intense change, it is important to examine how emotion skills develop during this time. Although several studies have

examined emotional clarity's associations cross-sectionally or longitudinally during adolescence, almost all of the investigations only have assessed EC at one time point. Thus, it is unclear how EC might change over time during adolescence, and further, whether there are individual differences in its development among adolescents. Only one investigation has examined EC at multiple time points, revealing that EC increased across adolescence (Rubenstein et al., 2015). Studies have found that emotional awareness is positively associated with age in adolescents (Eastabrook et al., 2014) and adults (Manlus et al., 2016), which also suggests that individuals tend to get better at identifying and labeling emotions with greater maturity. Thus, it is likely that EC increases over time for adolescents, although the factors driving this increase are not well understood.

Sex differences

Various studies on EC during adolescence document a consistent sex difference, in which boys tend to score higher on measures of EC than girls (Extremera et al. 2007, Fossati et al., 2014; Oliva et al., 2014; Powell et al., 2011; Rubenstein et al., 2015). Like sex differences in internalizing problems (Hankin et al., 1998), sex differences in EC might emerge over time. In a longitudinal study, Rubenstein and colleagues (2015) found that adolescent girls and boys did not differ in EC at Times 1 and 2 in the study (M ages = 12.4 and 13.8 years, respectively), but at Time 3 (M age = 14.7 years), adolescent boys demonstrated greater EC than their female peers. This sex difference may be linked to adolescent girls' experience of internalizing problems. In a cross-sectional study, Oliva and colleagues (2014) found that emotional clarity was inversely associated with internalizing symptoms for female adolescents, but not for their male peers, and higher levels of empathy were associated with more internalizing problems for girls with low

EC. Classic gender roles suggest that females tend to experience more empathy than males and typically hold a more expressive role in relationships than males, which can lead females to be prone to interpersonal sensitivity (Bem, 1974; Oliva et al., 2014). Although empathy can be considered beneficial for relationships, adolescent girls who have deficits in emotional clarity may not be able to adeptly use empathic responses without putting themselves at risk for emotional distress. Adolescent girls with low EC might be more likely to internalize others' emotional difficulties instead of utilizing empathy to promote social support. Further, adolescent girls also may be at greater risk for negative outcomes because of EC deficits. EC deficits might lead girls with early pubertal development to experience more symptoms of depression, and low EC moderates the link between peer victimization and internalizing problems for adolescent girls (Hamilton et al., 2014; 2016). Additionally, girls are particularly vulnerable to experiencing decreases in EC when they ruminate as a maladaptive response to depressive symptoms (Rubenstein et al., 2015). Thus, sex differences in EC reveal that, not only do adolescent girls score lower than boys consistently, but this deficit also might place adolescent girls at an increased risk for negative outcomes.

Rumination as a vulnerability factor for the development of emotional clarity

As emotional clarity involves the ability to correctly identify and label emotions, EC development might be driven by cognitive, as well as emotional, factors involving the ability to adequately process and think about emotion information. Rumination, passively and repetitively focusing on negative affect, is a response style for sad mood associated with negative outcomes, such as depression (Nolen-Hoeksema, 1991). In cross-sectional investigations of adolescents, EC is negatively associated with maladaptive cognitive

strategies, including rumination (Hatzenbuehler et al., 2008). Further, rumination predicts decreases in emotional clarity over time for female adolescents (Rubenstein et al., 2015). Rumination, as a maladaptive response style for sad mood, may deplete cognitive resources for emotion processing, and therefore, lead to confusion over emotional states. Additional investigations have associated low EC during adolescence with other cognitive vulnerabilities, such as negative inferential style (i.e., the tendency to ascribe internal, stable, and global causes, negative consequences, and negative self-worth implications to negative events; Hamilton et al., 2014; Stange et al., 2012), which is another well-established vulnerability to depression (Alloy et al., 2006). Lacking the ability to understand emotion cognitively may place adolescents at risk for poor EC, perhaps because they have less insight into their difficulties (Stange et al., 2012). Ruminative thinking might impact EC development because a repetitive, passive focus on the causes and consequences of one's sad mood might lessen the ability to engage in adaptive coping strategies, such as effective problem-solving (Lyubomirsky & Nolen-Hoeksema, 1995). Rumination is also associated with emotional suppression (Liverant et al., 2011); adolescents who ruminate tend to passively focus attention on negative affect, instead of the full spectrum of emotions (positive and negative) that may be accessible to others (Rubenstein et al., 2015). Thus, rumination may be a risk factor for poor emotional clarity development, as adolescents prone to rumination might not have the opportunity to develop an adaptive understanding of their emotional experiences.

Psychosocial Outcomes of Emotional Clarity Development During Adolescence

The study of emotional clarity and its relationship with developmental outcomes during adolescence is a growing field. Research on EC's link with psychosocial

development in the adolescent years has been conducted in a variety of countries, including the United States, Canada, Italy and Spain, and in diverse populations, such as community adolescents, psychiatric inpatients, juvenile offenders, adolescents with conduct problems, and gay/lesbian/bisexual youth. A majority of studies that investigate EC during adolescence examines how poor emotional clarity is associated with negative outcomes. Additionally, there is a smaller set of studies examining how adaptive levels of EC during adolescence might lead to positive mental health or resilience.

Emotional clarity deficits and poor psychosocial development

A number of studies have linked EC deficits in adolescents with negative outcomes in various domains, involving internalizing pathology, risky behaviors, and interpersonal relationship difficulties.

Internalizing problems. The most commonly researched outcome of emotional clarity deficits during adolescence is internalizing pathology, specifically anxiety and depression. Generally, EC is inversely related to internalizing outcomes during adolescence, including depression and anxiety, at the same time point and over time (e.g., Hatzenbuehler et al., 2008; McLaughlin et al., 2011; Salguero et al., 2012). Prospectively, emotional awareness buffers against increases in negative affect over a one-year follow up period (Ciarrochi et al., 2011). EC and depressive symptoms may have a relationship that is cyclical in nature; depressive symptoms predict decreases in emotional clarity over two years during adolescence (Rubenstein et al., 2015). However, the relationship between poor EC and internalizing problems may be specific to female adolescents (Oliva et al., 2014), which may be due in part to different risk factors that females experience as compared to males. Hamilton and colleagues (2014) found that early

pubertal timing (i.e., showing physical signs of puberty earlier than same-sex peers) predicted depressive symptoms approximately one year later for girls with low EC, but not for boys. Emotional clarity also has been studied as a more specific risk factor for anxiety, in comparison to depression (McLaughlin et al., 2011). For example, EC remained an independent predictor of anxiety during adolescence, but not depression, when accounting for the effects of thought suppression and low self-esteem (Fernandez-Berrocal et al., 2006). As experience of life stressors increases during adolescence and is often associated with increases in internalizing symptoms (Ge et al., 1994), often stress, depression, and anxiety are studied together. Stange and colleagues (2012) found that EC deficits interacted with negative cognitive style to predict increases in depressive symptoms over time for adolescents who experienced greater stress. Also, gay, lesbian, and bisexual adolescents, adolescents that are prone to experiencing high levels of interpersonal stressors, have lower levels of emotional awareness than their heterosexual peers, and this deficit predicted increases in internalizing pathology over time (Hatzenbuehler et al., 2008). Taken together, the results of these studies reveal that EC is linked with internalizing problems and experiences of stress during adolescence, and this connection may be the strongest for certain groups of individuals, such as adolescent girls.

Risky behavior. Past research on emotional clarity development also underscores the relationship between poor EC and externalizing problems, such as maladaptive behaviors. EC is associated with self-reported aggressive behavior in community adolescents (e.g., threatening peers; McLaughlin et al., 2011) and with anger in adolescents involved in the criminal justice system (Miller et al., 2012). Further, for

juvenile offenders with emotional clarity deficits, anxiety and negative affect are significantly associated with acts of violence (e.g., fighting or threatening someone with a weapon; Miller et al., 2012). In adolescent psychiatric inpatients, low EC is associated with general impulsivity and the frequency, duration, and severity of non-suicidal self-injury (Perez et al., 2012). A behavioral high-risk study of children who had conduct problems discovered that during adolescence, higher levels of emotional awareness were associated with a decreased likelihood of using hard drugs, but not with number of sexual partners or other behavior problems (Hessler & Katz, 2010). Whereas the study of EC and drug and alcohol use in adolescence is limited, in college-aged samples, poor emotional clarity is associated with more alcohol use and more frequent negative consequences associated with alcohol, such as interpersonal problems and academic/occupational consequences (Dvorak et al., 2014). Additionally, adolescent and young adult cannabis abusers have more difficulty identifying feelings than non-substance users (Dorard et al., 2008). Future research on substance use during the adolescent years will help to clarify the relationship between poor EC and maladaptive alcohol and drug use. Overall, past research indicates that deficits in emotional clarity may have a significant impact on promoting risky, antisocial behaviors, such as substance use and violent tendencies, in a wide variety of adolescent populations.

Interpersonal relationships. A small number of studies have begun to elucidate a connection between EC deficits and dysfunction in interpersonal relationships with peers and parents. In general, low EC is associated with higher rates of social anxiety and social stress (i.e., feelings of tension and exclusion in relationships; Eastabrook et al., 2014; Salguero et al., 2012). Specific to adolescent girls, poor emotional clarity is a risk

factor for greater frequency of relational peer victimization (e.g., bullying) over a 9-month period (Hamilton et al., 2016). Negative outcomes for the parent-child relationship are also linked with poor emotional clarity. In adolescents with a primary diagnosis of depression or anxiety, lower levels of adolescent emotional awareness are associated with more use of emotional suppression as a maladaptive emotion regulation tool in parents (Remmes & Ehrenreich-May, 2014). The relationship between poor emotional awareness in adolescents and parental use of emotion-dismissing strategies to cope with their children's negative emotions also is marginally significant (Remmes & Ehrenreich-May, 2014). Freed and colleagues (2016) found that EC mediated the link between general family functioning and depressive symptoms cross-sectionally at various time points during adolescence. These studies, although limited in scope, begin to reveal a link between lacking EC and dysfunction in relationships with others.

Emotional clarity and adaptive psychosocial development

Inasmuch as lacking emotional clarity is often considered a risk factor for negative outcomes, adaptive levels of the construct may reveal important positive psychosocial outcomes associated with well-being. High EC can be considered a resilience factor, and many studies have taken this approach to reveal how EC is associated with positive traits. Longitudinally, EC is protective against the development of aspects of negative affect, including fear, hostility, and sadness (Ciarrochi et al., 2011). During adolescence, EC is associated with general mental health (e.g., low distress and high well-being), life satisfaction, optimism, and self-esteem (Extremera et al., 2007; Fernandez-Berrocal et al., 2006; Salguero et al., 2012). Adaptive personality traits, such as agreeableness, extraversion, openness, and conscientiousness, are all positively

associated with emotional awareness during adolescence; conversely, neuroticism, psychoticism, and hopelessness are negatively associated with EC (Ciarrochi et al., 2002; 2011). Emotional clarity is also related to positive identity formation, as evidenced by EC's association with the more mature aspects of Erik Erikson's stages of personality development, such as autonomy vs. shame, industry vs. inferiority, identity vs. role confusion, and intimacy vs. isolation, which are all linked to psychosocial health and maturity during adolescence (Powell et al., 2011).

Further, studies on EC during adolescence reveal a consistent relationship between emotional clarity and other aspects of adaptive emotion regulation, which may contribute to overall well-being. EC is linked with a greater ability to regulate feelings (i.e., emotional repair) and a higher tendency to observe, think about, and attend to emotions (Extremera et al. 2007; Fernandez-Berrocal et al., 2006; Salguero et al., 2012). High emotional clarity is also negatively associated with a variety of maladaptive emotion factors, including alexithymia, emotional impulsivity, nonacceptance of emotions, emotional distress, and lacking the ability to carry out goal-directed behavior in the context of negative emotional states (Fossati et al., 2014; Miller et al., 2012; Perez et al., 2012; Powell et al., 2011). These findings demonstrate the utility of emotional clarity as a positive construct associated with adaptive emotional and psychological functioning. Thus, EC may contribute to overall well-being during adolescence, due to its relationship with positive psychological health.

The Current Study

Emotional clarity is associated with a wide range of developmental outcomes during adolescence. However, little is known about how EC develops over time, what

factors contribute to its developmental trajectory, and how this change might impact adolescent functioning over time. Thus, the current study is the first to examine the developmental trajectory of EC and to investigate how this development is implicated in psychosocial outcomes during adolescence. Only one study (Rubenstein et al., 2015) has traced the construct of EC prospectively, and no empirical studies have examined the consequences of EC development during adolescence. Past research using the same sample of participants as the current study (Rubenstein et al., 2015) examined EC change in adolescents across approximately two years in early adolescence. Thus, the current investigation fills a gap in the literature by tracing the development of emotional clarity over five years, from early to middle adolescence. The present study examined potential predictors of EC development to determine whether various groups of adolescents are more vulnerable to poor EC over time, including girls and adolescents who are prone to rumination. The current investigation also explored race and socioeconomic status (SES) as potential predictors of EC development that have not been previously studied, to further contextualize an understanding of EC among a diverse group of adolescents. This study also assessed psychosocial outcomes that may be associated with EC development prospectively, with the goal of presenting an integrated model of vulnerability and resilience to explain the connection between emotional clarity development and psychosocial outcomes during adolescence.

Study Aims and Hypotheses

Primary Aim 1. The present study aimed to understand and measure the trajectory of EC development during adolescence.

Primary Hypothesis 1. Based on past research on EC development (Rubenstein et al., 2015), we hypothesized that, in general, adolescents' EC would improve as they aged. We expected to find that some adolescents had steeper rates of change in EC development than other individuals. Further, the rate of change in EC development may be greater during early adolescence (12-14) than during late adolescence (ages 15-17), indicating that EC development may solidify in middle to late adolescence.

Primary Aim 2. Inasmuch as the rate of change in EC development might differ across various groups of adolescents, the present study aimed to determine factors that impact EC development.

Primary Hypothesis 2. We hypothesized that sex would moderate the development of EC over time, such that male adolescents would improve in EC faster than females. This finding may help to explain the gender difference in EC that is well-established (e.g., Extremera et al. 2007, Fossati et al., 2014). We also predicted that high levels of rumination would contribute to a slower increase in EC development.

Primary Aim 3. This study also investigated psychosocial outcomes associated with the development of emotional clarity. Past research indicates that EC is associated with a variety of negative outcomes, including internalizing problems, stress, relationship difficulties, and risky behaviors. Thus, we examined whether EC trajectories predicted various negative psychosocial outcomes measured at the last time point in the study (difficulties in the family environment, substance use) and measured over time (depressive symptoms, anxiety symptoms, life stress, peer victimization). We specifically explored depressive symptoms, anxiety symptoms, stress, and peer victimization over time, as these constructs have been the main focus of many studies documenting the

connection between internalizing problems and EC. This study also examined EC development as a predictor of psychological well-being at follow-up.

Primary Hypothesis 3. We hypothesized that adolescents with low baseline EC that increased slowly during adolescence would be at greater risk for negative outcomes than individuals whose EC increased more quickly. We expected that slower increases in EC would predict greater increases in depressive symptoms, anxiety symptoms, life stress, and peer victimization over time and greater substance use and difficulties in the family environment at the final assessment. Similarly, we predicted that adolescents who were high in EC and experienced greater increases in EC over time would have greater levels of psychological well-being.

Exploratory Aim 1. This study further examined how individual differences in race and socioeconomic status (SES) contributed to the development of EC during adolescence. This information would increase our understanding of individual difference factors that might contribute to emotional clarity development during adolescence.

Exploratory Aim 2. After the primary aims were tested, we examined the directions of the predictive effects between change in EC and change in internalizing symptoms (depression, anxiety) and life stress (stressful life events, peer victimization). These additional analyses would allow us to determine whether change in EC predicted change in internalizing symptoms and life stress more strongly than these variables predicted change in EC over time.

Method

Participants and Procedure

Participants in the present study were recruited to participate in a larger prospective investigation of the development of depressive disorders during adolescence, Project ACE (Adolescent Cognition and Emotion). The Temple University Institutional Review Board approved this study. Recruitment for participants occurred with permission from the Philadelphia School District through mailings and follow-up phone calls to parents of students in public and private middle schools in the Philadelphia area (approximately 68% of individuals) and through advertisements placed in local newspapers (approximately 32% of individuals). Project ACE has various inclusion criteria, including being 12 or 13 years old at the start of the study, having a female caregiver who was willing to participate in the study, and self-identifying as White/Caucasian, Black/African-American, or Biracial. Adolescents were excluded if they were not competent in reading or speaking English, had mental retardation, a severe learning disability or cognitive impairment, a psychotic disorder, a severe developmental disorder, or any other medical or psychiatric problem that would not allow the adolescents or their caregivers to participate in the study. The inclusion and exclusion criteria were developed to accommodate the larger aims of Project ACE, which include how potential maternal/caregiver factors, mother's/caregiver's reports about their children, and/or racial differences may be involved in the onset and course of psychopathology for adolescents (for a description of Project ACE, see Alloy et al., 2012). Project ACE is still underway and retention rates are likely to change as individuals continue to participate. At the time of the current investigation, 80% of

participants completed at least one follow-up visit, and 72% of the sample is continuing in the study.

Participants included 640 racially and socioeconomically diverse adolescents and their female caregivers (93% were the adolescents' biological mothers). Of the current sample, 53.0% were female, 52.2% were African-American, and 48.0% were eligible for free school lunch, an indicator of low socioeconomic status. The average age at Time 1 was 12.55 years ($SD = 0.88$). See Table 1 for information about the current sample and timing of study assessments. At Time 1, adolescents completed inventories of emotional clarity, depressive symptoms, anxiety symptoms, and peer victimization, as well as other measures that were not included in the present investigation. At all subsequent assessments, adolescents completed the same measures, along with an inventory of family functioning and an inventory and interview about stressful life events. At the long-term follow-up, participants completed the same measures, plus a measure of psychological well-being and a measure of substance use. Adolescents who completed a Time 1 assessment only did not significantly differ on any of the primary study variables as compared to adolescents who completed at least one follow-up assessment (Table 2).

Measures

Emotional Clarity

The Emotional Clarity Questionnaire (ECQ; Flynn & Rudolph, 2010) is a self-report measure including 7 items adapted from the Trait-Meta Mood Scale for adults (Salovey & Mayer, 1990). The scale, designed to measure perceived emotional clarity, asks youth to rate their responses to items on a 5-point Likert scale, from *not at all* to

TABLE 1. DEMOGRAPHICS AND STUDY INFORMATION

Variable	Mean (SD)	N (%)
Female	-	339 (53.0%)
Black	-	334 (52.2%)
Eligible for free lunch	-	307 (48.0%)
Age at Time 1 (in years)	12.55 (0.88)	-
Age at Time 2 (in years)	13.91 (1.02)	-
Age at Time 3 (in years)	14.60 (0.80)	-
Age at Time 4 (in years)	15.53 (0.72)	-
Age at Time 5 (in years)	16.58 (0.77)	-
Age at Time 6 (in years)	17.94 (0.73)	-
Months from Time 1-Time 2	14.94 (3.81)	-
Months from Time 2-Time 3	10.03 (4.11)	-
Months from Time 3-Time 4	11.34 (4.27)	-
Months from Time 4-Time 5	12.26 (3.93)	-
Months from Time 5-Time 6	16.00 (4.10)	-

TABLE 2. COMPARISON OF PARTICIPANTS WHO COMPLETED TIME 1 ONLY OR AT LEAST ONE FOLLOW-UP ASSESSMENT ON PRIMARY STUDY VARIABLES

Variable	t	p
Sex	-0.28	0.78
Race	-0.39	0.69
Eligible for free lunch	1.50	0.13
EC Time 1	0.86	0.39
Rumination Time 1	-1.29	0.20
CDI Time 1	-0.61	0.55
MASC Time 1	0.73	0.47

Note. EC = Emotional Clarity Questionnaire, Rumination = Rumination subscale of the Children's Response Styles Questionnaire, CDI = Children's Depression Inventory, MASC = Multidimensional Anxiety Scale for Children.

very much. Each item asks how youth experience feelings, including “My feelings usually make sense to me,” “I usually know how I am feeling,” and (reverse-scored) “I am often confused about my feelings.” Total scores on the ECQ are calculated by reverse-scoring appropriate items and then summing item scores. This total can range from 5-35, and higher scores indicate greater levels of EC. The ECQ has good internal validity and also convergent validity with congruent behavioral measures that assess the ability to process emotions (e.g., identifying affect in facial expressions; Flynn & Rudolph, 2010). EC was measured at Times 1-5 in the current study. In the Project ACE sample, the ECQ had good internal reliability at Times 1-5 ($\alpha = 0.83-0.91$).

Depressive Symptoms

The Children’s Depression Inventory (CDI; Kovacs, 1985) is a self-report measure of current depressive symptomatology for children and adolescents. The measure uses 27 items and asks youth to report on symptoms over the past two weeks. The CDI is designed for individuals aged 7-17, and it is the most widely-used self-report inventory to assess symptoms of depression in children and adolescents. Items include behavioral, affective, and cognitive symptoms of depression scored from 0-2. Higher scores indicate greater depressive symptomatology, and total scores can range from 0-54. The CDI has demonstrated good validity with adolescents (Klein et al., 2005). In the current study, depressive symptoms were assessed at Times 1-6. In Project ACE, the CDI had good internal reliability at Times 1-6 ($\alpha = 0.85-0.89$).

Anxiety Symptoms

The Multidimensional Anxiety Scale for Children (MASC; March et al., 1997) is a self-report measure consisting of 39 items to assess anxiety symptomatology in youth.

The MASC gathers information about anxiety in a variety of domains, including separation anxiety (e.g., fear of being separated from parents), physiological symptoms (e.g., heart racing, tenseness, restlessness), social anxiety (e.g., performance fears, fear of negative evaluation from others), and harm avoidance (e.g., perfectionism). On a 4-point Likert scale, the measure asks participants to rate each item on a scale of 1 (never) to 4 (often). To create a total score, all items are summed, with greater scores indicating more severe symptoms of anxiety. The MASC demonstrated excellent internal and retest reliability and also has good discriminant and internal validity (March et al., 1997; March & Albano, 1998). This measure was given at Times 1-6, and the total score was used. The MASC had good internal reliability at Times 1-6 in Project ACE ($\alpha = 0.86-0.91$).

Well-being

The Scale of Psychological Well-Being (PWB) is a self-report questionnaire that aims to measure current healthy mental functioning across six dimensions, including autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance (Ryff, 1989; Ryff & Singer, 1996). The PWB inventory includes 42 items, consisting of six subscales (one for each factor) with seven items each. Individuals are asked to respond to the items on a scale from 1 (strongly disagree) to 6 (strongly agree). Example items from the scale include: “In general, I feel I am in charge of the situation in which I live” (environmental mastery), “People would describe me as a giving person, willing to share my time with others” (positive relations with others), and “I like most aspects of my personality” (self-acceptance).

Approximately half of the items are reverse-scored, and the subscales are totaled, with high scores indicating mastery and low scores indicating poor functioning in that area. In

the current study, wording on a few items was changed slightly to be more appropriate for use with adolescents. The PWB subscales have been found to have good internal consistency in college students (autonomy, $\alpha = 0.78$; environmental mastery, $\alpha = 0.77$; personal growth, $\alpha = 0.65$; positive relations with others, $\alpha = 0.77$; purpose in life, $\alpha = 0.73$; self-acceptance, $\alpha = 0.83$; van Dierendock, 2005). A short (18-item) version of the PWB has been used with adolescent samples (Garcia & Siddiqui, 2009), and all of the subscales of the long version (six subscales with 14 items each) are significantly negatively correlated with depression and anxiety in college students (Kitamura et al., 2004). Psychological well-being was measured for participants at Time 6, and the total score was used. The PWB had excellent internal consistency in Project ACE at Time 6 ($\alpha = 0.92$).

Rumination

The Children's Response Styles Questionnaire (CRSQ; Abela et al., 2004) is a self-report measure that assesses youths' cognitive responses to sad or depressed mood. The CRSQ contains 25 items across three subscales: rumination, problem-solving, and distraction. On the measure, participants are asked to rate how frequently they experience feelings and thoughts when they are sad on a scale from 1 (never) to 4 (almost always), in which higher scores for each subscale indicate a greater tendency to engage in that response style when experiencing a depressed or sad mood. One example of an item on the rumination subscale of the CRSQ is: "When I am sad, I think about other times when I have felt sad." In the present study, scores from the rumination subscale of the CRSQ were used at Time 1. Research suggests that the CRSQ has good internal consistency

(Abela et al., 2004), and in Project ACE, internal reliability of the rumination subscale at Time 1 was $\alpha = 0.86$.

Substance use

The Adolescent Alcohol and Drug Involvement Scale (AADIS; Moberg, 2005) is a brief self-report measure to capture the frequency of adolescent substance use. This measure was adapted from the original AADIS (Moberg & Hahn, 1991), and it includes section A (self-report) and section B (interview). In the present study, section A was used alone. This measure asks participants to rate how often they used each category of substances, from 1 (never used) to 7 (several times a day). The inventory includes thirteen categories of substances, such as alcohol, marijuana, cigarettes, amphetamines, cocaine, and other drugs. Scores can range from 13-91. The AADIS is very accurate in determining which adolescents have a substance use disorder and which do not, and it has good internal consistency and reliability (Mennis & Mason, 2012). The measure also correlates highly with other self-report measures and clinical assessments of adolescent substance use (Mennis & Mason, 2012). In this study, AADIS data from Time 6 was assessed, and internal reliability in Project ACE was $\alpha = 0.65$.

Family functioning

The Family Assessment Measure- III- General Scale (FAM-III; Skinner et al., 1995) is a 50-item self-report inventory of family functioning at a systemic level. This measure was constructed based on the Process Model of Family Functioning (Steinhauer, 1987) that includes various constructs crucial for the accomplishment of many tasks within the family. The FAM-III has six subscales (affective expression, communication, control, involvement, role performance, and values and norms) and a total score for

overall effectiveness of family functioning. This total score is an average of the subscales' T-scores, where a T-score of 60 or higher indicates family dysfunction or disturbance. The FAM-III has demonstrated good convergent validity with other scales of family functioning (e.g., MMPI family scales), good internal and test-retest reliability, and the ability to distinguish between effective and problematic families (e.g., families with alcoholic parents; for review, see Skinner et al., 2000). The total score of this inventory was used to measure family functioning at Time 2 and Time 6. In general, the FAM-III had adequate internal consistency in Project ACE at Time 2 ($\alpha = 0.63$) and Time 6 ($\alpha = 0.77$).

Stressful life events

The Adolescent Life Events Questionnaire- Revised (ALEQ-R; Hankin & Abramson, 2002) is a 63-item self-report inventory that assesses a variety of negative life events that are common during adolescence. Events include friendship/romantic problems (i.e., "You didn't have as many friends as you wanted to"), school/achievement problems (i.e., "You did poorly on, or failed, a test or class project"), family problems (i.e., "Your parents separated or divorced"), and other problems (i.e., "You were very sick and had to go to the hospital"). The inventory included space to add up to three other negative life events that were not already listed, if necessary. If participants endorsed the occurrence of a particular event, the measure asked them to indicate the frequency of the event, from 1 (once) to 5 (daily or almost daily). The measure also asked participants to report how they felt about the occurrence of a particular event, ranging from -4 (extremely bad) to 4 (extremely good), with 0 indicating neither bad nor good. The principal investigators and senior research staff for Project ACE created *a priori* ratings of independence (0; not

caused by the adolescent) or dependence (1; caused by the adolescent) and objective impact (0 = no/slight impact to 4 = extreme impact) for each event. Participants completed the ALEQ-R at each follow-up session (Times 2-6) and reported on life events that occurred since the last assessment. The ALEQ-R demonstrated good internal consistency, validity, and test-retest reliability in adolescents (Hankin & Abramson, 2002). In Project ACE, internal consistency of the ALEQ-R at Times 2-6 ranged from $\alpha = 0.87-0.92$.

Subsequent to completion of the ALEQ-R, trained interviewers administered the Life Events Interview (LEI) to gain more information about the negative life events reported in the ALEQ-R. Interviewers also gathered the dates of all events that occurred. This technique of combining a life events checklist with an interview is used to ensure a more accurate report of negative life events than self-report alone (Alloy & Abramson, 1999). Using a manual of event-specific criteria probes, interviewers ensured that each event reported was consistent with predetermined event-specific criteria. Events that did not meet the criteria were disqualified. Past research indicates that the inter-rater reliability for dating events using the LEI is high (Alloy & Abramson, 1999). ALEQ-R and LEI data for participants were analyzed from Times 2-6, and the present study examined the total number of distinct events that occurred for each participant.

Peer victimization

The Social Experiences Questionnaire (SEQ; Crick & Grotpeter, 1996) is a multi-dimensional self-report measure that assesses peer victimization (overt and relational) and peer social support. The present study only utilized the relational peer victimization subscale. This subscale consists of six items that measure the frequency with which youth

rate that peers tried to harm their interpersonal relationships, such as “A teen told lies about you to make other teens not like you anymore.” The scale asks participants to rate if they have experienced each item in the past 6 months, and if yes, to indicate how often, from 1 (once) to 5 (daily or almost daily). Further, participants were asked to rate how distressing they found the experience, ranging from 1 (not at all) to 3 (very). Participants also indicated who typically causes the experience when it occurs (a girl, a boy, a group of girls, a group of boys, a group of boys and girls). We created a score for relational peer victimization frequency by summing the frequency score (ranging from 1-5) for each item. The SEQ had good test-retest reliability and internal consistency in adolescent samples (Storch et al., 2005). The present study examined relational peer victimization at Times 1-6, and internal consistency for this subscale was adequate in Project ACE at Times 1-6 ($\alpha = 0.62-0.67$).

Data Analysis

The current study examined change in emotional clarity prospectively, as collected over five time points that occurred within approximately five years (Primary Aim #1). Given measurements of EC occurring over time, nested within individuals, the use of multilevel growth curve modeling with individual times of observations was appropriate. This design allowed for sensitive measurement of EC in order to provide an accurate examination of the rate of change that occurred over time within individuals, by estimating growth curve models while incorporating individual times for each assessment. This data analytic strategy allowed for an idiographic (person-centered) approach to the measure of EC change over time. Further, multilevel growth curve modeling was advantageous because it maximized data usage by flexibly accounting for

missing data. Therefore, participants with missing data (e.g., who missed one assessment) were not eliminated from analyses. Before multilevel growth curve modeling analyses were conducted, data were inspected to ensure that they satisfied statistical assumptions. If necessary, adjustments were made to conform to these assumptions. Analyses were conducted using MPlus (Muthén and Muthén, 1998-2017).

The study also analyzed predictors of EC change over time (Primary Aim #2, Exploratory Aim #1). These analyses were conducted via hierarchical linear regressions within a multilevel growth curve modeling framework to test whether certain variables measured at Time 1 (sex, rumination, race, SES) predicted the slope and intercept of EC development over time (Times 1-5). Further, models were estimated within the same framework, to determine if the rate of EC development moderated the relationship between the predictor variables and various psychosocial outcomes at a long-term follow-up, Time 6. Baseline levels of these outcome measures (measured at Time 1 or Time 2) were controlled for in the moderation analyses. Further, multilevel growth curve models were tested that examined simultaneous growth of EC with four of the outcome variables (depressive symptoms, anxiety symptoms, stress, peer victimization) to determine their relationship at the level of the growth factors, by estimating the relationships between the slopes across and within construct (Curran et al., 2010). See Figure 1 for a model of the present study.

Results

Descriptive Results

Table 3 presents descriptive statistics of the study variables at each time point measured, including the mean, standard deviation, and number of participants. The

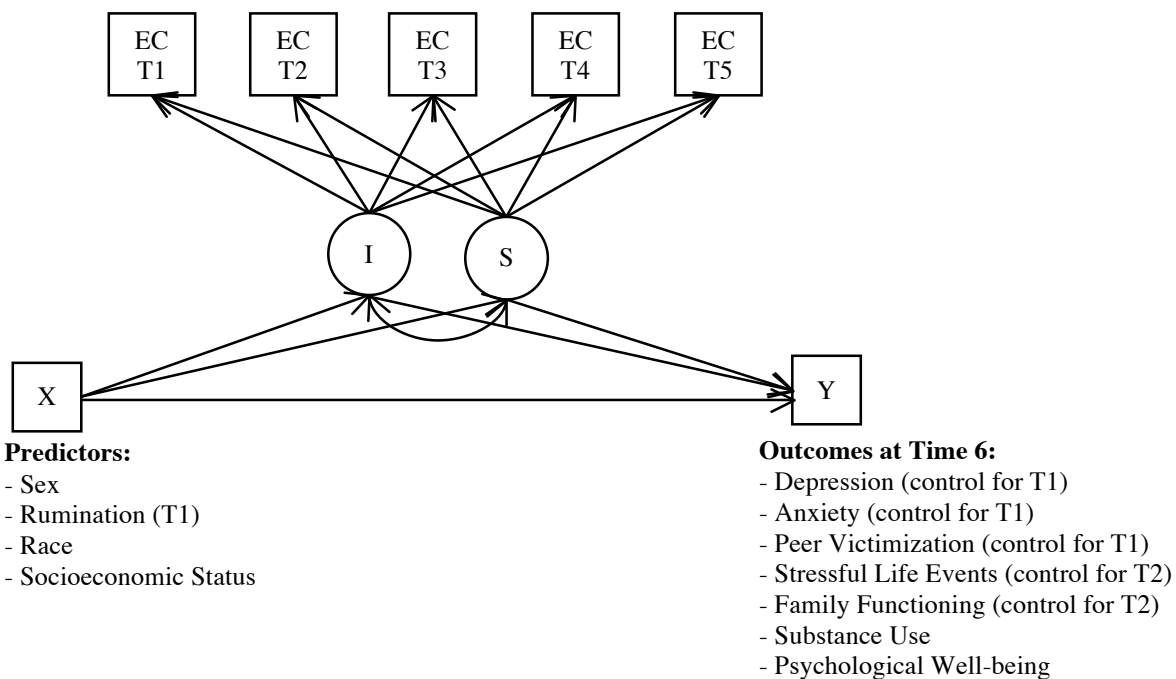


Figure 1. Model of Primary Aims 1-3 and Exploratory Aim 1 of the present study.

Legend. EC = Emotional Clarity, I = intercept, S = slope, T1 = Time 1, T2 = Time 2, etc. Depression, anxiety, peer victimization, and stressful life events were also assessed at Times 1-5.

numbers of participants represented are based on the specific visits chosen for the present study and do not reflect the overall numbers of participants who have completed follow-ups in Project ACE, due to variability in when participants attend each session of the study and variability in which assessments are completed at each type of study session. Table 4 presents bivariate correlations for each study variable at the first time point it was assessed.

Primary Aim 1: How does EC change across adolescence?

The trajectory of EC from Time 1-Time 5 was estimated using multilevel modeling growth curves. The model indicated that EC slope decreased linearly over time ($B = -0.092$, $SE = 0.043$, $p = 0.03$; Figure 2). The slope of EC also was tested in a model that estimated quadratic change, but this slope was not statistically significant ($B = 1.44$, $SE = 0.99$, $p = 0.15$). A third model that tested cubic change of EC found that the cubic slope of EC was marginally significant ($B = -1.34$, $SE = 0.74$, $p = 0.072$). Therefore, the only significant slope was included in the linear model. There also was a significant amount of variability in the linear slope ($B = 0.18$, $SE = 0.058$, $p = 0.002$). Individuals significantly differed on their baseline levels of EC (intercept; $B = 2.82$, $SE = 0.021$, $p < 0.001$) and there was a significant amount of variability in the intercept ($B = 0.13$, $SE = 0.017$, $p < 0.001$).

Primary Aim 2 and Exploratory Aim 1: What influences the trajectory of EC across adolescence?

Four predictors measured at Time 1 (sex, race, socioeconomic status, and rumination) were added as predictors of baseline levels and linear growth for the model tested in Aim 1. The effects of these covariates were tested simultaneously, to determine

TABLE 3. DESCRIPTIVE STATISTICS OF STUDY VARIABLES

Variable	Time 1		Time 2		Time 3		Time 4		Time 5		Time 6	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
EC	506	28.24 (4.82)	298	27.73 (5.53)	291	27.36 (5.29)	223	28.27 (5.13)	202	27.18 (5.84)	-	-
Rum	617	24.55 (7.69)	-	-	-	-	-	-	-	-	-	-
CDI	631	7.30 (6.04)	143	7.92 (7.24)	227	7.47 (6.37)	216	6.97 (6.41)	197	7.24 (5.98)	187	6.65 (6.38)
MASC	630	41.25 (14.49)	140	38.84 (16.66)	221	37.50 (14.37)	211	36.62 (14.97)	197	35.92 (14.06)	188	32.26 (16.29)
PV	254	1.97 (3.33)	215	2.17 (3.26)	185	1.76 (3.10)	161	1.58 (2.71)	115	0.96 (2.42)	88	0.75 (1.60)
LEI	-	-	228	11.51 (7.19)	225	10.73 (6.03)	173	9.78 (6.99)	125	7.81 (6.07)	124	8.01 (6.77)
FAM	-	-	297	109.83 (7.57)	-	-	-	-	-	-	187	108.13 (11.41)
AADIS	-	-	-	-	-	-	-	-	-	-	188	2.50 (3.95)
PWB	-	-	-	-	-	-	-	-	-	-	137	195.32 (27.87)

TABLE 4. CORRELATIONS OF STUDY VARIABLES AT FIRST TIME POINT MEASURED.

Variable	2	3	4	5	6	7	8	9	10	11	12
1. Sex	-.03	-.01	.14**	-.09	.13*	.18**	.17*	-.03	.28*	.10	.06
2. Race	1	.43**	-.01	.08	.01	.15**	-.13	.10	.01	.01	.02
3. Lunch		1	.01	-.04	.10	-.05	-.14*	.08	-.02	.03	-.12
4. Rum			1	-.25**	.46**	.46**	.11	.13*	.24**	.25*	-.03
5. EC				1	-.41**	-.26**	-.17*	-.24**	-.06	-.05	.18
6. CDI					1	.33**	.29**	.33**	.30**	.10	-.15
7. MASC						1	.19**	-.02	.16*	-.14	-.01
8. PV							1	.26**	.50**	-.13	-.08
9. FAM								1	.12	.13	-.30**
10. LEI									1	.10	.06
11. AADIS										1	-.20
12. PWB											1

Note for Tables 3 and 4. * significant at the $p < .05$ level, ** significant at the $p < .01$ level; Lunch = eligible for free school lunch; EC = Emotional Clarity Questionnaire, Time 1; Rum = Rumination subscale of the Children's Response Styles Questionnaire, Time 1; CDI = Children's Depression Inventory, Time 1; MASC = Multidimensional Anxiety Scale for Children, Time 1; PV = Peer Victimization subscale of the Social Experiences Questionnaire, Time 1; FAM = Family Assessment Measure- III- General Scale, Time 2; LEI = Life Events Interview, Time 2; AADIS = Adolescent Alcohol and Drug Involvement Scale, Time 6; PWB = Scale of Psychological Well-being, Time 6.

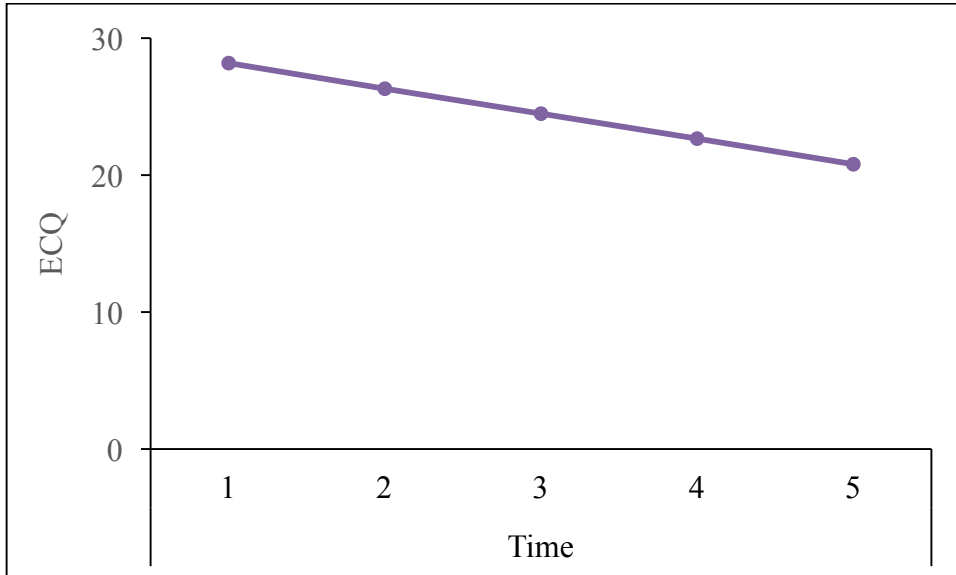


Figure 2. Linear trajectory of emotional clarity from Time 1 to Time 5.

Legend. ECQ = Emotional Clarity Questionnaire, slope: $B = -0.09$, $SE = 0.04$, $p = 0.03$; intercept: $B = 2.82$, $SE = 0.02$, $p < 0.001$.

their influence on the linear trajectory of EC. Sex significantly impacted the trajectory of EC ($B = -0.24$, $SE = 0.086$, $p = 0.004$). Compared to males, females, on average, had a steeper decline of EC over time (Figure 3). Males also were more likely to have higher levels of EC at baseline compared to females ($B = -0.12$, $SE = 0.041$, $p = 0.003$).

Rumination at Time 1 ($B = 0.004$, $SE = 0.005$, $p = 0.44$) did not significantly impact the trajectory of EC across adolescence (Times 1-5). Individuals lower in rumination had higher levels of EC at baseline than those with higher levels of rumination ($B = -0.01$, $SE = 0.003$, $p < 0.001$). Race (intercept: $B = 0.03$, $SE = 0.05$, $p = 0.46$; slope: $B = -0.04$, $SE = 0.09$, $p = 0.63$) and socioeconomic status (intercept: $B = -0.02$, $SE = 0.05$, $p = 0.62$; slope: $B = -0.02$, $SE = 0.09$, $p = 0.79$) did not significantly influence baseline levels of EC or the trajectory of EC across adolescence.

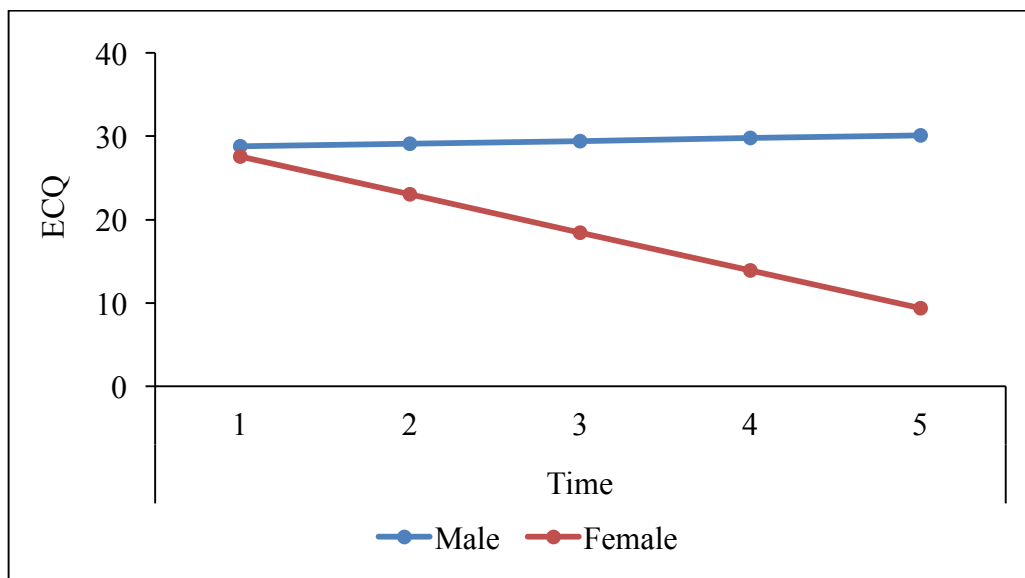


Figure 3. Sex predicts differences in the trajectory of emotional clarity from Time 1 to Time 5.

Legend. ECQ = Emotional Clarity Questionnaire, sex significantly impacts the trajectory of EC ($B = -0.24$, $SE = 0.09$, $p = 0.004$).

Primary Aim 3: Does EC change predict various psychosocial outcomes?

Seven variables (depression, anxiety, peer victimization, family functioning, stressful life events, substance use, well-being) were tested to determine whether the trajectory of EC impacted their outcomes at the long-term follow-up (Time 6). When possible, levels of each variable at Time 1 were included as covariates (depression, anxiety, peer victimization). For two variables (family functioning, stressful life events), levels at Time 2 were included as a covariate because they were not assessed at Time 1. For the two remaining variables (substance use, well-being), earlier levels were unable to be accounted for because these measures were added to the study at a later time. Each variable was tested separately in a model.

Controlling for Time 1 levels of depression, higher EC slope values were associated with lower levels of depression at the long-term follow-up ($B = -4.92$, $SE = 2.40$, $p = 0.04$). Individuals with a steeper decline of EC over time had higher depression scores at the long-term follow-up. Additionally, controlling for Time 2 stressful life events, higher EC slope values were associated with higher levels of stressful life events ($B = 1.67$, $SE = 0.20$, $p < 0.001$). Individuals with steeper EC growth over time had higher levels of life stress at the follow-up assessment. Higher baseline EC levels also were associated with more stressful life events at the long-term follow-up ($B = 10.23$, $SE = 0.44$, $p < 0.001$).

Further, controlling for Time 2 family functioning, higher EC slope values were associated with better family functioning at the long-term follow-up ($B = -0.09$, $SE = 0.04$, $p = 0.03$). Finally, higher EC slope values were associated with greater psychological well-being at the long-term follow-up ($B = 0.32$, $SE = 0.09$, $p < 0.001$). Individuals with steeper EC growth over time had higher well-being at the follow-up assessment. The trajectory of EC did not significantly predict anxiety ($B = -7.27$, $SE = 8.51$, $p = 0.39$), peer victimization ($B = 0.60$, $SE = 0.62$, $p = 0.34$), or substance use ($B = -0.22$, $SE = 0.13$, $p = 0.10$) at follow-up.

Exploratory Aim 2: Does the trajectory of EC influence the trajectories of other variables, and do the trajectories of other variables influence the trajectory of EC?

The trajectory of EC was analyzed simultaneously with the trajectories of depression, anxiety, peer victimization, and stressful life events to determine whether the trajectory of EC impacted the trajectory of the other variables, and vice versa. First, the trajectory of depression from Time 1-Time 5 was estimated using multilevel growth

curve models. Models that estimated linear ($B = -0.15, SE = 0.05, p = 0.77$), quadratic ($B = -0.06, SE = 0.19, p = 0.74$), and cubic ($B = -0.17, SE = 1.10, p = 0.88$) change of depression over time determined that the slope was not significant in any model, and there was no significant variability in the slope in any of the tested models (linear: $B = 0.15, SE = 0.14, p = 0.28$; quadratic: $B = 1.06, SE = 1.74, p = 0.54$; cubic: $B = 67.26, SE = 62.75, p = 0.28$). Therefore, depression was not pursued further with regard to how its slope was related to the trajectory of EC.

The trajectory of anxiety from Times 1-5 also was estimated using multilevel growth curve models. A model that estimated cubic change ($B = -6.07, SE = 2.26, p = 0.007$; Figure 4) was statistically significant, so this model was examined over models that estimated linear ($B = -1.38, SE = 0.12, p < 0.001$) and quadratic ($B = 1.46, SE = 0.45, p = 0.001$) change of anxiety over time. There was significant variability in the slope in each model tested (linear: $B = 1.73, SE = 0.52, p = 0.001$; quadratic: $B = 13.31, SE = 6.14, p = 0.03$; cubic: $B = 316.55, SE = 104.63, p = 0.02$). A model was tested that included the linear, quadratic, and cubic slope of anxiety over Times 1-5 regressed onto the linear slope of EC over Times 1-5. The linear slope of EC did not significantly impact the slope of anxiety over time in any model (linear: $B = 1.71, SE = 3.52, p = 0.63$; quadratic: $B = -12.36, SE = 11.90, p = 0.30$; cubic: $B = 10.81, SE = 9.83, p = 0.27$). Conversely, an additional model including the linear slope of EC over Times 1-5 regressed on the slope of anxiety found that the linear, quadratic, and cubic slope of anxiety did not significantly impact the slope of EC (linear: $B = -0.16, SE = 0.63, p = 0.80$; quadratic: $B = -0.23, SE = 32.41, p = 0.99$; cubic: $B = -0.03, SE = 31.12, p = 0.99$).

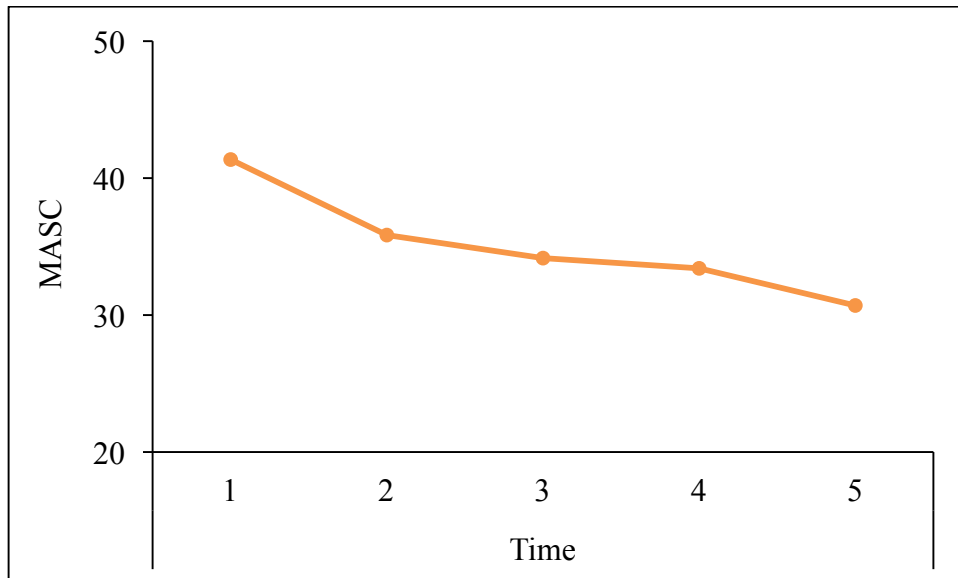


Figure 4. Cubic trajectory of anxiety from Time 1 to Time 5.

Legend. MASC = Multidimensional Anxiety Scale for Children, slope: $B = -6.07$, $SE = 2.26$, $p = 0.007$; intercept: $B = 4.13$, $SE = 0.06$, $p < .001$.

The trajectory of peer victimization from Times 1-5 also was estimated using multilevel growth curve models. Multilevel growth curve modeling indicated that peer victimization decreased linearly over time ($B = -1.61$, $SE = 0.37$, $p < 0.001$; Figure 5), and there was not a significant amount of variability in the linear slope ($B = 7.77$, $SE = 5.53$, $p = 0.12$). Models that estimated quadratic ($B = -0.94$, $SE = 1.27$, $p = 0.46$) and cubic ($B = -0.35$, model did not converge) change were not statistically significant. Thus, the first model included the linear slope of peer victimization over Times 1-5 regressed onto the linear slope of EC over Times 1-5. At a trend level, higher EC slope was associated with more negative peer victimization slope ($B = -1.86$, $SE = 0.95$, $p = 0.05$). A complementary model also was tested, including the linear slope of EC regressed on

the linear slope of peer victimization over Times 1-5. The slope of peer victimization did not significantly impact the slope of EC over time ($B = -0.14$, $SE = 0.13$, $p = 0.27$).

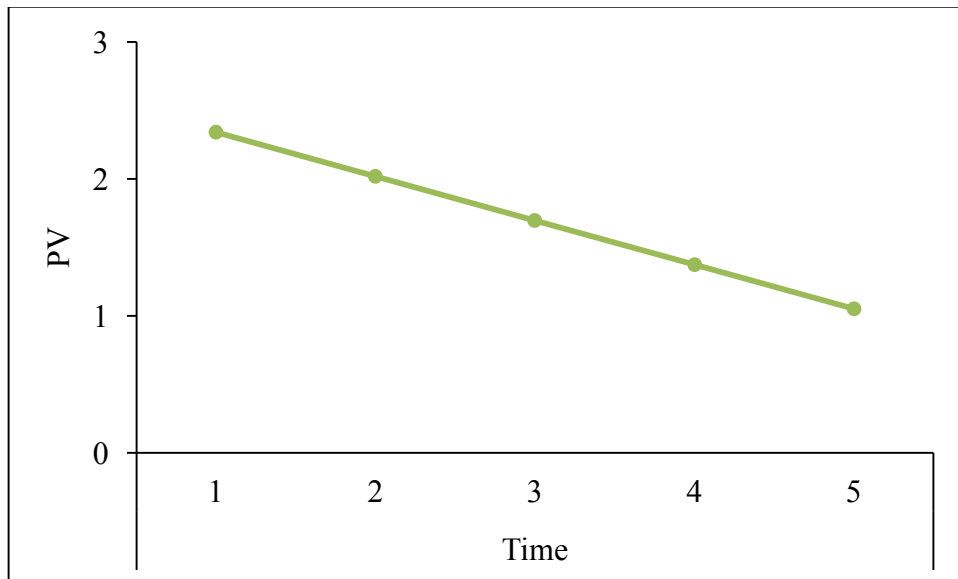


Figure 5. Linear trajectory of peer victimization from Time 1 to Time 5.

Legend. PV = Peer Victimization subscale of the Social Experiences Questionnaire, slope: $B = -1.61$, $SE = 0.37$, $p < 0.001$; intercept: $B = 2.34$, $SE = 0.20$, $p < .001$.

The trajectory of stressful life events from Times 2-5 also was estimated using multilevel growth curve models. A model that estimated cubic change was significant ($B = -17.26$, $SE = 7.78$, $p = 0.027$; Figure 6), in comparison to models that estimated linear ($B = -0.74$, $SE = 0.46$, $p = 0.11$) and quadratic ($B = 0.87$, $SE = 1.66$, $p = 0.60$) change of stressful life events over time. There was no significant variability in the cubic slope of stressful life events ($B = 1152.45$, $SE = 2160.85$, $p = 0.59$). A model that included the cubic slope of stressful life events over Times 2-5 regressed onto the linear slope of EC over Times 1-5 suggested that the linear slope of EC did not significantly impact the

cubic slope of stressful life events ($B = 1.48, SE = 3.45, p = 0.67$). Conversely, an additional model including the linear slope of EC over Times 1-5 regressed on the cubic slope of stressful life events over Times 2-5 found that the slope of stressful life events did not significantly impact the slope of EC ($B = -0.45, SE = 2.64, p = 0.86$).

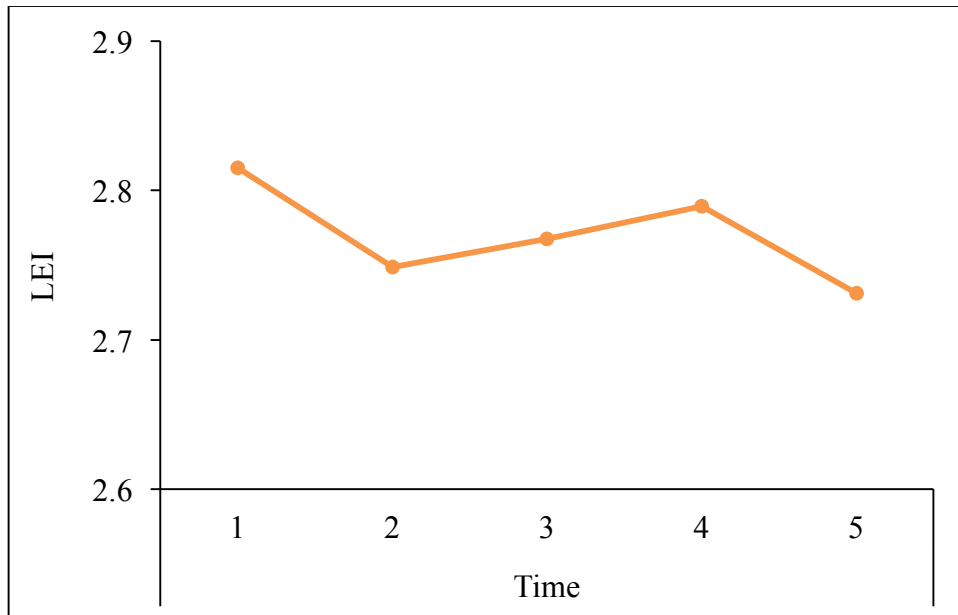


Figure 6. Cubic trajectory of stressful life events from Time 1 to Time 5.

Legend. LEI = Life Events Interview, slope: $B = -17.26, SE = 7.78, p = 0.027$, intercept: $B = 28.15, SE = 0.26, p < .001$.

Discussion

The study of facets of emotional intelligence during adolescence, such as emotional clarity, is a growing field of interest. As only one study to date (Rubenstein et al., 2015) has traced the development of emotional clarity over time, the present investigation is the first to demonstrate that EC tends to decrease in a linear fashion over the adolescent years. This finding is counter to the primary hypothesis that EC would

increase over time, which was supported by past research using a subset of the same participants (Rubenstein et al., 2015). Results may differ from the previous investigation because of differences in the participants involved and the time points examined. Rubenstein and colleagues (2015) only examined participants in Project ACE who had completed at least three study sessions and found that EC tended to increase from Time 1 (M age = 12.39) to Time 3 (M age = 14.72). The present study examined all participants in Project ACE and used multilevel growth curve modeling to maximize data usage by flexibly accounting for missing data. This statistical technique allowed the present study to include more participants in the investigation, and results indicated that over five time points (from M ages 12.55 - 17.94), EC tended to decrease in a linear fashion. The present results also suggest that EC change may occur in a cubic manner, as evidenced by the marginally significant cubic slope. The cubic model reveals that EC may decrease from Time 1 to Time 2, then increase from Time 2 to Time 4, and then decrease again from Time 4 to Time 5. Therefore, there is a possibility that EC tends to increase during middle adolescence. The primary finding that EC decreases linearly over time suggests that, rather than emotional clarity building and crystallizing over the adolescent years as experience with emotion grows, adolescence may be a time when emotional experiences become more puzzling instead of clearer. Interestingly, sex differences in EC may explain this tendency for decreasing EC over adolescence. Further, in accordance with hypotheses, decreases in the trajectory of EC predicted a variety of negative psychosocial outcomes, including depression and peer victimization. Conversely, increases in EC predicted higher levels of psychological well-being and adaptive family functioning. Examining how EC changes over time, what factors predict this change, and what

outcomes this change may impact (e.g., psychopathology) is a crucial step in understanding how adolescents comprehend their emotional experiences during a time of much psychological development.

The primary finding that EC decreases across adolescence for girls, while boys remained high and stable, was counter to hypothesis and warrants further attention. As a construct, EC is difficult to measure, and in the present study, EC was captured via self-report. Therefore, EC as discussed in the current study represents each adolescent's perception of his or her ability to understand and label feelings. However, it is possible that the self-report of EC may not be an accurate reflection of how clear a person actually is about their emotional states. When the ECQ (Flynn & Rudolph, 2010) was created for use with children and adolescents, it was examined alongside two laboratory tasks of facial emotion recognition. Although high scores on the ECQ were associated with greater right hemispheric specialization of facial recognition (which predominately occurs in the right hemisphere) and fewer mistakes on identifying displays of affect via a facial recognition paradigm (Flynn & Rudolph, 2010), recognizing facial expressions is not the same as being clear about emotions in oneself. Therefore, it is possible that self-reported EC is a proxy for other constructs that measure how individuals feel about themselves, including self-assuredness or self-confidence. Thus, the tendency for girls to report decreasing levels of EC may represent declines in self-confidence as life becomes more stressful during the adolescent years. The self-reported decrease in EC may not suggest that adolescent girls are losing a skill they once had; instead it may indicate that females are experiencing a greater complexity of emotional and interpersonal experiences, which leads girls to believe that they are unable to be clear about their

emotional experiences. To clarify the construct of EC, future studies might measure self-reported EC following mood induction in a laboratory alongside psychophysiological measures (e.g. heart rate, skin conductance) to measure arousal. Ecological Momentary Assessment (EMA) studies also may be useful to measure any daily fluctuations in self-reported EC based on what events an individual may be experiencing at the time of report. Taking the difficulty of measuring EC into consideration, the results of the present study must be interpreted with the understanding that EC represents a self-perception that may be more related to self-esteem than emotional intelligence.

Notably, examining sex differences in the decreasing trajectory of EC during adolescence revealed key differences between males and females. Adolescent boys tended to report higher EC than girls at baseline, and their EC level remained high and stable throughout the course of the study. Conversely, adolescent girls' EC decreased from early to late adolescence. These results are consistent with past research documenting that adolescent boys tend to score higher than girls on measures of EC (Extremera et al. 2007, Fossati et al., 2014; Oliva et al., 2014; Powell et al., 2011; Rubenstein et al., 2015). The present results indicate that, for girls, understanding emotions may become increasingly more difficult during adolescence. As women pay more attention to emotions and are better than men at differentiating between emotions (Mankus et al., 2016), it is possible that during adolescence, females begin to experience a greater variety of specific emotions that lead them to become less clear about their emotional states. Further, inasmuch as males tend to pay less attention to emotions, differentiate between emotional experiences less adeptly than females (Mankus et al., 2016), and experience lower intensity of emotional experience (Grossman and Wood,

1993), it is possible that boys self-report maintaining high and stable EC throughout the adolescent years because they may have access to less complex and less intense emotional material than their female peers. An additional explanation for this change may be the well-established sex difference in depression during adolescence, in which girls are more prone to experiencing depression than their male peers (e.g., Hankin et al., 1998). As adolescent girls become more vulnerable to negative affect and depression, it is possible that emotional states become more difficult to interpret. Further, Hamilton and colleagues (2014, 2016) suggest that certain risk factors moderate the link between low EC and depression in adolescent girls, including early pubertal timing and peer victimization. Future research might test how female-specific risk factors, such as pubertal timing and difficulties in interpersonal relationships, may impact EC deficits for girls. Further, because the trajectory of EC differed for male and female adolescents, it is possible that the other results would diverge if analyses were conducted separately for each sex. Subsequent studies should examine predictors and outcomes of the EC trajectory by sex, to determine how this development might be different for girls and boys.

Although the present study did not examine whether depression at baseline predicts the trajectory of EC over time, rumination, a well-established risk factor for depression (Nolen-Hoeksema, 1991) was examined as a predictor. Past research indicates that for adolescent girls, responding to depressive symptoms with rumination may lead to decreased EC over time (Rubenstein et al., 2015). Findings from the present study, however, suggest that although rumination at baseline did not predict the trajectory of EC during adolescence, individuals higher in rumination at baseline exhibited lower levels of

EC at baseline than those with lower levels of rumination. Therefore, in early adolescence, high rumination is linked with poorer EC. This result is congruent with past investigations linking low EC and rumination cross-sectionally (e.g., Hatzenbuehler et al., 2008). Ruminating, or thinking repetitively and passively about negative affect, may exhaust cognitive resources for the processing of emotions, which might increase present confusion regarding emotional experiences. The results indicate that experiences of rumination appear to have a concurrent, but not predictive, relationship with EC during early adolescence.

Additional results from the current study indicate that individuals with a steeper decline of EC over time had higher depression scores at the long-term follow-up, when controlling for baseline levels of depression. Adolescents who became poorer at identifying and labeling emotional experiences from early to late adolescence were more prone to experiencing symptoms of depression at a later time (approximately 16 months) in their development. This finding demonstrates a crucial connection between changes in EC and adolescent psychopathology. Notably, as EC declined more steeply for adolescent girls than boys, this result may align with past research indicating that adolescent girls are more likely to become depressed than boys. In order to clarify this relationship between EC and depression, the present study also aimed to test the transactional relationships between the trajectories of EC and depression. However, because the slope of depression was not statistically significant in the models tested, the present study was unable to assess how changes in depression might impact changes in EC, or how changes in EC might impact changes in depression.

As steeper decreases in EC predicted depression, a negative psychological outcome, greater EC growth over time predicted a positive psychological outcome, well-being. Well-being is a multifaceted construct that represents more than the absence of psychopathology. Therefore, this result indicates that increases in emotional clarity during the adolescent years may be associated with flourishing and positive mental health. The present measure of psychological well-being included a composite score of subscales measuring autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Thus, getting better at understanding emotions during adolescence may be linked to engaging in the world in a healthier, more fulfilling manner in a variety of domains. Increases in EC might free up cognitive resources that allow adolescents to think more abstractly about themselves and the world, which might improve self-worth and may increase the ability to have more meaningful interactions with others. Past research has linked high EC with aspects of positive psychological health during adolescence, such as optimism and openness, but most of these studies have been cross-sectional (e.g., Ciarrochi et al., 2002; Extremera et al., 2007; Fernandez-Berrocal et al., 2006; Salguero et al., 2012). Thus, the present finding linking increases in EC over time with psychological well-being at the long-term follow-up has implications for the field of positive psychology. Improvements in emotional clarity, and potentially emotional intelligence more generally, over the formative years of adolescence may be an important path to well-being. However, the implications of this finding are limited because the present study was unable to control for baseline levels of well-being. Therefore, it is unknown whether adolescents who experienced high levels of psychological well-being at the long-term follow-up also

experienced high levels at baseline. Future research could examine how the trajectory of EC changes with psychological well-being to provide more complete understanding of how EC relates to positive psychological health.

Moreover, the trajectory of EC was predictive of psychosocial outcomes that involve relationships with others. Greater increases in EC were associated with better family functioning at the long-term follow-up, and, at a trend level, with greater decreases in peer victimization over time, when controlling for levels of peer victimization at baseline. Past studies on adolescent emotional clarity and interpersonal relationships have begun to reveal a connection between low EC and poor interpersonal functioning with peers and parents (Eastabrook et al., 2014; Freed et al., 2016; Hamilton et al., 2016; Remmes & Ehrenreich-May, 2014; Salguero et al., 2012). However, the present study was the first to indicate that change in EC during adolescence may predict certain aspects of interpersonal functioning. First, greater increases in EC over time predicted adaptive family functioning, a broad construct that includes expression of affect, communication, control, familial involvement, role performance, and values and norms within the family. It is possible that adolescents with EC levels that increase more over time have been raised by parents with high levels of EC, and perhaps high EC from both parents and their children may contribute to adaptive family functioning. As there is some evidence that emotional intelligence has a genetic component (e.g., Petrides et al., 2011), future studies could examine how genetic and environmental influences impact emotional clarity development. Further, as EC increases, the incidence of peer victimization may decrease. Increasing EC may allow adolescents to be more socially savvy, which may steer them away from situations where they may be victimized. In a

positive psychological frame, it is also possible that increasing EC may guide adolescents towards finding more supportive and fulfilling friendships.

Of note, the present results suggest that the primary hypotheses related to the relationship between stressful life events and emotional clarity were not supported. Individuals with steeper EC growth over time had higher levels of life stress at the follow-up assessment, and higher baseline EC levels also were associated with more stressful life events at the long-term follow-up. These findings run counter to what was expected, and they suggest that the relationship between emotional clarity development and life stress may not be as clear as the relationship between EC and other psychosocial outcomes. It is possible that adolescents who understand their emotional experiences better are more likely to report stress over time. Adolescents with higher EC that increases over time may lead more enriched and mature lives, which could come with benefits, such as high well-being, and drawbacks, such as high stress. Future studies could examine whether EC differentially predicts various types of stressful life events (e.g., interpersonal and achievement events). Perhaps adolescents with greater increases in EC over time are more socially connected, so they may be more prone to experience interpersonal stressors that do not involve victimization (e.g., having a friend with a significant emotional problem). Given that experiencing stressful life events is linked with increases in depression during adolescence (Ge et al., 1994), future research might also reveal important connections between EC, depression, and stress by studying the relationships between these three factors over time.

Additionally, the present study yielded several non-significant findings that warrant attention. First, race and socioeconomic status were not significant predictors of

the trajectory of emotional clarity across adolescence. Race and SES were highly correlated ($r = 0.43, p < 0.01$), with Black participants more likely to be eligible for free school lunch. Notably, the present study compared White/Caucasian and Black/African-American adolescents from the same urban area and did not include individuals from other racial and ethnic groups. Although there is a dearth of research examining racial differences in EC, research on adults has demonstrated that higher SES is associated with greater EC (Mankus et al., 2016). Thus, future research may be useful to clarify whether there are any differences in EC between adolescents of different ethnic or racial backgrounds that were not included in the present study.

Further, the trajectory of EC was not predictive of several psychosocial outcomes examined at the long-term follow-up, including anxiety, peer victimization, and substance use. These results were counter to primary hypotheses and suggest areas that may merit further attention. The present study did not find a relationship between changes in EC and anxiety over time. Past research indicates that EC predicts anxiety during adolescence when accounting for the effects of thought suppression and low self-esteem (Fernandez-Berrocal et al., 2006). However, the current results suggest that changes in EC during adolescence may not have the same predictive impact on anxiety during late adolescence. Moreover, limited past research connects low EC to substance abuse in adolescents and young adults in cross-sectional studies (Dorard et al., 2008; Dvorak et al., 2014; Hessler & Katz, 2010). The present investigation found that EC changes over time may not predict adolescent substance use. Therefore, although changes in EC may impact outcomes that are related to negative and positive states (i.e., depression and well-being) and interpersonal relationships, changes in EC over time may

not be predictive of adolescent substance use. Future research would help to clarify whether this result is specific to substance use or whether substance use represents a proxy for risky decision-making or impulsivity in general during adolescence.

Finally, EC change did not predict change in anxiety or stressful life events over time, and changes in anxiety, stressful life events, and peer victimization over time did not predict changes in EC. These null findings suggest that, although adolescence is a time in development marked by much change, the trajectories of EC and various psychosocial factors may exist independently of each other. Although EC change was predictive of certain outcomes at the long-term follow-up, EC change did not predict any of the other variables' change trajectories except for peer victimization, which trended towards significance. These models also do not include information that may be necessary to determine the relationships between EC and the various other changing psychosocial variables. It is possible that a lag exists, such that change in one variable in early adolescence predicts change in EC in middle to late adolescence, or vice versa. Further, the models only examine change in two variables at a time, which does not reveal how all of these factors are interacting together. Future research may examine EC change alongside change in multiple variables at once (e.g., depression, anxiety, stress), to determine how all of the factors are related to one another. Interestingly, as a part of the analyses for Exploratory Aim #2, the current study determined that across adolescence, peer victimization tends to decrease linearly (Figure 5), and both anxiety (Figure 4; steeper decline, then shallower decline, then steeper decline) and stressful life events (Figure 6; decrease, then increase, then decrease) tend to have a cubic pattern to their trajectories. Although these findings are beyond the scope of the present aims and

hypotheses, they reveal patterns that explain how certain factors change during the adolescent years and could be the primary focus of future studies of adolescent psychosocial development.

The present study had several key strengths and a number of limitations that could be addressed in future investigations. First, this study utilized a large, diverse community sample of adolescents followed over five years during a formative time in development. The longitudinal design allowed for sophisticated statistical analyses to examine the predictive impact of certain variables on the development of other variables. The statistical analysis in the current study also was robust because it examined how various variables change over time and how these changes can be considered simultaneously. This study examined a variety of psychosocial factors, and it was the first longitudinal study to track EC change across the adolescent years.

On the other hand, one limitation of the present study was the reliance on self-report measures. All of the measures used except for one (Life Events Interview) were self-report, which may limit the ecological validity of the findings. Further, this study relied solely on adolescents' reports of their current functioning. Future studies might benefit from the perspective of other people in the adolescents' lives, such as parents and teachers, to obtain a more comprehensive understanding of various psychosocial domains. Whereas the current study examined psychopathology in terms of depressive and anxiety symptoms, future research could provide more thorough results by examining diagnoses of depression and anxiety disorders. Because there were sex differences in the trajectory of EC during adolescence, subsequent studies might control for sex in analyses to determine how the trajectory of EC predicts psychosocial outcomes irrespective of sex.

Additionally several of the measures used (AADIS, FAM-III, SEQ) demonstrated marginal internal reliability ($\alpha = 0.62-0.67$), which may have impacted the results of the present study. Future studies could retest the present hypotheses using more reliable measures of substance use, family functioning, and peer victimization. Subsequent research also could examine subscales of the Life Events Interview (e.g., friendship/romantic problems, school/achievement problems, family problems) to determine how EC may predict various types of stress. Finally, whereas the present study included a diverse sample of participants, only Black, White, and biracial adolescents were included because of the larger aims of Project ACE. Future studies of emotional clarity development during adolescence could be more inclusive of participants from other ethnic and racial backgrounds, which might reveal differences that were not evident in the current study.

Critically, the results of this investigation have clinical implications for adolescent mental health. First, it seems that EC changes during adolescence, especially for girls. Inasmuch as evidence suggests that emotional intelligence is mutable (Brackett et al., 2011), EC may prove to be a fruitful target for intervention. Although EC tends to decrease over time, results suggest that increases in EC may protect against negative outcomes, such as depression and peer victimization, and promote positive outcomes, such as adaptive family functioning and psychological well-being. Given that EC is naturally changing during adolescence and may be malleable, early intervention, especially for girls, may be useful in altering the trajectory of EC. Because a large part of the adolescent experience takes place in the school context, developing workshops in school that teach adolescents how to better identify and become aware of their emotional

experiences might be especially advantageous (Hamilton et al., 2016). By teaching EC skills in a group format, these types of programs might buffer against stressors that often occur around peers, such as bullying, peer pressure, and substance use. Thus, already established protocols for teaching emotional intelligence in the classroom (e.g., Brackett & Katulak, 2007) should devote adequate time to teaching the skills associated with adaptive emotional clarity, such as identifying and labeling emotions correctly. It is possible that these types of interventions and prevention programs also might facilitate more emotional understanding of peers' experiences, which could foster more overall awareness and clarity about emotional experiences in interpersonal relationships (Hamilton et al., 2016).

In teaching emotional clarity, interventions should be careful to focus on fostering clarity above simply drawing attention to emotions. Research indicates that drawing attention to emotions without promoting understanding may backfire, leading to increased rumination and prolonged dysphoria (Ramos et al., 2007). Thus, interventions that lead to more emotional clarity might include mindfulness components, in which individuals are taught to approach their emotional experiences nonjudgmentally. In children, mindfulness interventions are associated with increased empathy, perspective-taking, and control over emotions (Schonert-Reifl et al., 2015). Mindfulness is also linked with improvements in emotional intelligence in adults (Ciarrochi et al., 2007). Although there is mixed evidence that mindfulness interventions are effective for adolescents (Tan, 2016), it is possible that adolescents also would experience increases in EC from mindfulness-based interventions, both in individual and group formats. Parents, teachers, and treatment providers should consider boosting emotional clarity as a useful way to

promote adolescent mental health. Increasing EC through prevention and intervention programs might decrease problematic outcomes for adolescents, such as depression, and increase positive outcomes, such as psychological well-being.

Overall, as the most comprehensive longitudinal study of adolescent emotional clarity, the present study determined that EC tends to decrease across adolescence, and this decrease may be limited to adolescent girls. Further, EC decreases are associated with negative outcomes, such as depression, and EC increases are linked with positive outcomes, such as well-being. Future research could expand on the present results by tracking EC over a longer period of time, to determine how EC changes throughout the life course. Learning how EC might develop during young, middle, and older adulthood would contribute to a more comprehensive understanding of the construct and would reveal if EC tends to solidify at any point in human development. Further, studies could also expand on the current findings by examining whether the sex difference in EC development leads to any differential outcomes, such as depression. Studies might also clarify whether there are any downsides to having high emotional clarity in addition to the tendency to experience more stressful life events. Studying which interventions may improve EC during adolescence and how EC improvement occurs also would enrich the current understanding of EC as a protective factor. Results from the present study, along with future research on emotional clarity development during adolescence, will set the foundation for psychological interventions that may promote adolescent mental health.

CHAPTER 2

SYSTEMATIC REVIEW OF THE LITERATURE

Introduction

Adolescence is a period marked by intense growth and change in various domains, including in the development of emotional processes. For youth, positive emotional development is important for psychosocial health and well-being; conversely, maladaptive emotional functioning is associated with negative outcomes, such as psychopathology (e.g. Hofmann, Sawyer, Fang, & Asnaani, 2012), risky behavior, and poor social relationships (for review, see Zeman et al., 2006). Inasmuch as adolescence is a stressful period during which individuals become more vulnerable to developing mental health issues (e.g., Hankin et al., 2007), it is imperative to examine the connection between emotional health and psychosocial adjustment. As a broad construct, emotional processing encompasses an array of factors that describe how people experience their emotions and the emotions of others in the realms of acceptance, appraisal, arousal, attention, awareness, clarity, control, differentiation, expression, intelligence, modulation, problem-solving, regulation, repair, rumination, and suppression, to name a few. As emotional processing is a multi-dimensional construct, understanding how each component specifically associates with psychosocial adjustment during adolescence will help illuminate which emotional factors are especially salient, and thus, might be fruitful targets for psychological intervention when developing in non-optimal fashion.

Described as both an emotion regulation strategy and an emotional intelligence factor, emotional clarity (EC) is the ability to identify, discriminate, and understand one's own emotional experiences (Gohm & Clore, 2000). As a component of emotion

regulation, emotional clarity is essential. Before one can engage in any explicit or implicit emotion modulation strategies, one must be able to identify the particular emotion he or she is experiencing (for review, see Denham, 2007). Emotional clarity is a unique construct because it directly invokes the meta-knowledge of one's experiences of emotion, and therefore, is associated with emotional intelligence (Salovey & Mayer, 1995). Conversely, lacking EC is considered a facet of alexithymia, which includes the inability to identify emotions in the self (Boden et al., 2013; Sifneos, 1973). Whereas emotional clarity is a specific construct focused on emotional self-identification and labeling, alexithymia is broad and encompasses a variety of dysfunctions in emotional cognition and processing. Alexithymia is considered a disorder that, along with lack of EC, also includes poor imagination, externally-oriented thinking, and difficulties parsing apart bodily versus emotional arousal (Bankier et al., 2001). Alexithymia also comes with the inability to fully experience empathy (Venta et al., 2012). The broad construct of alexithymia has been linked to negative psychosocial outcomes, such as depression and poor executive functioning (Tonkalampi et al., 2000; Koven & Thomas, 2010). Other poor outcomes, such as eating pathology, dissociation, substance use, and violence are associated with alexithymia during adolescence (for review, see Venta et al., 2012). Although alexithymia is an important marker for emotional dysfunction across the lifespan, its nature as a wide-ranging, multi-faceted construct leaves room for a more specific understanding of emotion dysregulation. In fact, a commonly used self-report measure, the Toronto Alexithymia Scale (Bagby et al., 1994a; 1994b), has several subscales that are often examined separately, including 1) difficulty identifying feelings (i.e., lack of emotional clarity), 2) difficulty describing feelings, and 3) externally-

oriented thinking. Thus, most research on alexithymia treats EC as its own distinct facet that warrants individual investigation. The focus of this review will be on the particular ability to identify and label emotions as opposed to alexithymia as a broad concept, in order to determine what developmental correlates might be specifically related to EC.

Further, emotional clarity has emerged as its own factor in the realm of emotional processing, and has been differentiated from many related, yet distinct, constructs. These studies help to further illuminate EC as a factor that deserves attention because it may contribute uniquely to psychosocial outcomes. In their original studies of meta-mood experiences, Salovey and Mayer (1995) distinguished emotional clarity from emotional repair and emotional attention. They theorized that understanding one's mood was separable from how one feels about their mood or interacts with their mood, and confirmatory factor analysis suggested that emotional clarity loads onto a unique factor in the Trait-Meta Mood Scale (Salovey & Mayer, 1995). Hierarchical clustering analysis of emotional processing measures also suggest that EC does not overlap other key emotion constructs, including ambivalence over emotional expressiveness, reactivity, emotional inhibition/expression, emotional intensity, monitoring, attention, or absorption (Gohm & Clore, 2000). Further studies have separated EC from emotional acceptance, control, and differentiation (Boden et al., 2013; Gratz & Roemer, 2004). In fact, emotional clarity may be related to other factors outside of emotional processing, such as beliefs about one's identity (Boden et al., 2013). Meta-knowledge about one's own mood, in conjunction with reflection on other emotion regulation strategies and the self, may all contribute to shaping an individual's emotional clarity.

Boden and Berenbaum (2011) differentiate between two types of emotional clarity: source awareness and type awareness. They posit that these factors are distinguishable and contribute separately to emotional understanding. Source awareness represents the ability of individuals to identify what causes their emotions. Previous research indicates that in mood induction tasks, source awareness leads to differences in emotional processing (for review, see Boden & Berenbaum, 2011). Self-report measures of source awareness typically ask individuals to rate themselves on a variety of items, to determine: 1) if they usually know the cause of their emotions, and 2) how much time it takes them to identify who or what led to an emotional experience. Conversely, most research that purports to measure EC is essentially investigating type awareness. This facet examines understanding and identification of the kinds of emotions one experiences, and the ability to distinguish between them. Thus, self-report measures of type awareness might ask individuals to rate how well they usually know how they are feeling, or how often they are confused by their feelings. The authors argue that source awareness and type awareness are likely to impact cognition in different ways, especially in the realms of psychopathology (Boden & Berenbaum, 2011). Source awareness could be useful for examining the cause of false beliefs (e.g., delusions) or assessing individual differences in motivation. On the other hand, emotional clarity type awareness is important because it identifies how well individuals perceive their own emotional experiences occurring internally, and this construct is the central topic of the present review.

Typically, and in the majority of studies included in this review, EC is assessed via self-report measures. These inventories allow participants to rate their own perceived

levels of emotional clarity or awareness using a Likert scale format. Measures of EC are often contained within larger measures of emotional functioning, such as the Difficulty Identifying Feelings subscale of the Toronto Alexithymia Scale (TAS; Bagby et al., 1994a; 1994b), the Clarity subscale of the Trait-Meta Mood scale (TMMS; Salovey et al., 1995), and the Lack of Emotional Clarity subscale of the Difficulties in Emotion Regulation scale (DERS; Gratz & Romer, 2004). More recent advances in the study of emotional clarity involve new measures adapted from these larger inventories, such as the Emotional Clarity Questionnaire (ECQ; Flynn & Rudolph, 2010). EC also can be measured via semi-structured interview (e.g., Hessler & Katz, 2010), in which trained interviewers ask participants to report on their experience and understanding of various emotions. Evaluating EC via self-report or interview is useful in understanding how individuals believe they make sense of their moods and how they use this information to process emotional material.

The aforementioned self-report measures of EC have been validated against other self-report and behavioral measures, which further substantiate their utility to capture perceived emotional clarity. In Salovey and Mayer's (1995) TMMS, emotional clarity loads onto its own factor and is negatively associated with ambivalence over emotional expression in adults. The ECQ (Flynn & Rudolph, 2010), which was adapted from the TMMS for use with youth, is correlated with various behavioral measures that capture in vivo experiences of emotional clarity. Low scores on the ECQ were associated with impairments in identifying and processing emotional information (measured through reduced preference in the right hemisphere) via facial expressions in the Chimeric Faces Task (Levy et al., 1983). Further, deficits in emotional clarity, as measured by the ECQ,

were linked with poor performance on the Diagnostic Assessment of Nonverbal Accuracy Faces task (Nowicki & Carton, 1993). In this computer task, youth are asked to indicate the emotion displayed on faces (e.g., sad, happy, fearful, or angry) in twenty-four trials. More errors in affective identification of facial expressions were associated with lower ECQ scores (Flynn & Rudolph, 2010). In the TAS, difficulty identifying feelings is negatively associated with psychological mindedness and affective awareness, as rated by a trained interviewer (Bagby et al., 1994b). The DERS also has shown good construct and predictive validity (Gratz & Roemer, 2004). The lack of EC subscale of the DERS is associated with negative mood regulation, experiential avoidance, lack of emotional expressivity, and increased likelihood of self-harm in women (Gratz & Roemer, 2004). Overall, the widely-used self-report measures of EC have demonstrated good reliability and validity across populations, which illustrates the central link between EC and other emotional and behavioral indices of poor emotional functioning.

A growing number of studies reveal an association between emotional clarity and mental health in adults. Salovey and Mayer (1990) linked EC with adaptive psychological processes, including everyday coping and problem solving. Individuals high in EC are likely to utilize active coping strategies, reinterpret stressful events as positive, exhibit conscientiousness, and experience well-being (Gohm & Clore, 2002). Emotional clarity also can be considered a resilience factor; high levels of the construct are associated with protecting older adults with chronic pain from increased depressive symptoms over time (Kennedy et al., 2010). Additionally, adults with high EC were more likely to find meaning in life than those with low clarity, even in the presence of existentially threatening thoughts (e.g., thoughts about death; Abeyta et al., 2015). Thus,

EC seems to promote psychological well-being and be protective against negative outcomes in adults.

Conversely, deficits in emotional clarity in adults are associated with maladaptive adjustment, such as negative affect, neuroticism, and depressive symptoms (Coffey et al., 2003; Gohm & Clore, 2002; Salovey et al., 1995). In fact, EC deficits in adults can be seen as transdiagnostic risk factors for a variety of psychopathologies, including depression, borderline personality disorder, binge eating, social anxiety disorder, and alcohol use (Vine & Aldao, 2014). Additional research in college-aged and adult samples reveals important connections between low EC and risky behaviors. Lacking emotional clarity is associated with more alcohol use in college students and more frequent negative consequences associated with alcohol, such as interpersonal problems, impaired control, and academic/occupational consequences (Dvorak et al., 2014). In combat veterans with post-traumatic stress disorder, low EC leads to more alcohol use (Tripp & Dewitt-Murphy, 2015). Furthermore, cannabis abusers have more difficulty identifying feelings than non-substance users (Dorard et al., 2008). Deficits in EC, in combination with high cognitive reappraisal (i.e., changing the impact of emotionally-laden situations), are associated with cannabis misuse in patients who use cannabis for medical purposes (Boden et al., 2013). In inpatients, poor emotional clarity was an independent predictor of risky sexual behavior, such as number of sexual partners and failing to practice safe sex while intoxicated (Tull et al., 2012). Based on these wide-ranging outcomes, lacking the ability to identify and label emotions may have deleterious consequences for mental health and put adults at risk for a variety of psychosocial problems.

Further, a small body of research has examined the developmental correlates of emotional clarity in children. For youth, deficits in EC have been linked to poor responses to interpersonal stress (e.g., bullying), such as disengagement coping and dysregulated involvement with stressors, including rumination. Over time, this relationship between low EC and poor coping predicted increases in depressive symptoms (Flynn & Rudolph, 2010; 2014). These findings reveal that at a young age, impaired emotional functioning via low emotional clarity may lead to stunted development of coping strategies, which creates a vulnerability to depression. Children with poor emotional understanding may expend too much effort trying to make their own feelings clear, and therefore, might find it more challenging to direct cognitive resources to more adaptive ways of coping. Further, impaired emotional understanding in children may be a product of, or a precursor to, poor parenting behaviors. Studies indicate that childhood maltreatment, exposure to domestic violence, and insecure attachment to parents are associated with low emotional competence (Barone & Lionetti, 2011; Katz et al., 2007; Shipman & Zeman, 1999). For children, deficits in the ability to comprehend emotions are also associated with behavioral problems and poor friendship quality (Cook et al., 1994; Laghi et al., 2014). Thus, for children, lacking emotional clarity is associated with a variety of poor outcomes, in the realms of family environment, peer relationships, coping, and psychopathology.

In children and adults, EC has emerged as an important emotion regulation tool associated with a variety of psychological and behavioral outcomes. As a crucial period of development marked by intense and rapid change, adolescence is a key time to identify risk factors for psychopathology and protective factors for adaptive functioning. During

adolescence, important emotional circuitry in the brain is undergoing rapid development, with neurobiological systems increasing in sensitivity during the adolescent years (Luciana, 2013; McLaughlin et al., 2015). Specifically, adolescents experience exaggerated amygdala activity and ongoing prefrontal cortical development, two changes in the brain that are associated with increased intensity of emotions and emotion regulation (McLaughlin et al., 2015). Moreover, stressful life events increase markedly around the onset of puberty (Ge et al., 1994), which raises the ability to identify and understand one's emotional responses to stress to even greater importance. Adolescence is also a time in which many forms of psychopathology, such as depression, emerge (e.g., Hankin et al., 2007). Thus, adolescence presents a key time point to examine emotional functioning and its connection to psychosocial outcomes.

Therefore, the goal of the current systematic review is to examine emotional clarity during adolescence and its association with negative and positive outcomes. By reviewing the literature on EC and psychosocial outcomes in a systematic fashion, we aim to identify which psychosocial factors are consistently linked with EC during adolescent development. This review will highlight the specific correlates of EC during adolescence and explore systematically what other factors might be implicated in the relationship between EC and psychosocial outcomes, as indicated by the literature. Further, because this is an important and growing area of study, we hope to synthesize the current literature so that the findings may be applicable to psychosocial intervention. A recent systematic review of emotional intelligence during adolescence (Resurreccion et al., 2014) highlights that the study of emotional intelligence factors is becoming more widespread during adolescence, with the hope that these factors are malleable and able to

be taught (Brackett et al., 2011). However, no such review exists for emotional clarity in adolescents. Thus, the current review builds on past research by focusing on one specific facet of emotional processing and its association with diverse outcomes for adolescents, with the ultimate goal of informing psychosocial intervention.

Method

A systematic review of the literature was completed to examine the correlates of emotional clarity during adolescence. To capture all investigations examining emotional clarity during adolescence, peer reviewed articles published through November 2015 were gathered through a search of the PsychINFO database. A keyword search was conducted with the terms: ‘emotional clarity’, ‘emotional awareness’, or ‘emotional understanding’, and adolesc*, child*, youth, or teen. Inclusion criteria were: a) empirical studies, b) articles written or available in English, c) target population included individuals between the ages of 12 and 17 years, d) measurement of the construct of emotional clarity, emotional awareness or emotional understanding, f) outcome represents some measure of adolescent functioning (e.g., internalizing symptoms, personality traits, risky behaviors). Exclusion criteria were: 1) studies only assessing psychosocial interventions or scale development, and 2) target population focusing on youth with Autism or learning disabilities. To ensure fidelity, two investigators (LMR and BAM) independently hand searched the included studies and resolved discrepancies through discussion. Across stages of the search and selection process, agreement between raters ranged from 93% to 97% (Mean = 95%). Raters discussed all disagreements and reached consensus on discrepant items. See Figure 7 for an explanation of the selection process.

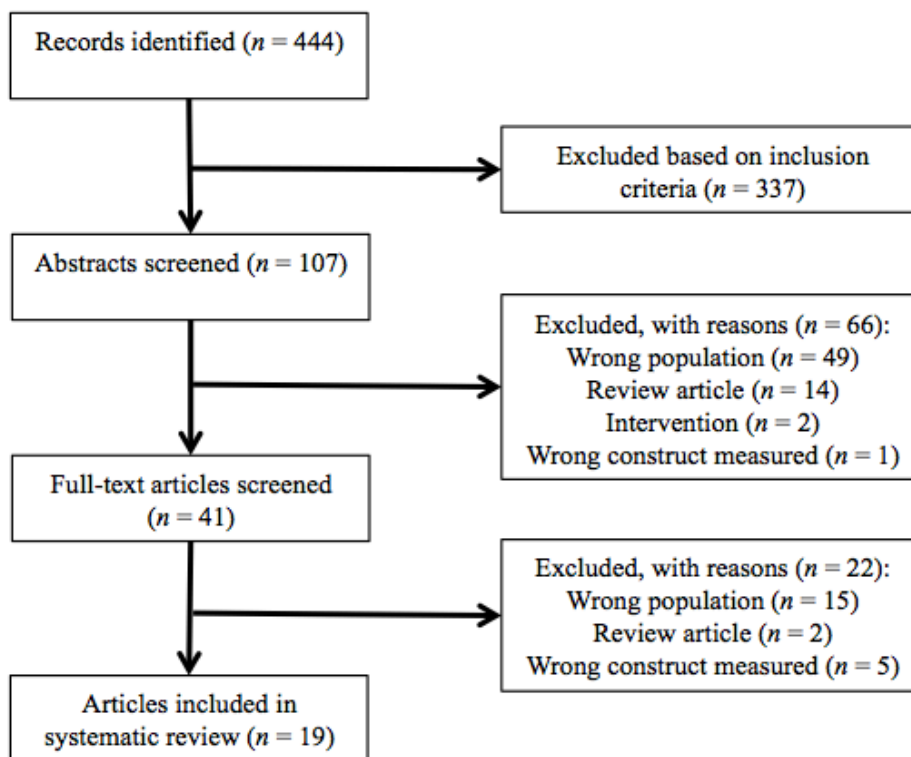


Figure 7. Flow diagram outlining the selection process.

Results

The literature search and systematic selection of articles yielded 19 empirical articles that assessed emotional clarity, understanding, or awareness in an adolescent sample. All of the studies utilized self-report measures, and one also included an interview (Hessler & Katz, 2010). Measures used include the EC subscale of the TMMS (Salovey & Mayer, 1995), ECQ (Flynn & Rudolph, 201), Lack of Emotional Awareness subscale of the DERS (Gratz & Romer, 2004), Poor Awareness subscale of the Emotion Expression Scale for Children (EESC; Penza-Clyve & Zeman, 2002), Emotional Awareness Questionnaire, revised version (EAQ; Rieffe et al., 2007), Emotion Awareness subscale of the TAS (Bagby et al., 1994a; 1994b), and the

Awareness/Understanding of Emotion subscale of the Child and Adolescent Meta-Emotion Interview (Hessler & Katz, 2010; Katz & Windecker-Nelson, 2004). Cronbach's alpha for the scales measuring EC in the present review ranged from $\alpha = .68$ to $.92$, indicating acceptable to excellent reliability (see Table 5). The articles reviewed utilized moderate to large sample sizes, ranging from $n = 67$ to 2400. The studies included adolescents from a variety of countries, including the United States, Canada, Italy, and Spain. Participants ranged in age from 11-19. The majority of studies (14) were conducted with community adolescents often recruited from schools, two studied psychiatric inpatients (Perez et al., 2012; Powell et al., 2011), one examined juvenile offenders (Miller et al., 2012), one included adolescents with high and low levels of conduct problems (Hessler & Katz, 2010), and one examined sexual minority adolescents (Hatzenbuehler et al., 2008). Many of the articles reviewed (11) utilized a cross-sectional study design, whereas eight utilized longitudinal designs. All of the articles measured EC quantitatively and utilized quantitative data in analyses. Comparable to the standards for publication in peer-reviewed journals, all articles included were felt to meet high standards for quality of research. No major methodological concerns were noted. All of the studies reviewed used reliable measures, assessed moderate to large sample sizes, and published in peer-reviewed journals from reputable research sites.

Internalizing Problems

Many of the empirical studies in this review supported a connection between lacking emotional clarity and internalizing problems (i.e., anxiety and depression) during adolescence. Although some studies examined a cross-sectional relationship between poor emotional awareness and mental health concerns like depression, others examined

the prospective association of these constructs. Further, these investigations propose a variety of potential mechanisms linking poor EC and internalizing problems.

Concurrently and longitudinally, research indicates a complex relationship between EC and internalizing problems. Generally, EC is negatively related to internalizing outcomes, including depression and anxiety, at the same time point and over time (e.g., Hatzenbuehler et al., 2008; McLaughlin et al., 2011; Salguero et al., 2012). Although some research illustrates that emotional clarity alone is not a longitudinal predictor of internalizing problems (Salguero et al., 2012), other findings indicate that emotional awareness buffers against increases in negative affect over a one-year follow up period (Ciarrochi et al., 2011). Out of all the studies reviewed, only one (Rubenstein et al., 2015) examined a developmental trajectory of EC during adolescence over time, in the context of internalizing issues. This study revealed that depressive symptoms predict decreases in emotional clarity over two years during adolescence. Specific to girls, rumination (i.e., passively and repetitively focusing on negative affect) mediated the link between depressive symptoms and decreased EC prospectively. Thus, the relationship between internalizing problems and EC may be cyclical in nature.

Sex specificity

In a cross-sectional analysis, Oliva and colleagues (2014) found that emotional clarity was inversely related to internalizing symptoms, but only in female adolescents. This study also found that for girls with low EC, higher levels of empathy are associated with more internalizing problems. Also specific to only female adolescents, Hamilton and colleagues (2014) found that early pubertal timing (i.e., showing physical signs of

TABLE 5. ARTICLES INCLUDED IN THE PRESENT SYSTEMATIC REVIEW

Study	Sample	EC Scale (α)	Study Time	Outcome Variable(s)	Summary of Findings
Ciarrochi et al., 2002	$n = 137$ (55% female), ages 16-18 ($M = 16.9$)	LEAS (.89), TAS (.81)	Cross-sectional	Help-seeking behaviors	Emotional awareness had a significant multivariate relationship with help seeking for personal-emotional problems and a significant univariate relationship with help seeking from personal sources and one non-personal source.
Ciarrochi et al., 2011	$n = 776$ (50% female), M age = 15.4 ($SD = 0.5$), Australian	TAS (.85)	Longitudinal (1 year)	Personality traits	Emotional awareness negatively correlated with fear, hostility, sadness, and positively correlated with positive affect; emotional awareness predicted decreases in sadness, hostility, and fear.
Eastabrook et al., 2014	$n = 123$ females, ages 13-16 ($M = 14.5$, $SD = 0.9$), Canadian	DERS (.83)	Cross-sectional	Internalizing problems	Emotional awareness was negatively correlated with depression and anxiety; reappraisal accounted for the effect of emotional awareness on depressive symptoms and suppression accounted for the effect of emotional awareness on social anxiety symptoms.
Extremera et al., 2007	$n = 498$ (59% female), ages 12-19 ($M = 15.8$, $SD = 1.6$), Spanish	TMMS (.81)	Cross-sectional	Psychosocial adjustment, stress	EC positively correlated with optimism and life satisfaction; EC negatively correlated with perceived stress; males had higher EC than females.
Fernandez-Berrocal et al., 2006	$n = 250$ (52% female), ages 14-19 ($M = 14.7$, $SD = 0.6$), Spanish	TMMS (.81)	Cross-sectional	Internalizing problems	EC positively correlated with psychological health/self esteem; EC was negatively associated with depression, anxiety, and thought suppression; high EC was associated with less anxiety, even when accounting for self-esteem and thought suppression.
Fossati et al., 2014	$n = 91$ (49% female), M age = 16.7 ($SD = 1.7$), Italian, grouped based on BPD features	DERS (.79)	Cross-sectional	Borderline personality disorder	Girls scored higher in lack of EC than boys; high BPD group scored higher on lack of EC than moderate BPD, and moderate BPD scored higher than low BPD group.
Hamilton et al., 2014	$n = 318$ (54% female), ages 12-13 at Time 1 ($M = 12.8$, $SD = 0.6$)	ECQ (.82)	Longitudinal (10 months)	Depressive symptoms, pubertal timing	Early pubertal timing predicted increases in depressive symptoms for girls with poor EC, but not for boys, prospectively.
Hamilton et al., 2016	$n = 355$ (53% female), ages 12-13 at Time 1 ($M = 12.8$, $SD = 0.6$)	ECQ (.81)	Longitudinal (9 months)	Internalizing problems, peer victimization	Low EC predicted greater peer victimization for girls; low EC contributed to more peer victimization, which predicted more depressive and anxiety symptoms in girls, but not boys, over time.
Hatzenbuehler et al., 2008	$n = 1071$ (49% female), ages 11-14, split into groups based on sexual minority status	EESC (.88)	Longitudinal (7 months)	Internalizing problems	Sexual minority group had lower emotional awareness; poor emotional awareness was correlated with internalizing symptoms; rumination + poor emotional awareness mediated the relationship between sexual minority status and internalizing symptoms.
Hessler & Katz, 2010	$n = 88$ (36% female), M age = 16.1 ($SD = 0.6$), had conduct sxs as children	CMEI (.68)	Cross-sectional	Risky behavior (drug use, sex)	Greater emotional awareness was associated with decreased likelihood of using hard drugs, not associated with number sexual partners or other behavior problems.

Table 5. (continued)

Study	Sample	EC Scale (α)	Study Time	Outcome Variable(s)	Summary of Findings
McLaughlin et al., 2011	$n = 1065$ (49% female), ages 11-14	EESC (.82-.92)	Longitudinal (7 months)	Internalizing problems, maladaptive behavior	Baseline lack of emotional understanding correlated with depression, anxiety, aggressive behavior, eating attitudes, sadness management, and rumination, both concurrently and at the follow-up assessment
Miller et al., 2012	$n = 94$ (42% female) ages 12-18 ($M = 16.2$, $SD = 1.3$), in the criminal justice system	DERS (.78)	Cross-sectional	Risky behavior (violence)	Negative affect, anxiety, guilt, and anger correlated with lack of EC; negative affect and anxiety were significantly related to violence for those with low EC.
Oliva et al., 2014	$n = 2400$ (56% female), ages 12-17 ($M = 14.7$, $SD = 1.3$), Spanish	TMMS (.89)	Cross-sectional	Internalizing problems	EC moderated the relationship between empathy and internalizing problems in girls; more empathy led to more internalizing problems for those with low EC.
Perez et al., 2012	$n = 218$ (59% female), ages 12-17 ($M = 15.9$, $SD = 1.4$), psychiatric inpatients	DERS (.85)	Cross-sectional	Non-suicidal self injury	Non-suicidal self injury group scored higher on lack of EC than group that did not self-injure.
Powell et al., 2011	$n = 67$ (43% female), ages 12-17, psychiatric inpatients	EAQ (not reported)	Cross-sectional	Psychosocial development	Emotional awareness positively correlated with bodily awareness, autonomy vs. shame, industry vs. inferiority, identity vs. role confusion, and intimacy vs. isolation.
Remmes & Ehrenreich-May, 2014	$n = 76$ (52% female), ages 12-18 ($M = 15.4$, $SD = 1.71$) with a primary anxiety or depression diagnosis	EESC (.83)	Cross-sectional	Parental emotion regulation strategies	Poor emotional awareness was associated with parental use of emotional suppression; positive relationship existed between parent-reported use of emotion-dismissing strategies and youth-reported poor emotional awareness (non-significant trend).
Rubenstein et al., 2015	$n = 223$ (52% female), ages 12-13 at Time 1 ($M = 12.4$, $SD = 0.6$)	ECQ (.81-.88)	Longitudinal (2 years)	Depressive symptoms	Depressive symptoms predicted decreases in EC; rumination mediated the relationship between depressive symptoms and decreases in emotional clarity among girls over time.
Salguero et al., 2012	$n = 358$ (50% female), ages 13-17 ($M = 14.4$, $SD = 1.3$), Spanish	TMMS (.82)	Longitudinal (1 year)	Internalizing symptoms, mental health	EC positively correlated with mental health and negatively correlated with anxiety, depression, and social stress; EC did not predict adjustment over time.
Stange et al. 2012	$n = 256$ (54% female), ages 12-13 at Time 1 ($M = 12.3$, $SD = 0.6$)	ECQ (.82)	Longitudinal (9 months)	Depressive symptoms, life stress	Low EC and high negative cognitive styles interacted to predict depressive symptoms following life stress; EC buffered against the impact of life stress on depressive symptoms for those with negative cognitive styles.

Note. BPD: Borderline personality disorder; CMEI: Awareness/Understanding Emotion subscale of the Child and Adolescent Meta Emotion Interview; DERS: Lack of Emotional Clarity subscale of the Difficulties in Emotion Regulation Scale; EAQ: Emotional Awareness Questionnaire; EC: Emotional clarity; ECQ: Emotional Clarity Questionnaire; EESC: Emotional Awareness subscale of the Emotion Expression Scale for Children; LEAS: Levels of Emotional Awareness Scale; TAS: Difficulty Identifying Feelings subscale of the Toronto Alexithymia Scale; TMMS: Emotional Clarity subscale of the Trait-Meta Mood Scale.

puberty earlier than same-sex peers) predicted depressive symptoms approximately one year later for girls with low EC. This result indicates that for girls who are particularly vulnerable to depression based on early physical maturation, lacking the skills to understand emotions puts them at a greater risk for internalizing problems. This study also linked poor EC with higher levels of negative cognitive styles (i.e., the tendency to ascribe internal, stable, and global causes to negative events) during adolescence, another well-established vulnerability to depression (Alloy et al., 2006). Thus, during this crucial period of development, low EC may confer risk for internalizing problems, and this effect could be magnified for girls whose development does not mimic that of their same-aged peers.

Differences in type of internalizing pathology

EC may have a differential impact on separate types of internalizing problems (e.g., anxiety vs. depression), based on the other emotional mechanisms involved. McLaughlin and colleagues (2011) found that an integrated model of emotion regulation, which included emotional understanding, along with three other emotion regulation factors, significantly predicted anxiety, but not depression, for adolescents. Additionally, EC was an independent contributor to anxiety during adolescence, even after accounting for the effects of thought suppression and low self-esteem, which are well documented correlates of internalizing symptoms (Fernandez-Berrocal et al., 2006). However, when a similar model was analyzed for depression, EC did not remain a significant contributor. In a study examining only female adolescents, Eastabrook and colleagues (2014) found that, whereas emotional awareness was negatively correlated with depression and social anxiety, pathways of vulnerability were distinct. In a cross-sectional design, reappraisal

(e.g., adaptive reframing of a negative, emotionally-laden situation) significantly mediated the relationship between emotional awareness and depression, whereas emotional suppression mediated the link between emotional awareness and social anxiety. In the first model, more awareness of emotion was related to more reappraisal, which was, in turn, associated with lower levels of depressive symptoms. Likewise, emotional awareness was associated with lower levels of emotional suppression, which related to lower levels of social anxiety (Eastabrook et al., 2014). As poor emotional clarity is related to both anxiety and depression, it is evident that the mechanisms underlying this increased vulnerability may be different, based on the type of internalizing problem present for each adolescent.

Life stress

As levels of internalizing problems increase during adolescence, so do experiences of life stress (Ge et al., 1994). Stange and colleagues (2012) examined how emotional clarity deficits may promote depressive symptoms in the face of stressful life events over time. To measure stress, the authors employed an interview that assessed a variety of negative life events, in the realms of school achievement, family, social relationships, and appearance-related stressors. Results indicated that although emotional clarity itself was not significantly correlated with stress, low EC interacted with negative cognitive style to predict increases in depressive symptoms over time for adolescents who experienced greater stress. One investigation of internalizing problems and EC (Hatzenbuehler et al., 2008) focused on a specific population of adolescents who may be particularly vulnerable to stress due to social stigma or rejection—those who self identify as gay, lesbian, or bisexual. The authors found that, at two time points, sexual minority

adolescents had poorer emotional awareness than heterosexual adolescents. Further, a composite variable of emotion regulation (rumination + low emotional awareness) mediated the relationship between sexual minority status and increases in anxiety and depression over a 7-month period. These results lend evidence to the hypothesis that deficits in EC can increase risk for internalizing problems, whereas having high EC may buffer against this vulnerability, even in the context of stress.

Risky Behavior

Although low emotional clarity is a risk factor for internalizing psychopathology, it is also important to examine how low EC is implicated in externalizing problems, as manifested through maladaptive behaviors. Research in this area utilizes a variety of methodologies, including cross-sectional and behavioral high-risk designs, which examine diverse groups of adolescents (e.g., juvenile offenders and psychiatric inpatients). In a sample of community adolescents, low EC was associated with self-reported aggressive behavior (e.g., threatening peers; McLaughlin et al., 2011). Adolescents in the criminal justice system follow a similar pattern, in which poor EC is associated with anger (Miller et al., 2012). Further, for juvenile offenders with poor emotional clarity, negative affect and anxiety were significantly associated with acts of violence (e.g., fighting or threatening someone with a weapon). Therefore, deficits in the ability to identify and label internal emotional experiences may lead to outwardly antisocial behavior in a variety of contexts.

Low levels of emotional clarity also may be implicated in risky behaviors that have direct effects on personal health. In adolescent psychiatric inpatients, deficits in EC were associated with general impulsivity and the frequency, duration, and severity of

non-suicidal self-injury (Perez et al., 2012). A behavioral high-risk study that followed children who had conduct problems into adolescence discovered that higher levels of emotional awareness were associated with a decreased likelihood of using hard drugs during adolescence, but not with number of sexual partners or other behavior problems (Hessler & Katz, 2010). Poor emotional clarity also is implicated in the tendency for adolescents to not seek help for suicidal thoughts or other personal/emotional problems. After controlling for hopelessness, deficits in emotional awareness were associated with a decreased likelihood to seek help from personal sources (pastor/priest, teacher, youth group leader) and a non-personal source (phone help line; Ciarrochi et al., 2002). Additionally, low EC related to individuals refusing to seek help from parents, and generally indicating that they would not seek any help for a problem. Thus, lacking good emotional resources may prevent adolescents from adaptive help-seeking behaviors in times of need. An overall deficit in emotional clarity may have a variable, yet significant, impact on promoting risky behaviors and inhibiting adaptive behaviors for adolescents across a variety of populations.

Interpersonal Relationships

A small number of studies in the present review examine EC in the context of interpersonal relationships. These investigations begin to shed light on the connection between low EC and dysfunction in relationships with parents and peers. Generally, low EC is associated with higher rates of social stress (i.e., feelings of tension and exclusion in relationships) and social anxiety (Eastabrook et al., 2014; Salguero et al., 2012). Hamilton and colleagues (2016) found that for adolescent girls, poor emotional clarity predicted a greater frequency of relational peer victimization (e.g., bullying) over a 9-

month period. This deficit in the ability to label and identify emotions in girls led to an increased vulnerability to bullying by peers, which then contributed to symptoms of depression and anxiety in this prospective study. Poor EC in adolescents is also associated with negative outcomes for the parent-child relationship. In a sample of adolescents with a primary diagnosis of depression or anxiety, lower levels of adolescent emotional awareness associated with more use of emotional suppression as a maladaptive emotion regulation tool in parents (Remmes & Ehrenreich-May, 2014). The authors also found a marginally significant trend supporting the relationship between poor emotional awareness in adolescents and parental use of emotion-dismissing strategies to cope with their children's negative emotions. These studies, although limited in scope, reveal the connection between lacking EC and dysfunction in relationships with others.

Personality and Adaptive Development

Some studies that examine EC reveal its connection with personality traits that are often considered stable across the life course. Adolescence is a time of much change and also a period during which personality traits combine with an emerging sense of identity development, in part due to the new capacity for abstract thinking (for review, see Klimstra, 2013). Therefore, adolescence is a crucial time to examine how EC is linked with personality characteristics. In the sole study of personality disorder and EC in adolescents, Fossati and colleagues (2014) found that personality pathology, specifically in the realm of borderline personality disorder (BPD) features (e.g., affectivity and identity disturbances, interpersonal instability, fear of closeness, self-harm/suicidal behavior, dissociation, impulsive behavior, and psychotic symptoms) was associated with poor emotional clarity. Adolescents high in BPD features (top 3% of the distribution)

scored lower on EC than the moderate BPD group (average in the distribution), and the moderate group scored lower in EC than low BPD individuals (bottom 3% of the distribution). Thus, EC was related dimensionally to the amount of BPD features adolescents exhibited.

Just as lacking emotional clarity is often examined as a risk factor for negative outcomes, studying adaptive levels of the construct can reveal important positive psychosocial outcomes. In general, emotional clarity increases over adolescence (Rubenstein et al., 2015). High EC therefore can be considered a resilience factor, and many studies have taken this approach to reveal how EC is associated with positive traits. EC is associated with general mental health (e.g., low distress and high well-being), optimism, self-esteem, and life satisfaction during adolescence (Extremera et al., 2007; Fernandez-Berrocal et al., 2006; Salguero et al., 2012). High emotional awareness is also linked with positive affect and the tendencies to mindfully observe internal and external states, act with awareness, and experience acceptance (Ciarrochi et al., 2011). Adaptive personality traits, including openness, conscientiousness, agreeableness, and extraversion are all positively associated with emotional awareness during adolescence; conversely, neuroticism, psychoticism, and hopelessness are negatively correlated with EC (Ciarrochi et al., 2002; 2011). EC also is correlated with aspects of the Eriksonian stages of personality development linked to psychosocial health in adolescents, such as autonomy vs. shame, industry vs. inferiority, identity vs. role confusion, and intimacy vs. isolation (Powell et al., 2011). EC is negatively related to maladaptive cognitive strategies, such as rumination (Hatzenbuehler et al., 2008; Rubenstein et al., 2015) and thought suppression (Eastabrook et al., 2014; Fernandez-Berrocal et al., 2006). Longitudinally, EC buffers

against the development of aspects of negative affect, including fear, hostility, and sadness (Ciarrochi et al., 2011). Thus, EC may not only relate to positive traits, but also may protect against the development of poor outcomes.

In every study that examined other emotion regulation factors alongside emotional clarity, there was a positive relationship between EC and adaptive emotional processing and an inverse relationship between EC and poor emotional functioning. Research on emotional clarity using the TMMS revealed that EC is linked with a greater ability to regulate feelings (i.e., emotional repair) and a higher tendency to observe, think about, and attend to emotions (Extremera et al. 2007; Fernandez-Berrocal et al., 2006; Salguero et al., 2012). Powell and colleagues (2011) found that high EC is negatively associated with maladaptive facets of alexithymia, including dysfunction in describing emotions and externally-oriented thinking/poor imaginative capacity. Using the DERS, EC is also inversely associated with emotional impulsivity (i.e., experiencing emotions as out of control) and lacking goal-directed behavior in the face of negative emotions (i.e., difficulty accomplishing tasks when feeling upset; Fossati et al., 2014; Miller et al., 2012; Perez et al., 2012). Emotional clarity also negatively related to nonacceptance of emotions, such as feeling guilty for being upset, and lacking the tools to utilize emotion regulation strategies (i.e., wallowing, experiencing emotional distress; Fossati et al., 2014; Miller et al., 2012; Perez et al., 2012). These connections reveal EC's consistent relationship with adaptive emotional functioning in other separate, but related areas.

Sex Differences

Throughout the literature on emotional clarity during adolescence, findings consistently support sex differences in the ability to identify and label emotions. Across a

variety of adolescent samples (e.g., Spanish, Italian, American), boys tend to score higher on measures of EC than girls (Extremera et al. 2007, Fossati et al., 2014; Oliva et al., 2014; Powell et al., 2011; Rubenstein et al., 2015). Rubenstein and colleagues (2015) revealed that, like sex differences in internalizing problems, sex differences in EC might emerge over time. In a longitudinal study, they found that adolescent girls and boys did not differ in EC at Times 1 and 2 in the study (M ages = 12.4 and 13.8 years, respectively), but at Time 3 (M age = 14.7 years), adolescent boys demonstrated greater EC than their female peers (Rubenstein et al., 2015). Adolescent girls may also be at increased risk for negative outcomes because of low EC. Low EC moderates the link between peer victimization and internalizing problems for adolescent girls, and EC deficits might lead girls with early pubertal development to experience more symptoms of depression (Hamilton et al., 2014; 2016). Other emotional processing mechanisms, such as experiencing empathy, may lead to internalizing difficulties in girls, but not boys, with low EC (Oliva et al., 2014). In the realm of EC development, girls are particularly vulnerable to experiencing decreases in EC when they use rumination as a maladaptive response style to depressive symptoms (Rubenstein et al., 2015). Therefore, sex differences in EC reveal that, not only do adolescent girls consistently score lower than boys, but this deficit might also place girls at an increased risk for negative psychosocial outcomes.

Discussion

Ultimately, the results of the present systematic review reveal the connection between emotional clarity and psychosocial outcomes during adolescence. In cross-sectional and longitudinal studies, deficits in EC are consistently linked with internalizing

problems, such as depression and anxiety. The association between low EC and internalizing difficulties is more pronounced in girls and also seems to be mediated by different factors in the development of depression than of anxiety. Poor emotional awareness also may lead to more internalizing problems for adolescents in the face of life stress. Further, deficits in EC are implicated in adolescent risky behavior and may negatively impact relationships with parents and peers. In a number of studies, EC is linked with positive personality traits and other indicators of beneficial mental health and emotional development. By mid-adolescence, girls tend to be worse at identifying and labeling emotions than boys, which may put them at greater risk for negative outcomes. Across diverse adolescent populations, including Americans, Europeans, inpatients, juvenile offenders, and individuals in the sexual minority, there is a consistent link between poor emotional clarity and negative psychosocial outcomes.

Developmental Mechanisms

Examining the mechanisms by which poor EC leads to negative outcomes, and high EC links with adaptive outcomes, is crucial in understanding how this specific emotional processing factor impacts adolescent development. The majority of studies (11) included in the present review examined internalizing problems as correlates or outcomes of EC deficits. These studies reveal several key mediators of this relationship, including cognitive and emotional factors, developmental factors, and stress. Many of these models are specific to adolescent girls. This is congruent with past research illustrating that as sex differences in internalizing problems, especially depression, emerge during adolescence, girls become more vulnerable to disorder than boys (Hankin et al., 1998). Sex differences in EC also seem to emerge during adolescence (Rubenstein

et al., 2015), and thus, girls might become more vulnerable to a variety of pathologies at this time. This relationship could be cyclical in nature, in which preexisting vulnerabilities in adolescent females (i.e., vulnerability to interpersonal stress, early pubertal timing) lead to decreases in emotional clarity, which creates more vulnerability to internalizing difficulties and further decreases in emotional clarity over time.

Thus, certain mechanisms, such as interpersonal stressors, linking low EC with poor outcomes may be specific to girls. Based on classic gender roles, females tend to experience more empathy than males and often are placed in a more expressive role in relationships than males, in which they are prone to interpersonal sensitivity (Bem, 1974; Oliva et al., 2014). Although empathy is generally considered adaptive for promoting interpersonal relationships, adolescent girls who are unable to understand their emotions may not be adept enough to constructively utilize empathic responses to others without putting themselves at risk for disorder. Adolescent girls with poor EC may be more likely to internalize others' emotional difficulties instead of using empathy as a tool for promoting social support. Female adolescents also are consistently more vulnerable to the effects of interpersonal stress than boys (Hamilton et al., 2016; Paquette et al., 1999). As adolescence is a time of marked development, it is also important to examine the impact of puberty on the connection between internalizing problems, interpersonal stress, and EC. Particularly for girls who mature earlier than peers, deficits in EC may be associated with difficulties comprehending the emotions associated with a more mature pubertal status (Hamilton et al., 2016). Having more adaptive levels of emotional clarity may be particularly important for early developing adolescent girls, given that they might be challenged with the precocious confrontation of mature social expectations before other

peers, leading to interpersonal stress that early maturing boys may not experience. Thus, the results that girls are especially susceptible to internalizing problems when lacking EC reveal important connections between female-specific risk factors in the socio-developmental realm.

More generally, adolescents of both sexes experience increases in stress throughout adolescence (Ge et al., 1994). All adolescents who experience deficits in emotional clarity may be more vulnerable to a variety of stressors, which could further increase these adolescents' risk for negative outcomes. Prospective models (e.g., Stange et al., 2012) support an emotion-vulnerability-stress model for depression, indicating that deficits in EC exacerbate the association between stress and depressive symptoms. In the realm of internalizing problems, lacking EC especially increases risk for adolescents who have negative cognitive styles, perhaps because they have less emotional insight into their difficulties (Stange et al., 2012). Thus, these adolescents may be especially vulnerable to depression because they are likely to interpret stressful experiences more negatively, which would enhance the amount of distress associated with these experiences. Adolescents with poor EC also might lack the buffering impact of emotional understanding to promote adaptive emotional processing, such as adaptive reappraisal or coping. Experiencing more distress following stressful life events may be harder to understand and cope with for adolescents with low emotional clarity. It is additionally possible that the stressors some minority groups—such as gay, lesbian, or bisexual adolescents—encounter because they are different than the majority of their peers (i.e., rejection, stigma-related stress) may contribute to deficits in the development of emotional clarity. Stress and poor EC appear to be linked for adolescents in a variety of

contexts, and this connection appears to make adolescents more vulnerable to developing anxiety and depression. Deficits in EC can increase risk for internalizing problems like depression, whereas having high EC may buffer against this vulnerability, even in the context of stress.

As EC is consistently connected to both depression and anxiety during adolescence, it is useful to understand the specific mechanisms underlying these relationships. Interestingly, there seems to be a differential relationship between EC and experiences of anxiety and depression during adolescence. Some studies reveal that whereas lacking EC may directly contribute to anxiety symptoms, the mechanisms behind EC's association with depression may be more complex (e.g., Fernandez-Berrocal et al., 2006). In the realm of anxiety, adolescents with poor awareness of emotional experiences may be more likely to utilize thought suppression, due to a lack of full emotional competence and understanding of a range of emotional experiences. As proficient emotional processing is key to navigating social situations and connecting with others, this combination of vulnerabilities may lead adolescents to withdraw or experience anxiety in a social context (Eastabrook et al., 2014). Conversely for depression, the ability to be clear about emotions may allow adolescents to utilize other adaptive emotion regulation skills that buffer against depression and may help individuals to reappraise instead of ruminating or succumbing to negative social comparisons (Eastabrook et al., 2014). Depressive symptoms themselves might also lead to decreases in the ability to identify and label emotions over the course of adolescence, via experiences of rumination (Rubenstein et al., 2015). Rumination, as a maladaptive response style to depressed mood (Nolen-Hoeksema, 1991), may sap cognitive resources

away from emotional processing and lead to confusion over emotional states. Thus, although the relationship between low EC and the development of different forms of internalizing pathology is well-established, the mechanisms behind these connections appear to be different.

The pathway that connects deficits in emotional clarity with risky behavior, such as substance use, is also an important area that warrants future research. Currently, although studies have connected low EC and risky behavior during adolescence, all of these investigations have been cross-sectional (Hessler & Katz, 2010; Miller et al., 2012; Powell et al., 2011). Thus, it remains unclear if risky behaviors lead to poor EC, or if low levels of EC drive adolescents to act in ways that may be damaging. As poor EC is often conceptualized as a risk factor for negative psychosocial outcomes, it may be useful to examine the potential mechanisms connecting EC deficits to risky behaviors during adolescence. For adults, low EC, in conjunction with high cognitive reappraisal, is associated with substance misuse (Boden et al., 2013). This same connection may be true for adolescents, although more research in this area is needed. Specifically, adolescents with poor emotional clarity may be unable to distinguish a full spectrum of emotions, and further, are likely to have deficiencies in other emotion regulation skills. Cognitive reappraisal is generally considered an adaptive strategy that involves reframing a negative, emotionally-laden situation as less stressful. However, adolescents with poor EC may have trouble distinguishing the appropriate situation to utilize this type of emotion regulation tool. Instead of targeting more appropriate negative situations with reappraisal (i.e., reinterpreting a failure as a learning experience), individuals lacking in emotional clarity may be more likely to target a maladaptive behavior (e.g., substance

use, violence) with cognitive reappraisal. Thus, adolescents with low EC might apply cognitive reappraisal to reinterpret risky behavior as less negative. EC also is inversely associated with thought suppression during adolescence (e.g., Eastabrook et al., 2014). Adolescents with EC deficits may be likely to suppress thoughts that engaging in risky behaviors are harmful. Lacking the ability to identify and label emotions could also lead to a dearth of coping resources for negative affect. Adolescents with poor emotional clarity may turn to substances or externalizing behaviors as maladaptive coping strategies for dealing with the high levels of stress that they will inevitably face as teenagers. Future research on decision-making and emotional clarity also might reveal potential connections between low EC and impaired resources to make emotionally-competent choices, such as avoiding behaviors that are risky and unlawful.

Just as examining the mechanisms linking poor EC to negative outcomes is crucial, analyzing how high levels of emotional clarity act as a resilience factor could have a positive impact on adolescent mental health. High EC is linked to many other adaptive emotion regulation strategies, such as emotional repair, attention, and acceptance (e.g., Extremera et al. 2007). EC is also associated with the ability to be imaginative and non-impulsive in the context of emotions (e.g., Fossati et al., 2014). Therefore, adolescents who have adaptive levels of emotional clarity might be more able to experience a full range of emotions, which could contribute to greater feelings of self-understanding and self-acceptance. Less confusion about emotional experiences could serve as a resilience factor in the face of stressors that adolescents commonly face, especially in interpersonal contexts. As high EC is associated with psychosocial maturity via the Eriksonian stages of development such as autonomy vs. shame, industry vs.

inferiority, identity vs. role confusion, and intimacy vs. isolation (Powell et al., 2011), it is likely that high EC adolescents are able to make savvy social decisions, such as associating with likeminded peers and engaging in meaningful social relationships. High EC also may contribute to using more adaptive coping strategies (e.g., appropriate utilization of emotion regulation skills like cognitive reappraisal) when faced with stressful events, such as bullying or peer pressure. High EC also may alert adolescents to the full extent of their emotional experiences, giving them adequate information to understand when emotions are problematic. Thus, adolescents with higher EC will be more likely to seek help for emotional or personal issues (Ciarrochi et al., 2002) because they are deft at recognizing their internal experiences of emotion. Understanding the mechanisms linking high EC to adaptive mental health will be important to conceptualize emotional clarity as a resilience factor during the adolescent years.

Future Directions

The studies included in the present systematic review reveal key developmental correlates of emotional clarity during adolescence. However, the literature search yielded only a small number of studies with limited implications; thus, there is much room for future research. The majority of studies included in the current review (11) were cross-sectional, so their results can only be interpreted narrowly. Although the longitudinal and prospective studies reviewed here have more wide-ranging implications, their time frames are somewhat limited (ranging from 7 months to 2 years). Adolescence is often conceptualized as a period of development connecting childhood with adulthood. Thus, future research would benefit from examining EC beginning in early adolescence to late adolescence to emerging adulthood, to capture how development impacts the relationship

between EC and psychosocial outcomes. Further, only one article (Rubenstein et al., 2015) examined the development of EC prospectively. Future research could benefit from an understanding of how emotional clarity develops over time and how this developmental trajectory might shape adolescent mental health. It is possible that individual differences in trajectories of EC development may clarify risk factors for disorder and resilience factors for adaptive psychosocial health.

Additionally, the present review included adolescents from a variety of Western cultures, including North American and European countries. Across these cultures and in a variety of languages, poor EC is consistently linked with negative outcomes. However, all of the cultures represented in the present review are individualistic, in which people generally value independence over interdependence. Research indicates that higher levels of emotional suppression are found in Eastern cultures as compared to Western cultures, perhaps due to the strong value of social harmony (Matsumoto et al., 2008). It is possible that because people from interdependent cultures value social connectedness over autonomy, they are more willing to suppress their own emotions to aid in connection with others. In Western cultures that value autonomy, thought suppression is linked to lower EC (Eastabrook et al., 2014; Fernandez-Berrocal et al., 2006); however, the connection between thought suppression and emotional clarity among adolescents from collectivist cultures remains understudied. Future cross-cultural studies are needed to examine whether any differences exist in the association between emotional clarity and psychosocial outcomes for adolescents from a variety of cultural backgrounds, especially within the independent vs. collectivist dichotomy.

Further, only a few studies included in this review examined how emotional clarity is related to interpersonal contexts. During adolescence, individuals begin to attach more to peers than to parents, and social networks are often reorganized, placing a special emphasis on social status (Brown & Larson, 2009). Deficits in emotional clarity are associated with peer victimization (Hamilton et al., 2016), yet the mechanisms underlying this relationship are not yet clear. Future research might address the connection between poor emotional understanding and peer relationships to determine precisely how important peer interaction is in EC development and likewise, how central EC is in shaping interpersonal peer outcomes. Additionally, it is well established that dysfunctional parenting is related to negative outcomes for adolescents, such as internalizing problems and risky behavior (e.g., Hughes & Gullonne, 2008; Kincaid et al., 2012). Parenting also may have a significant impact on adolescent emotion regulation (Jabeen et al., 2013). Thus, more research is also needed to examine the differential impact of peer relationships and parental relationships on emotional clarity during adolescence. By examining both peer and familial relationships in the same adolescent sample, researchers could begin to determine whether peers or parents are more influential in the development or maintenance of emotional clarity.

Whereas much past research on EC views low levels of this construct as a risk factor, more future work could take a positive psychological approach by examining what outcomes EC might protect against during adolescence. As EC is consistently linked with adaptive mental health concurrently, it would be useful to determine whether EC predicts positive outcomes over time or buffers against the development of negative outcomes. High EC may serve as a powerful protective factor for adolescents in the face of

adversity, including interpersonal stress or internalizing difficulties. Thus, approaching EC from a perspective of resilience may be a critical step towards discovering whether teaching adolescents how to bolster EC might be a useful psychological intervention. As reviewed earlier, lacking emotional clarity is linked to risky behaviors, including drug use and violence (Hessler & Katz, 2010; Miller et al., 2012). Across adolescence, the prefrontal cortex is developing, which has important implications in decision-making and reward sensitivity. Adolescents may be prone to sensation-seeking and have difficulties regulating their motivational strivings as the prefrontal cortex and its functional connections throughout the brain mature (Luciana, 2013). Inasmuch as EC has been implicated in substance abuse and risky sexual behavior in adults, it may be useful to study how adolescents' EC might buffer against risky behavior while the brain is developing. Future research is necessary to clarify EC as a protective factor against the development of poor outcomes, and this knowledge would help to shape psychological intervention for adolescents at risk for negative outcomes.

Clinical Implications

The study of emotion regulation factors during adolescence is a growing field, especially because evidence suggests that these factors are teachable (Brackett et al., 2011). Results from the current systematic review indicate that EC is a potentially protective factor against negative outcomes; thus, the findings suggest utility for intervention. It may be useful for interventions and prevention programs to target emotional understanding as an important tool for positive adolescent adjustment. Certain groups of teens may be more vulnerable to low EC, including adolescent girls, sexual minority youth, and early maturing adolescents. Therefore, it may be useful to develop

interventions that particularly address how to develop adequate emotional clarity in the face of stressors specific to these groups. Inasmuch as a large part of the adolescent experience takes place in the school context, developing workshops in school that teach adolescents how to better identify and become aware of their emotional experiences might be especially advantageous (Hamilton et al., 2016). By teaching EC skills in a group format, these types of programs might buffer against stressors that often occur around peers, such as bullying, peer pressure, and substance use. Thus, already established protocols for teaching emotional intelligence in the classroom (e.g., Brackett & Katulak, 2007) should devote adequate time to teaching the skills associated with adaptive emotional clarity, such as identifying and labeling emotions correctly. It is possible that these types of interventions and prevention programs might also facilitate more emotional understanding of peers' experiences, which could foster more overall awareness and clarity about emotional experiences in interpersonal relationships (Hamilton et al., 2016).

In teaching emotional clarity, interventions should be careful to focus on fostering clarity above simply drawing attention to emotions. Research indicates that drawing attention to emotions without promoting understanding may in fact backfire, leading to increased rumination and prolonged dysphoria (Ramos et al., 2007). Thus, interventions that lead to more emotional clarity might include mindfulness components, in which individuals are taught to approach their emotional experiences nonjudgmentally. In children, mindfulness interventions are associated with increased empathy, perspective-taking, and control over emotions (Schonert-Reifl et al., 2015). Mindfulness is also linked with improvements in emotional intelligence (Ciarrochi et al., 2007). Thus, it is likely

that adolescents would experience increases in EC from mindfulness-based interventions, both in individual and group formats. Parents, teachers, and treatment providers should consider boosting emotional clarity as a useful way to promote adolescent mental health. Increasing EC through prevention and intervention programs might decrease problematic outcomes for adolescents, such as internalizing problems, interpersonal difficulties, and risky behaviors.

Conclusions

The present systematic review synthesized the results of 19 studies examining the psychosocial correlates of emotional clarity during adolescence. The review highlighted major themes in the study of adolescent EC, including the consistent relationship between poor EC and negative outcomes, such as internalizing problems and risky behaviors. Taken together, results suggest that deficits in EC are associated with a variety of negative outcomes concurrently and longitudinally. Likewise, EC at adaptive levels is connected with positive traits and good psychosocial functioning. Potential mechanisms, including sex, stress in interpersonal relationships, and other cognitive and emotional factors, may help to explain the links between low EC and negative developmental outcomes. Future research should further clarify how EC develops over time and how this development impacts functioning across cultures and in the context of interpersonal relationships. Additional investigation of emotional clarity as a protective mechanism against diverse negative outcomes will set the foundation for psychological interventions promoting adaptive adolescent mental health.

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*References marked with an asterisk indicate studies included in the systematic review.