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# **Psychosocial Correlates of Alexithymia in a Rural Adolescent Residential Population: Implications for Gender-Sensitive Treatment of Female Adolescents**

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## **Abstract**

This study used a multimethod approach to evaluate the relationship of alexithymia (measured by the 20-item Toronto Alexithymia Scale, and 30-item Emotion Awareness Questionnaire), psychosocial development (assessed with the Measure of Psychosocial Development), and risk behavior (as measured by the Youth Comprehensive Risk Assessment) in 67 rural adolescents in residential treatment. Results revealed that both measures of alexithymia demonstrated good internal consistency and convergent validity, adolescent females were more alexithymic than males, and demonstrated significantly more shame, diminished bodily awareness, and risk to self; whereas males demonstrated significantly more risk to others. Gender-specific treatment implications for female adolescents are included.

**Keywords:** alexithymia, adolescents, assessment, emotion, gender, rural, residential, female, treatment

## **Introduction**

Adolescence is considered by many to be the most challenging and critical stage of human development. As a stepping stone to young adulthood, the period of adolescence brings significant changes in physical, cognitive, social, and emotional development (Buist, Deković, Meeus, & van Aken, 2004; Laible, Gustavo, & Raffaelli, 2000). While most individuals are able to navigate adolescent stages of development without significant distress, others may not be as fortunate. The developmental transition appears to be more complicated for adolescents who have difficulty identifying, differentiating, and articulating emotional experience (Cicchetti, Ackerman, & Izard, 1995; Cozolino, 2006), and regulating strong emotions that arise with increasing desire for behavioral and emotional autonomy (Klimes-Dougan & Zeman, 2007). Consequently, adolescents who have difficulty identifying, verbalizing, and cognitively processing feelings may be at increased risk for emotion dysregulation, mental health disorders, and risk behavior (Bongers, Koot, van der Ende, & Verhulst, 2003; Suveg et al., 2008).

Over the past three decades, increased interest in emotion-regulation and functional aspects of emotion has led to the emergence of the alexithymia construct. First introduced by Sifneos (1973), alexithymia literally means “without words for emotions,” and is conceptualized predominately as dysfunction in identifying one’s feelings (p. 256). Alexithymia encompasses affective disturbance manifested through a limited ability to identify, differentiate, and verbalize emotion. Additionally, alexithymia is associated with reduced symbolic thinking, impoverished fantasy life, and an externally oriented cognitive style focused on facts and data rather than psychological introspection (Bouchard et al., 2008; Lumley, Gustavson, Partridge, & Labouvie-Vief, 2005; Picardi, Toni, & Caroppo, 2005; Taylor & Bagby, 2004).

Most researchers generally agree that limited subjective awareness of one's affect states leads to misinterpretation or amplification of physiological sensations that accompany emotional arousal. In turn, emotional experiences that are not modulated through cognitive processing are often expressed as maladaptive risk behaviors (Lumely et al., 2005; Scott, 2009; Taylor & Bagby, 2004).

Alexithymia has been identified as a causal factor for a variety of medical and psychiatric illnesses in the adult population such as depression, anxiety, and somatoform disorders (Grabe, Spitzer, & Freyberger, 2004; Taylor & Bagby, 2004), and there is growing evidence to suggest that alexithymia may have similar detrimental consequences in adolescents, including substance use disorders (Leduc, 2002; Ryngala, 2007), eating disorders (Karukivi, Hautala, Korpelainen, et al., 2010; Zonneville-Bender et al., 2004), depression (van de Putte et al., 2007), anxiety (Karukivi, Hautala, Kaleva, et al., 2010), somatic complaints (Rieffe, Oosterveldt, & Terwogt, 2006), self-injurious behavior (Garisch & Wilson, 2010), and interpersonal problems (Honkalampi et al., 2009; Rieffe et al., 2007; 2008). Taken together, these studies underscore the importance of emotional awareness and expression in behavior regulation and positive psychosocial development.

The alexithymic construct holds promise in understanding how and why adolescents develop emotional and interpersonal problems. Yet alexithymia has not been adequately studied in adolescents, especially residential treatment populations (Ciarrochi, Heaven, & Supavadeeprasit, 2008). The current study was exploratory in nature, and attempted to examine psychosocial correlates of alexithymia and risk behavior in an adolescent residential population. We were particularly interested in exploring potential gender differences in emotional awareness and regulation associated with risk behavior in order to generate gender-specific treatment modalities.

#### *Developmental Aspects of Alexithymia*

Optimal emotional development has been defined as the capacity to differentiate real from imagined emotions, increase awareness of contextual factors contributing to various emotions, and experience contradictory emotions concurrently (Loevinger as cited in Hauser & Smith, 1991). Although the etiology of alexithymia is not entirely clear, exposure to dysfunctional affective environments during critical periods of cognitive and emotional development appears to be an influential factor in hindering the development of emotional awareness, expression, and behavior regulation (Buist et al., 2004; Cole, & Deater-Deckard, 2009; Zegers, Schuengel, Van IJzendoorn, & Janssens, 2008).

Various theories of emotion contribute to the current understanding of the development of alexithymia. For example, Loevinger proposed that emotional awareness includes a cognitive component. Cognitively, adolescents transition from concrete thinking to more abstract thought processes, with increased focus on internal affect states, and changes in personal meaning ascribed to emotion (Hauser & Smith, 1991; Wagner, 1996). Difficulty identifying and describing feelings are aspects of alexithymia that correspond with this stage of development.

Larson's (2000) two-stage model of emotion regulation suggests that individuals may be unable to cope with negative affect effectively if they incorrectly identify an emotional state. In other words, successful identification of affect triggers a second emotion-management skill. This is a cognitive process that facilitates down-regulation of negative affect states. According to this model, adolescents who are alexithymic may have difficulty in three aspects of coping: active problem solving in unforeseen events, difficulty seeking and relying on social support, and effective cognitive restructuring to negotiate social situations (Skinner & Zimmer-Gembeck, 2007).

Erik Erikson proposed that a primary psychosocial task in adolescence is to develop a strong sense of self in the context of one's culture. His theory of psychosocial development suggested that individuals experience eight developmental stages in the course of the lifespan. Specific to adolescent development, Erikson (1968) proposed that adolescence is a crucial stage when one's sense of identity becomes intensified. Adolescents who have successfully resolved conflicts in earlier stages of development (i.e., trust vs. mistrust, autonomy vs. shame and doubt, initiative vs. guilt, and industry vs. inferiority) are expected to develop the ability to employ cognitive and emotional reflection across levels of mental functioning (Hawley, 1988). If earlier stages are not resolved, adolescents may experience difficulty forming and maintaining interpersonal relationships, difficulty accepting or differentiating feelings, cognitive rigidity, and negative self-concept in the form of shame, guilt, and feelings of inferiority (Erikson, 1963).

### *Emotion Socialization and Risk Behavior*

Children acquire rules of emotion self-management through a variety of external influences and the interventions of others. In other words, children are socialized so that the management and expression of behavior is in accordance with social and cultural expectations (Thompson, 1994). From a cultural perspective, emotion regulation involves balance between maintaining emotional arousal, and inhibiting or suppressing it. In cultures that value emotional inhibition, children learn emotion-regulation skills that dampen emotional arousal, especially negative emotion. This can result in a disconnect from feelings, and the inability to put words to affect states (Ciarrochi et al., 2008).

Many studies have demonstrated that boys and girls perceive and evaluate their problems differently, and society tends to reinforce affect expression differently for boys and girls (Garside & Klimes-Dougan, 2002; Klimes-Dougan & Zeman, 2007). Therefore, gender differences in risk behavior may be in part, determined by sociocultural reinforcement or discouragement of discrete emotions. For example, Fivish, Brotman, Buckner, and Goodman (2000) found that parents were more likely to reinforce expressions of anger in boys, whereas girls were encouraged to express vulnerable emotions of sadness or fear. Their research is consistent with gender-stereotyped beliefs that women and girls typically express internalizing negative emotions (i.e., shame, guilt, sadness, or fear), while boys are more likely to exhibit externalizing emotions (i.e., aggressive or delinquent behavior) (Bongers, et al., 2003; Honkalampi et al., 2009).

The effects of gender socialization may be more detrimental for emotional development of girls than boys, specifically with regard to autonomy and identity formation (Ollech & McCarthy, 1997; Severino, McNutt, & Feder, 1987). Research on gender and psychosocial development reveals differences between boys and girls emerge as early as grade school. For example, Pomerantz and Ruble (1998) found that girls are more vulnerable to anxiety than boys, and significantly more susceptible to depression during adolescent years. One explanation for this finding is that girls are socialized to take greater responsibility for failure than boys, and tend to evaluate themselves negatively. During adolescence, boys expand their self image through exercised autonomy, while girls “bury their subjectivity and constrain the strong sense of self” that once flourished during latency years (Ollech & McCarthy, p. 66).

Additionally, the stage of adolescence brings a process of “gender intensification” for females, which involves increased self-consciousness, decreased self-esteem, conflictual dependence, and heightened receptivity to the opinions of others (Severino et al., 1987). The process of gender intensification can inhibit the task of identity formation in females, and is associated with negative affectivity of anger and shame (Erikson, 1968), and greater risk for internalizing behaviors (Acton & Zodda, 2005). Unfortunately, many inpatient or residential interventions tend to focus on problematic externalizing behaviors consistent with male adolescents. Consequently, female adolescents may be overlooked in the design of treatment interventions aimed at addressing unique gender-related difficulties with shame and identity formation.

### *Objectives of the Study*

While research has linked alexithymia with risk behavior and psychopathology, few studies have explored developmental psychosocial factors that may be associated with alexithymia in adolescent populations. Participants in previous adolescent studies have been primarily from community samples, and the current study attempted to generalize findings to clinical or inpatient population of adolescents.

Our first objective was to investigate the validity of the alexithymia construct in a residential population of adolescents. Considerable biological, social, and psychological development occurs during the transition from childhood to adolescence which raises questions about adolescents’ capacity to evaluate and report about their own patterns of thoughts, feelings and behaviors (Soto, John, Gosling, & Potter, 2008). The most widely used instrument to assess alexithymia in adolescent and adult populations is the 20-item Toronto Alexithymia Scale (TAS-20). While the TAS-20 has demonstrated strong psychometric properties in adult studies, there has been debate in developmental literature regarding instrument’s validity with adolescents. In particular, the validity of the third factor of the TAS-20 (Externally Oriented Thinking), has been called into question with very young adolescents and clinical populations of adolescents, and some authors have recommended further psychometric validation with clinical populations of adolescents (Heaven, Ciarrochi, & Hurrell, 2010; Parker, Eastabrook, Keefer & Wood, 2010; Rieffe, Oosterveld, & Terwogt, 2006; Rieffe et al., 2007).

Through a multi-method approach, we examined the psychometric properties of the TAS-20 by administering a conceptually related measure of alexithymia, the Emotion Awareness Questionnaire (EAQ-30). With respect to psychometric validation, we predicted that the TAS-20 would be inversely correlated with the EAQ-30. Secondly, we explored concurrent validity of alexithymia measures with measures of adolescent psychosocial development and risk behavior. Based on previous studies of internalizing and externalizing behavior, we hypothesized that the two related measures of alexithymia would be associated with poorer psychosocial outcomes, and higher risk behavior among residential adolescents.

Finally, we examined gender differences in alexithymia, psychosocial development, and risk behavior in order to formulate gender-sensitive treatment recommendations for increasing emotional competence and behavior regulation in an adolescent residential population. Based on gender socialization theory, we predicted that female adolescents would demonstrate more shame, role confusion, and risk to self; and that male adolescents would exhibit more risk to others.

## Method

### *Participants and Procedure*

Data for the present study were collected from 67 clinical adolescent inpatients residing six months or longer at a rural residential treatment center in the Rocky Mountain Region of the United States. The agency is a nationally recognized residential treatment facility that offers specialized educational, psychological, and therapeutic services for adolescents. All participants were referred to this facility for one or more of the following reasons: (a) non-compliance in school, (b) history of criminal activity, or (c) having been a referral to Child Protective Services. The participants range in age from 12-17, with approximately 57% male ( $n = 38$ ), and 43% female ( $n = 29$ ). Approximately 85% of the participants identified their ethnicity as European American, with 10% Hispanic, and 5% American Indian/Alaska Native.

Assessment instruments were administered by Master's-level, licensed counselors or social workers within the first three weeks of participants' admittance to the facility per requirement from the agency's accrediting body – the Joint Commission for the Accreditation of Health Care (JCAHO, 1998). Facilities accredited by JCAHO adhere to multiple standards of professional patient care.

### *Instruments*

*Toronto Alexithymia Scale-20 (TAS-20)*. Alexithymia was assessed using the 20-item TAS developed by Bagby, Parker, and Taylor (1994). The TAS-20 was revised from the original 26-item version (Taylor, Ryan, & Bagby, 1985). Initial validation studies with the TAS-20 revealed a three factor structure consistent with the theoretical construct of alexithymia. Factor 1 assesses Difficulty Identifying Feelings and somatic sensations of emotional arousal (DIF). Factor 2 reflects Difficulty Describing Feelings to others (DDF), and Factor 3 measures Externally Oriented Thinking, or constricted imaginal process (EOT) (Bagby et al.). Each item is rated on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Five of the items are negatively keyed, and the total score ranges from 20-100. A higher score indicates the likelihood of alexithymia. The scores of the three subscales were calculated using the original factor structure. In accordance with developers, a total TAS-20 score less than or equal to 51 represents non-alexithymia, 52 to 60 represents possible presence of alexithymia, and scores greater than 60 equal high alexithymia.

The TAS-20 has demonstrated good internal consistency and test-retest reliability in community samples of adolescents (Honkalampi et al., 2009; Säkkinen et al., 2007). Confirmatory factor analysis has demonstrated replicability of the three-factor structure with clinical and nonclinical populations (Bagby et al., 1994; Parker, Taylor, & Bagby, 1993). The TAS-20 has demonstrated strong convergent validity with closely related constructs, and found to be negatively correlated with measures of emotional intelligence, psychological mindedness, and the openness-to-experience dimension in the five-factor model of personality (Bagby et al.; Taylor & Bagby, 2004).

*Emotion Awareness Questionnaire (EAQ-30)*. The EAQ-30 is a self-report measure developed by Rieffe et al. (2007) in effort to broaden measurement of the alexithymia construct to children and adolescents, and address the predictive limitations of the third factor of the TAS-20. The EAQ measures a number of emotion-awareness aspects, and identifies how adolescents think and feel about emotions, and has been deemed appropriate in

identifying relevant areas of emotional functioning related to psychological and behavioral problems (Lahaye et al., 2010).

The 30-item version of the EAQ consists of six subscales: (a) Differentiating Emotions reflects the ability to identify, differentiate, and understand the causes of one's emotions; (b) Verbal Sharing of Emotions measure the ability to communicate feeling to others; (c) Bodily Awareness of Emotions reflects physical sensations of emotions; (d) Not Hiding Emotions captures overt, but non-impulsive expression of emotions; (e) Attention to Others' Emotions reflects willingness to face emotions of others; and (f) Analysis of Emotions reflects willingness to face one's own emotion. Respondents are asked to rate each item as it pertains to them on a three-point scale (1 = not true, 2 = sometimes true, 3 = often true). Some items are negatively formulated, and therefore reversed-scored. A higher score indicates greater capacity for emotional competency.

The EAQ was normed on 692 participants ages 9-16, and revised on 303 fourteen-year-olds. A subsequent large scale validation study in a French sample of adolescents confirmed discriminant and convergent validity of the EAQ, and internal consistencies of the six subscales were found to be satisfactory for adolescents (Lahaye et al., 2010). Compared to the initial 40-item version (Rieffe et al., 2007), the EAQ-30 is shorter and reflects a clear factor structure. Initial validation studies suggest internal consistency, and inter-item correlations of subscales meet acceptable standards. All scales correlate positively with conceptually related measures for trait emotional intelligence, and negatively correlated with measures of somatic complaints, depression, and anxiety (Lahaye et al.). Each factor has been found to contribute uniquely to the prediction of internalizing symptoms in children.

*Measure of Psychosocial Development (MPD)*. The MPD was used to assess levels of psychosocial development related to emotional functioning in adolescents. The MPD is a self-report instrument based on Eriksonian constructs of adolescent and adult personality development (Hawley, 1988). The MPD provides an index of psychosocial health based on Erikson's criteria. The MPD consists of 112 self-descriptive statements which measure positive and negative developmental attitudes. For the purposes of our study, six of the eight MPD scales considered most relevant to adolescent psychosocial development were used: (1) Trust versus Mistrust, (2) Autonomy versus Shame, (3) Initiative versus Guilt, (4) Industry versus Inferiority, (5) Identity versus Role Confusion, and (6) Intimacy versus Isolation.

Normative data consisted of a sample of 2,450 individuals, ages 13-86. Approximately 620 of the 2,450 norm group were adolescents (ages 13 to 17). Hawley (1998) indicates that the adolescent norm group was considered a non-delinquent sample. Both reliability and validity for the MPD are robust. Test-retest reliability exceeded .80 on a sample 108 adolescents and adults. Internal consistency has been calculated on a sample of 372 adolescents and adults with coefficients ranging from .64 to .84. Comparison analysis of the MPD with other self-report measures of Erikson's theory demonstrated support for construct validity (including convergent and discriminant validity) of the MPD in assessing psychosocial development. Extensive multitrait and multimethod analyses with normative data (as required by Campbell & Fiske, 1959) methodology proved strong support for discriminant validity. The correlations of measures of different constructs were smaller than correlations of measure of the same construct at a rate of 97.3 %. The MPD also identified resolution scores that "provide a representation of the status conflict resolution for each of the eight stages. A low resolution (for example, R1) suggests developmental stress resulting from lack of adequate resolution of that specific stage (i.e., for Stage 1, Trust vs. Mistrust)" (Hawley, 1988, p. 7).

*The Youth Comprehensive Risk Assessment (YCRA)*. The YCRA, developed by Coll, Junke, Thobro, and Haas (2003) is a clinical assessment tool used to assess adolescent risk behavior. The YCRA has been found to have significant research and clinical utility in identifying problem areas of risk behavior, and generating effective treatment plans (Coll, Thobro, & Haas, 2004; 2006). The YCRA uses a non-equal-interval Likert scale of 1 to 4 x 2 (1 = slight risk, 2 = mild risk, 3 = moderate risk, and 4 x 2 = severe risk). Depending on the scale, scores range from 4x2 (8) to 24. The YCRA is included in the JCAHO's list of approved performance measurement systems. It adheres to all of the JCAHO quality principles, including sampling, standardization, monitoring, documentation, feedback, education, and accountability. Specific to the current study, the YCRA was used to assess risk to self (including risk for suicide, self-injurious behavior, substance use, and risk for victimization), and risk to others (including aggression, sexually inappropriate behavior, and destruction of property).

## Results

Descriptive statistics and correlation coefficients were calculated for the three factors of the TAS-20 (Difficulty Identifying Feelings [DIF], Difficulty Describing Feelings [DDF], and Externally Oriented Thinking [EOT]); the six subscales of the EAQ-30 (Differentiating Emotion, Verbal Sharing of Emotion, Not Hiding Emotion, Bodily Awareness, Attending to Others' Emotions, and Analysis of Emotions); six subscales of the MPD: (trust vs. mistrust, autonomy vs. shame, initiative vs. guilt, industry vs. inferiority, identity vs. role confusion, & intimacy vs. isolation); and risk behavior (risk to self, and risk to others).

Descriptive statistics for all variables are summarized in Table I. Results revealed that 30% of the participants met criteria for possible alexithymia, and 22% met criteria for high alexithymia as measured by the TAS-20 ( $M = 52.5$ ,  $SD = 10.7$ ). Mean scores on MPD scales indicated that adolescents in residential treatment experience mistrust (per trust/mistrust resolution) ( $M = 4.1$ ,  $SD = 7.6$ , 18<sup>th</sup> percentile), shame (per autonomy/shame resolution) ( $M = 4.4$ ,  $SD = 7.0$ , 35<sup>th</sup> percentile), guilt (per initiative/guilt resolution) ( $M = 4.5$ ,  $SD = 5.9$ , 27<sup>th</sup> percentile), inferiority (per industry/inferiority resolution) ( $M = 6.1$ ,  $SD = 7.4$ , 18<sup>th</sup> percentile), role confusion (per identity/role confusion resolution) ( $M = 3.7$ ,  $SD = 8.1$ , 38<sup>th</sup> percentile), and isolation (per intimacy/isolation resolution) ( $M = 3.0$ ,  $SD = 9.3$ , 42<sup>nd</sup> percentile). Mean YCRA scores revealed severe risk for harm to self ( $M = 13.9$ ,  $SD = 4.4$ ), and harm to others ( $M = 9.5$ ,  $SD = 5.3$ ).

Zero-order correlations revealed the total TAS-20 was significantly correlated with all three factors (DIF, DDF, & EOT) ( $p < .01$ ). The total EAQ-30 and six subscales were also significantly correlated ( $p < .01$ ), suggesting good internal consistency for both measures of alexithymia. In support of our first hypothesis, global TAS and EAQ scores demonstrated a significant inverse correlation ( $p < .01$ ), lending support for convergent validity. Similar to previous studies, the TAS Factor 3 (EOT) was not significantly correlated with the other two subscales (DIF & DDF). However, the EOT scale demonstrated a strong association with the total EAQ and Analysis of Emotions ( $p < .01$ ), Not Hiding Emotions ( $p < .05$ ), and Attending to Others' Emotions ( $p < .05$ ). See table two.

When correlations between alexithymia measures and psychosocial variables were evaluated, our second hypothesis was only partially supported. As shown in table three, the TAS-20 was significantly inversely correlated with intimacy/isolation resolution ( $p < .05$ ), suggesting that adolescents who are alexithymic are also more likely to experience social isolation, and have difficulty maintaining interpersonal relationships. The EAQ-30 was more robust in measuring associations between alexithymia and psychosocial development, and the global EAQ score correlated significantly with autonomy/shame resolution ( $p < .01$ ), industry/inferiority resolution ( $p < .01$ ), identity/role confusion resolution ( $p < .01$ ), and intimacy/isolation resolution ( $p < .01$ ).

Among the six EAQ subscales, Describing Emotions and Verbal Sharing of Emotions were significantly correlated with autonomy, industry, identity, and intimacy ( $p < .01$ ). The subscale Bodily Awareness was significantly correlated with autonomy, identity, and intimacy ( $p < .01$ ), suggesting that adolescents who are adept at identifying and sharing feelings are more likely to develop a strong sense of identity, healthy independence, and maintain interpersonal relationships. When correlations between alexithymia and risk behavior were evaluated, our hypothesis was again only partially supported. Of the two alexithymia measures, only the Bodily Awareness subscale of the EAQ demonstrated a significant association with risk to others ( $p < .05$ ), and a significant inverse correlation with risk to self ( $p < .05$ ). See table three.

Finally, mean-level differences between males and females were explored through univariate analysis with participant gender as the independent variable, and alexithymia scales, psychosocial scales, and risk behavior as dependent variables. Summarized in Table IV, results revealed that females, reported significantly more symptoms of alexithymia (as measured by the EAQ-30),  $F(1, 61) = 4.02$ ,  $p = .049$ , primarily characterized diminished bodily awareness,  $F(1, 61) = 7.91$ ,  $p = .007$ , than males. Our third hypothesis was partially supported in that females demonstrated significantly more shame (as measured by the MPD),  $F(1, 52) = 8.42$ ,  $p = .005$ , than males. However, no significant gender differences were found in identity development. Results confirmed our hypothesis that females demonstrated significantly more risk to self (as measured by the YCRA),  $F(1, 60) = 5.94$ ,  $p = .018$ , while males demonstrated significantly more risk to others,  $F(1, 60) = 18.72$ ,  $p = .000$ . No other significant gender differences emerged.

**Insert tables here.**

## Discussion

The current study examined the relationship between alexithymia, psychosocial development, and risk behavior in a rural adolescent residential population. Results of the study provide preliminary, yet supportive evidence of the validity of the alexithymia construct in a clinical population of adolescents, and lend support for the TAS-20 and EAQ-30 for research and clinical purposes with adolescents. Mean alexithymia scores for this sample were generally higher than scores found in studies of community samples (Joukamaa et al., 2007; Parker et al., 2010; Säkkinen et al., 2007), but similar to those in studies of inpatient or psychiatric samples (Leduc, 2002, Ryngala, 2007). The high prevalence of alexithymia in the current study highlights the importance of targeted interventions for emotional deficits related to risk behavior.

The TAS-20 correlated significantly with all three factors, and demonstrated a significant inverse association with the EAQ-30. Both measures of alexithymia were found to be coherent and internally consistent. Similar to previous studies, the third factor of the TAS (i.e., Externally Oriented Thinking-EOT) demonstrated less internal consistency, but given the EOT's significant correlation with the global EAQ (and subscales Analysis of Emotions, Not Hiding Emotions, and Attending to Others' Emotions) the relevance of the EOT subscale in the validity of the alexithymia construct should not be overlooked in terms of its applicability to adolescent populations. While both the TAS and EAQ demonstrated good internal consistency and convergent validity, the EAQ exhibited stronger discriminant validity, and emerged as a more robust measure of alexithymia and psychosocial risk behavior. Future studies are needed to replicate our procedures with a larger sample of adolescents in residential treatment to determine if the EAQ is a more psychometrically sound instrument over the TAS.

Several subscales of the EAQ were inversely correlated with shame, inferiority, role confusion, and isolation, suggesting that alexithymia (i.e., deficits in emotional processing) poses a risk to healthy psychosocial development. Specifically, our results imply that developing a sense of autonomy, viewing the self as competent, and maintaining close, interpersonal relationships is compromised by deficits in emotional awareness and expression, and that emotional awareness and expression are key factors to consider in the treatment of adolescents.

Interestingly, none of the psychosocial variables in the current study were significantly associated with risk behavior, and the only alexithymia variable associated with risk behavior was the Bodily Awareness subscale of the EAQ. This finding raises important questions about how emotions are embodied, and perhaps expressed in absence of conscious reflection. Our results bring to light the crucial influence of self-body relations in emotional development and affect regulation.

In evaluating gender differences, we found that female adolescents were more alexithymic than males on both measures, and demonstrated significantly more risk to self, while males presented more risk to others. This finding is consistent with literature regarding rates of aggression among adolescent males (Cohen & Prinstein, 2006). Additionally, females demonstrated significantly less bodily awareness than males. This finding is somewhat unexpected, given the heightened attention to appearance that often occurs for females during adolescence, and is contrary to the commonly held notion that female adolescents are more aware and expressive of emotions than their male counterparts.

A theory that might explain these findings is self objectification theory. Developed by Fredrickson and Roberts (1997) to explain the psychological consequences experienced disproportionately among girls and women, self objectification theory proposes that females encounter sexually objectifying experiences in their day-to-day environment from a very young age. Consequently, they come to view themselves through the external lens of the male observer, and treat themselves as objects to be looked at and evaluated from the outside. Fredrickson and Roberts propose that sexualization of females is a pervasive cultural norm in Western society, and leads to psychological consequences of body shame, appearance anxiety, and decreased awareness of bodily states. In other words, girls come to view the body as belonging "less to them and more to others" (p. 193). This particular theory might explain why female adolescents in our study exhibited higher rate of alexithymia, and significantly more shame than males. When overlaid with variables of diminished bodily awareness and greater risk for harm to self, our results point to clinical implications in addressing unique emotional deficits of female adolescents.

### *Implications for Treatment with Female Adolescents*

Many inpatient or residential interventions tend to focus on problematic externalizing behaviors often associated with males. Consequently, adolescent females may be neglected in research and treatment interventions. Results of the current study lend support for gender-specific treatment to increase emotional competence and behavior regulation among females. Based on results of the current study, adolescent females would likely benefit from targeted interventions that (a) foster autonomy, (b) increase positive feelings toward the body, and (c) facilitate internal awareness through mind-body integration. When implemented together, these treatment strategies may reduce negative psychosocial outcomes through a process of shifting objective awareness to subjective self-awareness (Menzel & Levine, 2011).

*Autonomy.* Clinicians can foster autonomy by encouraging female adolescents to develop an inner assurance of competence despite imperfections. This can be accomplished through promoting physical and mental activities centered on functionality and pleasure, such as hiking, gardening, or yoga, providing mentorship for a newly admitted female resident, or leading a group activity (Tylka & Augustus-Horvath, 2011). Clinicians can also help females to develop positive affirmations that honor their intellect and unique personality, and encourage female adolescents to pursue their own goals, and learn to trust their own voices.

*Positive feelings toward the body.* Clinicians should assist female adolescents to respect and appreciate the body, rather than feel shameful toward it. This can be accomplished by adopting a set of adaptive cognitions (Tylka & Augustus-Horvath, 2011). A cognitive strategy called *positive rational coping* consists of thoughts and behaviors that facilitate rational self-talk about appearance, and has been found associated with positive body-image (Cash, Santos, & Williams, 2005). An example of positive rational coping includes statements such as, "I try to figure out why I am challenged or threatened by a situation, I tell myself that there are more important things than what I look like, and I try to remind myself of my good qualities."

*Mind-body integration.* Paying attention to and understanding what is happening in one's body is related to improved self-regulation (Menzel & Levin, 2011). Clinicians can help adolescent females increase internal awareness and mind-body connection through attuning to bodily experience. This involves welcoming emotions and sensations experienced in the body (including physical sensations of pain, hunger, or fatigue), and deciphering what is experienced. Body awareness-enhancing practices (e.g. mindful awareness/meditation) can also provide opportunity to learn to identify feelings in the body so they can be deciphered and made sense of (Stahl & Goldstein, 2010).

### *Limitations and Future Directions*

This study contributes to a broader understanding of emotional development and regulation in adolescents, and highlights underlying mechanisms that differentiate how male and female adolescents experience and express emotion. Our study was exploratory in nature, with a relatively low number of participants. Therefore, several limitations should be noted. First, the participants were residential inpatients, and there is some question whether our findings can be generalized to populations outside of a residential treatment setting. Secondly, we did not examine differences in age or race. A third limitation is that the study was correlational in nature, and causal connection or mediation models were not tested. However, there is evidence to speculate that shame and diminished bodily awareness might emerge as mediators of alexithymia and risk behavior. Future studies should include a larger sample size of adolescents to explore the possible moderating effects of body shame on risk behavior, or attempt to draw more definitive causal conclusions. Finally, while the recommended interventions have been found effective in non-clinical populations, future outcome research is necessary determine efficacy with adolescent residential populations.

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**Table I**

Descriptive Statistics for all Variables

N = 67	Range	Minimum	Maximum	Mean	SD	
<u>Alexithymia</u>						
TAS-20 Total	46.0	30.0	76.0	52.5	10.7	
Difficulty Identifying Feelings	24.0	7.0	31.0	15.6	6.2	
Difficulty Describing Feelings	19.0	5.0	24.0	14.4	4.1	
Externally Oriented Thinking	21.0	13.0	34.0	22.6	4.3	
EAQ-30 Total	45.0	39.0	84.0	67.0	8.7	
Differentiating Emotions	14.0	7.0	21.0	17.3	3.6	
Verbal Sharing of Emotions	8.0	4.0	12.0	8.4	2.0	
Not Hiding Emotions	8.0	4.0	12.0	8.4	2.2	
Bodily Awareness	10.0	5.0	15.0	9.8	2.3	
Attending to Others' Emotions	8.0	7.0	15.0	12.1	2.3	
Analysis of Emotions	10.0	5.0	15.0	11.0	3.2	
<u>Psychosocial Development (MPD)</u>						
						%ile
Trust vs. Mistrust	36.0	-15.0	21.0	4.1	7.6	18 <sup>th</sup>
Autonomy vs. Shame	30.0	-13.0	17.0	4.4	7.1	35 <sup>th</sup>
Initiative vs. Guilt	31.0	-9.0	22.0	4.5	6.0	27 <sup>th</sup>
Industry vs. Inferiority	39.0	-15.0	24.0	6.1	7.4	18 <sup>th</sup>
Identity vs. Role Confusion	37.0	-12.0	25.0	3.7	8.1	38 <sup>th</sup>
Intimacy vs. Isolation	43.0	-23.0	20.0	3.0	9.3	42 <sup>nd</sup>
<u>Risk Behavior (YCRA)</u>						
Risk to Self	18.0	6.0	24.0	13.9	4.4	
Risk to Others	21.0	3.0	24.0	9.5	5.3	

Note: TAS-20 higher scores indicate likelihood of alexithymia. EAQ-30 higher scores indicate greater emotional competence. YCRA higher scores indicate greater risk to self or others.

**Table II**

Correlations Between TAS-20 Scales and EAQ-30 Scales

	TAS-20	DIF	DDF	EOT	EAQ-30	DE	VSE	NHE	BA	ATOE	AOE
TAS-20		.86**	.84**	.48**	-.69**	-.67**	-.51**	-.53**	-.23	-.11	-.19
DIF			.70**	.04	-.57**	-.64**	-.43**	-.42**	-.35**	.07	-.06
DDF				.13	-.56**	-.56**	-.48**	-.50**	-.21	-.06	-.05
EOT					-.39**	-.25	-.22	-.52*	.12	-.32*	-.34**
EAQ-30						.80**	.71**	.48**	.34**	.33**	.56**
DE							.57**	.23	.42**	.02	.20
VSE								.40**	.22	-.01	.21
NHE									.05	-.02	.10
BA										-.29*	-.26*
ATOE											.38**
AOE											

Note: TAS-20 = Toronto Alexithymia Scale total score; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking; EAQ-30 = Emotion Awareness Questionnaire total score; DE = Differentiating Emotions; VSE = Verbal Sharing of Emotions; NHE = Not Hiding Emotions; BA = Bodily Awareness; ATOE = Attending to Others' Emotions; AOE = Analysis of Emotions.

\*p < .05. \*\*p < .01 (2-tailed)

**Table III**

Significant Correlations among Alexithymia, Psychosocial Development, and Risk Behavior

Variables

	TAS-20 Total	EAQ-30 Total	Differentiating Emotions	Verbal Sharing of Emotion	Not Hiding Emotion	Bodily Awareness
MPD Autonomy vs. Shame	-.20	.36**	.40**	.35*	-.04	.33*
MPD Industry vs. Inferiority	-.26	.40**	.46**	.41**	-.10	.14
MPD Identity vs. Role Confusion	-.22	.46**	.49**	.29*	-.10	.29*
MPD Intimacy vs. Isolation	-.30*	.40**	.41**	.33*	.30*	.02
YCRA Risk to Self	.10	-.25	-.16	-.03	-.14	-.27*
YCRA Risk to Others	.04	-.05	-.01	-.08	-.02	.26*

Note. \*p < .05. \*\*p < .01 (2-tailed)

**Table IV**

Significant Gender Differences in Alexithymia, Psychosocial Development, and Risk Behavior.

	Males (n = 38)		Females (n = 29)		F	p
	M	SD	M	SD		
<u>Alexithymia</u>						
EAQ-30 Total	68.9	8.3	64.6	8.7	4.02	<.05
Bodily Awareness	10.5	2.0	8.9	2.4	7.91	<.01
<u>Psychosocial Development</u>						
MPD						
Autonomy vs. Shame	6.7	6.1	1.5	7.1	8.42	<.005
<u>Risk Behavior</u>						
YCRA Risk to Self	12.8	4.1	15.4	4.4	5.94	<.05
YCRA Risk to Others	11.7	5.0	6.5	4.0	18.72	<.001