Published in final edited form as:

Prev Sci. 2016 May ; 17(4): 493–502. doi:10.1007/s11121-016-0637-4.

Evaluation of the Environmental Supports Scale with a Community Sample of Adolescents

Cristina M. Risco¹, Anahi D. Collado², Elizabeth K. Reynolds³, Carl W. Lejuez¹, and Laura MacPherson¹

¹Center for Addictions, Personality, and Emotion Research, University of Maryland, College Park

²Department of Psychiatry and Behavioral Sciences, Emory University

³Division of Child and Adolescent Psychiatry, Johns Hopkins School of Medicine

Abstract

Environmental sources of psychosocial support have been found to modulate or protect against the development of psychopathology and risk behavior among adolescents. Capturing sources of environmental support across multiple developmental contexts requires the availability of well-validated, concise assessments—of which there are few in the existing literature. In order to address this need, the current study explored the factor structure, concurrent and convergent validity of the Environmental Supports Scale (ESS; Tyler, Tyler, Echeverry, & Zea, 1991) with a community sample of adolescents. An unconstrained exploratory factor analysis revealed a separate factor for Home, School, and Neighborhood settings. Internal consistency and test-retest reliability were evaluated for each factor. Concurrent and predictive validity analyses revealed that the ESS was associated in the expected directions across a range of constructs relevant to adolescent development including internalizing symptoms, well-being, external influences, and engagement in risk behavior. Convergent validity for the neighborhood context was established with an assessment of neighborhood environmental adversity. A brief assessment of perceived environmental support across key developmental contexts provides an important tool for research on resilience processes during adolescence and may help illuminate key protective factors and inform intervention and prevention efforts.

Keywords

environmental support; psychosocial support; assessment; adolescents

Correspondence concerning this article should be addressed to Cristina M. Risco and Laura MacPherson, 2103 Cole Field House, University of Maryland, College Park, MD 20742-4411. crisco1@umd.edu and lmacpher@umd.edu.

b. Disclosure of potential conflicts of interest

The authors declare that they have no conflict of interest.

Compliance with Ethical Standards

c. Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

d. Informed consent

Informed consent/assent was obtained from all individual participants and their primary caregiver(s) included in the study.

For some youth, adolescence is marked by a steep increase in psychopathology and risk behavior (Cicchetti & Rogosch, 2002; Gullo & Dawe, 2008). In understanding individual differences in developmental trajectories, conceptual models emphasize individual and/or environmental sources of resilience that may mitigate risk (e.g., Fergus & Zimmerman, 2005). Although individual protective and risk factors that influence adolescent psychopathology and risk taking have been examined widely (e.g., Steinberg, 2008), environmental resilience has received less empirical attention. Environmental resilience consists of systems within which individuals develop that promote positive well-being and reduce the risk of psychopathology and maladaptive behavior (Luthar, Cicchetti, & Becker, 2000; Masten & Obradovi, 2006). Of particular importance to resilience is the role of positive, supportive relationships with adults and/or peers in the immediate environment. Despite the limited research on environmental resilience, empirical literature indicates that specific environmental factors, such as caring and supportive caregivers, positive relationships with school personnel, and friendships with pro-social peers, are essential in directing and maintaining youth on positive developmental trajectories, particularly among those who face significant vulnerability (Kurlychek, Krohn, Dong, Hall, & Lizotte, 2012; Sesma, Mannes, & Scales, 2013).

Deepening our understanding of environmental resilience requires the availability of well-validated assessments that capture the characteristics that modulate vulnerability to psychopathology and risk behavior across multiple contexts. However, there are few existing measures designed to assess environmental resources across multiple developmental settings that are not resource or labor intensive. The goal of the current study was to evaluate the psychometric properties of a concise and efficient measure of perceptions of the social environment—specifically supportive, positive relationships with adults and/or peers—across multiple contexts that are most immediate to adolescent development.

Environmental Resilience: The Role of Supportive Relationships

Consistent with a developmental psychopathology framework, the home, school, and neighborhood represent three immediate contexts within which risk and resilience processes are enacted and have a transactional influence (Bronfenbrenner, 1999; Cauce, Cruz, Corona, & Conger, 2011; Cicchetti & Rogosch, 2002). Among youth, a positive home environment characterized by familial support, nurturance, and monitoring has been positively related to pro-social behavior (Griffin, Botvin, Scheier, Diaz, & Miller, 2000), self-esteem (Boudreault-Bouchard et al., 2013), and inversely related to risk behavior (Lloyd-Richardson, Papandonatos, Kazura, Stanton, & Niaura, 2002). In particular, the parental bond and the adolescent's perception of parental support have been linked to positive youth outcomes (Arbona & Powers, 2003).

Specific to relational support in the school setting, perceived teacher support has been shown to contribute to students' subjective well-being (Suldo et al., 2009). More generally, large scale studies have demonstrated the association between a high degree of school connectedness and positive outcomes (Bond et al., 2007). Positive school attachment, for example, has been shown to reduce adolescent risk behavior including early sexual intercourse (Paul, Fitzjohn, Herbison, & Dickson, 2000), violence (Borowsky, Ireland, &

Resnick, 2002), anxiety and depressive symptoms (Shochet, Dadds, Ham, & Montague, 2006). Further, positive orientation toward school has been shown to be protective for youth with substance using friends (Costa, Jessor, & Turbin, 1999).

Neighborhood and community environments also have been shown to impact behavior and mental health (Roosa, White, Zeiders, & Tein, 2009; Stiffman, Dore, & Cunningham, 1996). For example, among adolescents at risk for violent behavior, parental reports of high levels of social and neighborhood integration was found to protect against engagement in violence and other maladaptive behavior (Kurlychek et al., 2012). Moreover, various developmental perspectives suggest that neighborhood supports are crucial in promoting the skills necessary to avoid risk behaviors and facilitate successful transition into adulthood for adolescents (Leffert et al., 1998). While these studies report on characteristics of the neighborhood environment, the impact of psychosocial support from members of the community or neighborhood is less well understood (Peterson, Buser, & Westburg, 2010).

The availability of positive, supportive relationships within each context not only contributes a unique influence on development, but also has a transactional influence (Sameroff & Fiese, 2000). For example, among adolescents in a negative home environment, a positive school environment has been found to buffer against engagement in problematic behavior by providing the opportunity to connect with pro-social peers and supportive school staff (Kenny, Gallagher, Alvarez-Salvat, & Silsby, 2002). Similarly, family connectedness has been found to mitigate risks for adolescent smoking associated with low school connectedness (Lloyd-Richardson et al., 2002). Further, parental support has been shown to protect against neighborhood-level risk factors such as drug availability for marijuana use (Brook, Brook, De La Rosa, Whiteman, & Montoya, 1999). Thus, assessments of the social environment across each context are crucial for providing a more comprehensive picture of the role that environmental resources play in trajectories of psychopathology and risk behavior.

Existing Assessments of Environmental Characteristics

There are a number of comprehensive assessments of environmental characteristics that include observational components and/or multiple informants. These measures are well-established and have provided critical data on environmental factors that may escalate or mitigate risk. Despite their strengths, these measures require considerable resources to administer, have typically assessed only one context, have focused solely on risk rather than protective resources of a given context, and/or do not capture the adolescents' perspective. We discuss in brief the most prominent measures below.

The Home Observation for Measurement of the Environment Inventory (HOME) is a widely used measure of emotional, social, and cognitive support available to children and adolescents in the home setting (Caldwell & Bradley, 1984). Although the measure has been commended for its inclusion of both a parent interview and observational component, it also has been criticized for lacking a standardized administration due to its length, subjectivity, and limited binary response options (Leventhal, Selner-O'Hagan, Brooks-Gunn, Bingenheimer, & Earls, 2004; Totsika & Sylva, 2004). The Family Environment Scale (FES;

Moos, Insel, & Humphrey, 1974; Moos & Moos, 1994) is another widely-used, self-report measure designed to assess family climate and documents the family environment from the perspective of each family member. However, like the HOME, the FES is quite lengthy, assesses only one environmental context, has demonstrated low internal consistency (Roosa & Beals, 1990), and low convergent validity on four of the 10 subscales (Sanford, Bingham, & Zucker, 1999).

One of the most comprehensive measures of social environment is the School Success Profile (SSP), a student self-report assessment that measures risk and protective factors across students' school, neighborhood, peer, and family environments (Bowen, Woolley, Richman, & Bowen, 2001). The SSP contains 220 multiple-choice questions and assesses 22 dimensions of social environment that are then categorized according to whether they are perceived by the student to be a potential risk, warrant caution, or potential asset. Although the SSP exhibits utility in school settings, its length limits its practicality for use in larger assessment batteries.

Further, the Neighborhood Environment Scale (NES; Elliott, Huizinga, & Ageton, 1985) is an 18-item self-report measure of perceived violence, safety, drug use and availability of drugs in the neighborhood. While this measure is fairly concise and easy to administer, it captures only neighborhood threats. Finally, the Adverse Childhood Exposure (ACE) assesses whether as children, individuals were exposed to abuse (psychological, physical, and sexual), domestic violence, living with someone who used substances, had a mental illness, or went to prison (Felitti et al., 1998). While the ACE has demonstrated utility as a predictor of deleterious outcomes in adulthood, it does not capture perceptions of psychosocial support and focuses only on environmental risk factors. In sum, while the available measures have many strengths and utility, they are limited in that they primarily assess the social environment or risk in only one context and require substantial resources to administer.

Environmental Supports Scale

The Environmental Supports Scale (ESS; Tyler, Tyler, Echeverry, & Zea, 1991) was designed to measure youths' relationships (e.g., perceptions of care, support, and protection) with adults and peers across a variety of settings. The scale was originally developed for youth living in environments of extreme adversity and assessed three contexts—home, institution, and “on the street.” In our current use of the measure with a community-based sample of youth, the institution and “on the street” contexts were modified to school and neighborhood settings to provide more relevance to broader community samples. In its original use, the scale composite for each context yielded fair to good reliability estimates (Cronbach's alphas ranged from .62 to .89). However, additional psychometric evaluations (e.g., factor analysis) were not conducted by the developers of the measure, in part due to the small, highly specific sample in the original study.

In order to address the need for a concise, validated measure of the social environment across multiple contexts, the primary aim of this study was to examine the psychometric properties of the ESS (Tyler et al., 1991) in a racially heterogeneous community sample of adolescents. Concurrent validity was evaluated with measures of internalizing symptoms

(i.e., depressive symptoms), well-being (i.e., self-esteem), external influences (i.e., parental monitoring and engagement in extra-curricular activities), and engagement in risk behavior (i.e., delinquent behaviors, risky weight management, and past year alcohol use). Convergent validity for the neighborhood context was evaluated with a measure of threats in the neighborhood environment. Finally, predictive validity was assessed with the same measures of internalizing symptoms, well-being, and engagement in risk behavior administered one year later.

It was hypothesized that perceptions of positive, supportive relationships with adults and/or peers would correlate positively with self-esteem, parental monitoring, and engagement in extra-curricular activities. Further, an inverse relationship was expected with depressive symptoms as well as engagement in risk behavior. Finally, support in the neighborhood context was expected to be negatively associated with perceptions of neighborhood disorganization and negative external influences.

Method

Participants

Data were collected from a community sample of youth participating in a larger prospective study of behavioral, environmental, and genetic mechanisms of vulnerability for HIV-related risk behaviors. Families were recruited through media outreach in the greater Washington, DC metropolitan area, as well as through contact with area schools, libraries, and Boys and Girls Clubs. Study advertisements recruited 5th and 6th grade youth. Proficiency in English was the only criterion for inclusion. Eligible families were invited to the assessment session at [Institution Omitted] accessible by public transportation (reimbursement was provided for transportation costs). At the initial assessment session, a more detailed description of the study procedures was provided and the primary caregiver(s) and youth signed informed consent/assent. Permission to conduct research was obtained from [Institution Omitted] Institutional Review Board (IRB).

To include youth in early to mid-adolescence, data were drawn from the study's third annual assessment (N =247) and a 1-year follow-up to examine test-retest reliability and predictive validity. During this developmental period, youth gain more autonomy and the external environment becomes increasingly more important as attention shifts from relationships within the family to those with peers and adults outside of the home setting (Eccles & Roeser, 2009).

The average age was 13.06 years ($SD = .89$; range, 11-15 years) and 57% were boys. Approximately 49% of participants identified (via mother/primary caregiver report) as White/European American, 35% Black/African American, 3% Hispanic/Latino, 2% Asian/Southeast Asian, less than 1% Native American/American Indian, and 11% indicated other ethnicity (i.e., identification with a racial/ethnic group not indicated). The racial/ethnic composition of White and African American persons in our sample reflects the racial heterogeneity of the Washington D.C. metropolitan area estimated at 55.9% White and 25.4% African American (U.S. Census Bureau, 2014a). Parental reports indicated that 65% of mothers and 58% of fathers had completed an associate's degree or higher. Mean annual

family income (parental report) was \$93,700 ($SD = \$74,019$, median = \$85,000; range: \$290 to \$850,000). The median income reported is consistent with the documented median household income for this metropolitan area [recently estimated at \$90,149 (U.S. Census Bureau, 2014b)].

Measures

Demographics—Parents/guardians completed a demographics form that included age, sex, race/ethnicity, annual family income, and highest level of education completed.

Environmental supports—The *Environmental Supports Scale* (ESS; Tyler et al., 1991) was originally designed to assess youth's perceptions of the environmental conditions that characterize their socialization—including perceptions of relational support. Youth responded to five items that assess perceptions of care/support, help, protection, companionship, and respect for each of three contexts: home, school, and neighborhood (15 items total). These contexts were adapted from the original version that inquired about home, institution, and street. Response options ranged from (0) “none” to (4) “a lot” on a 5-point Likert scale. In the current sample, the internal consistency for each context was good (α 's $\geq .80$). See Table 1 for Cronbach's alpha values for the current sample and item content. See Appendix A for the complete measure.

Internalizing symptoms—The depression scale of the *Revised Child Anxiety and Depression Scales* (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000) was used to assess DSM-IV major depressive symptoms. Items query frequency of symptoms and were scored on a 5-point Likert scale. Response options ranged from (0) “never” to (4) “always.” In previous research with children and adolescents (Chorpita et al., 2000), the depression module achieved adequate internal consistency ($\alpha = .76$). Cronbach's alpha was .84 in the current sample.

Well-being—The *Rosenberg Self-Esteem Scale* (RSE; Rosenberg, 1965) provides a global measure of self-esteem and includes 10 general statements assessing the degree to which respondents are satisfied with their lives and feel good about themselves. Response options ranged from (1) “strongly disagree” to (4) “strongly agree.” Cronbach's alpha has been reported at .81 (Whiteside-Mansell & Corwyn, 2003) and was .87 in the current sample.

Parental monitoring—A brief version of the Stattin and Kerr (2000) *Parental Monitoring Measure* was administered. Using a 5-point Likert type scale [i.e. response options ranged from (0) “never” to (4) “always”], adolescents reported on their parents' knowledge of their whereabouts, activities, and affiliations. A composite score was created by summing the values across five items. The abbreviated measure has been used in previous studies (e.g., Reynolds, MacPherson, Matusiewicz, Schreiber, & Lejuez, 2011; Stattin & Kerr, 2000) and achieved strong internal consistency in samples of children and adolescents ($\alpha = .85$). Internal consistency in the current sample was adequate ($\alpha = .77$).

Activities—To measure adolescents' engagement in extra-curricular activities, we created a 26-item questionnaire in which adolescents reported their participation in activities such as

sports (both in and out of school), dance, school clubs, boy/girl scouts, reading, and video games. In addition, adolescents were asked to estimate their average weekly engagement in such activities. Response options ranged from (0) *not engaging in the activity* to (4) engaging in the activity five or more times per week. The items were dichotomized (participated vs. not participated) and then a composite score of the questionnaire was calculated by summing the values across the 26 items. Internal consistency was not assessed for this measure as activities were not necessarily expected to be interrelated.

Engagement in risk behavior—An abbreviated version of the The Centers for Disease Control and Prevention Youth Risk Behavior Surveillance System (YRBS; CDC, 2002) was used to examine past year alcohol use (single item), prevalence of delinquent behavior (e.g., initiated a physical fight), and engagement in risky means to manage weight (e.g., vomited or taken laxatives). A composite was created for delinquent behavior (10 items) and risky weight management (4 items) as has been used successfully in previous research with adolescents (e.g., MacPherson et al., 2010). Because of the nonnormality of the prevalence of risk behaviors in the current sample (responses were moderately to highly truncated), we dichotomized each behavior [i.e., (0) “no” and (1) “yes”] to keep all variables on a relatively equal metric, consistent with previous adolescent research (e.g., MacPherson et al., 2010).

Neighborhood environment—The *Neighborhood Environment Scale* (NES; Elliott et al., 1985) was used to measure perceptions of neighborhood disorder, disadvantage, and safety. Eighteen items assess for exposure to neighborhood deviant behavior including violent crime, drug use and exchange, racism, and prejudice. Adolescents indicated whether exposure to various threats was (0) “false” or (1) “true” in their neighborhood. Lower scores represented better neighborhood perceptions. Cronbach’s alpha for the scale has been reported at .81 in previous research (Bass & Lambert, 2004) and was adequate ($\alpha = .77$) in the current sample.

Results

Exploratory Factor Analyses

Principal axis factoring, with an oblimin (oblique) rotation, was conducted for factor derivation of the ESS. An unconstrained exploratory factor analysis (EFA) of the 15 support items identified 3 eigenvalues greater than 1 and generated a scree plot that indicated a strong first factor (eigenvalue = 5.96 which accounted for 36.88% of the total variance) and a natural break at the third factor. Factors 4 through 6 each accounted for 6% or less of the total variance, which is equivalent to fewer than two items per factor. On the basis of these results, all 15 support items were submitted to an EFA forcing extraction of one, two, and three factors.

After rotation, the three-factor solution was retained because it produced factors that were more conceptually and meaningfully interpretable when compared to the one- or two-factor solutions. The three-factor solution included a Home factor, a School factor, and a Neighborhood factor. An item was retained if it had a loading greater than .40 on a primary factor, had loadings less than or equal to .30 on any other factor, and was consistent with factor content (Floyd & Widaman, 1995). Factor loadings are reported in Table 1. The model

retained all 15 items accounting for 55.59% of the variance. The three factors accounted for 36.88%, 12.37%, and 6.34% of the total variance, respectively. Next, items were unit weighted and summed to compute subscale scores. Subscale intercorrelations ranged from .37 to .53 and all were significant at $p < .001$ (see Table 2).

Reliability

Subscale Cronbach's alphas ranged from .80 to .90, indicating good internal consistency. To evaluate stability of the measure, test-retest correlation coefficients between subscale scores from the current assessment wave and an assessment point one year later were examined. Modest reliability emerged for the School subscale, $r = .47$, $p < .001$. This was unsurprising given the nature of the construct and that 34.9% of participants changed schools during that year (e.g., transitioned from middle to high school). The Home and Neighborhood subscales yielded higher coefficients of stability over one year (9.6% of participants moved during that year). Correlations were .67 for Home and .66 for Neighborhood (both $ps < .001$). Bias corrected and accelerated bootstrap 95% confidence intervals (95% BCa CIs) are reported in Table 2.

Concurrent Validity

Cross-sectional analyses using Pearson product-moment correlations were conducted to examine concurrent associations between perceptions of environmental support and the following constructs: internalizing symptoms (i.e., depressive symptoms), well-being (i.e., self-esteem), external influences (i.e., parental monitoring and extra-curricular activities), and engagement in risk behavior (i.e., delinquent behaviors, risky weight management, and past year alcohol use). See Table 2 for 95% BCa CIs.

Internalizing symptoms—As expected, all three subscales were negatively correlated with depression (all $ps < .001$); Home ($r = -.27$), School ($r = -.34$), and Neighborhood ($r = -.27$). Effect sizes were in the small to medium range (Cohen, 1992). Results indicate that adolescents perceiving a lack of positive, supportive relationships in any or all of the three contexts were likely to endorse co-occurring depressive symptoms.

Well-being—All three subscales were positively correlated with well-being as assessed by self-esteem (all $ps < .001$); Home ($r = .41$), School ($r = .37$), and Neighborhood ($r = .37$). Effect sizes were in the medium range suggesting that relationships characterized by support, caring, and respect were associated with positive self-regard.

External influences—External influences that were expected to correlate with the three support subscales included parental monitoring (child report), neighborhood environment, and engagement in extra-curricular activities. Across all three contexts, correlations for parental monitoring were positive and ranged between .19 and .32. Furthermore, effect sizes for home ($r = .32$) and school ($r = .30$) support were largest (both $ps < .001$) when compared to neighborhood support ($r = .19$, $p = .005$) suggesting that associations between adolescent perceptions of parental involvement were more strongly associated with their perceptions of support at home and school, while less so with supportive relationships in the neighborhood.

Involvement in extra-curricular activities was not associated with supportive relationships across all three settings. Based on the 95% CI, however, the correlation for home was significant (CI did not cross zero) although the effect was small ($r = .12$).

Engagement in risk behavior—Engagement in delinquent behavior, risky means for weight management, and past year alcohol use were expected to demonstrate an inverse relationship with the three support subscales. Engagement in delinquent behavior was negatively correlated with the home and school settings only; $r = -.18$ ($p < .01$) for home and $r = -.29$ ($p < .001$) for school. Risky weight management also was negatively correlated with perceptions of support in the home ($r = -.15$, $p = .03$) and school ($r = -.14$, $p = .04$) contexts only. Finally, past year alcohol use was negatively correlated with perceptions of support in both the school ($r = -.15$, $p = .03$) and neighborhood ($r = -.15$, $p = .03$) settings but not significant for the home setting.

Neighborhood environment—Perceived threats in the neighborhood was negatively correlated (r ranged from $-.14$ to $-.35$, p values ranged from $< .001$ to $.04$) with all three subscales and, in support of our hypothesis regarding the convergence of these constructs, the effect was largest in the association with supportive relationships in the neighborhood ($p < .001$).

Predictive Validity

Predictive validity was evaluated by Pearson product-moment correlations between ESS subscales and internalizing symptoms, well-being, and engagement in risk behavior assessed at a 1-year follow-up. As hypothesized, all subscales were negatively correlated with depression one year later. For Home, $r = -.19$, 95% BCa CI $[-.35, -.03]$, $p = .01$, for School $r = -.29$, 95% BCa CI $[-.46, -.11]$, $p < .001$, and for Neighborhood $r = -.24$, 95% BCa CI $[-.36, -.09]$, $p = .001$. Also as expected, all subscales were positively correlated with self-esteem one year later. For Home $r = .25$, 95% BCa CI $[.14, .37]$, $p < .001$, for School $r = .20$, 95% BCa CI $[.05, .34]$, $p = .004$, and for Neighborhood $r = .31$, 95% BCa CI $[.19, .42]$, $p < .001$. Engagement in delinquent behavior one year later was significantly correlated with the School subscale only, $r = -.18$, 95% BCa CI $[-.31, -.05]$, $p = .01$. Past year alcohol use was negatively correlated with perceptions of support in both the school and neighborhood settings but not significant for the home setting. For School, $r = -.15$, 95% BCa CI $[-.29, -.01]$, $p = .03$, and for Neighborhood $r = -.14$, 95% BCa CI $[-.28, .00]$, $p = .04$. Risky weight management one year later was not significantly correlated with the ESS subscales.

Discussion

The current study evaluated the psychometric properties of the ESS with a racially heterogeneous community sample of adolescents. An unconstrained exploratory factor analysis of the 15 items yielded a three-factor solution, including a separate factor each for home, school, and neighborhood settings. The intercorrelations between the scales of the ESS suggested that the measure was capturing overlapping yet distinct constructs, thus the ESS subscales demonstrated the expected amount of convergence. Further, concurrent and predictive validity analyses revealed that the ESS was associated in the expected directions

across a range of constructs relevant to adolescent development including internalizing symptoms, well-being, parental monitoring, and engagement in risk behavior. Convergent validity for the neighborhood context was established with an assessment of neighborhood environmental adversity.

In support of the validity of the ESS, across all three settings, there was a negative association between supportive, positive relationships and concurrent depressive symptoms as well as symptoms one year later. This finding is in line with the interpersonal theory of depression that posits diminished social support as a consequence of depressive behaviors such as social withdrawal, excessive need for reassurance, and negativity (Stice, Rohde, Gau, & Ochner, 2011). With regard to self-esteem, an indicator of psychological well-being, there were positive associations with perceived support across all three contexts concurrently and one year later. Adolescent self-esteem has been positively linked to perceived parental emotional support (Boudreault-Bouchard et al., 2013), peer relationships (Laible, Carlo, & Roesch, 2004), and support from school personnel and other important adults (Ryan, Stiller, & Lynch, 1994). Research suggests that supportive relationships create a context for higher self-esteem and the current findings are consistent with this literature.

Influences external to the adolescent that were concurrently associated with perceived environmental support included parental monitoring however not extra-curricular activities. Parental monitoring was more strongly associated with support in the home and school settings while the effect for the neighborhood setting was small. This was somewhat surprising, as higher parental monitoring has been shown to either ensure the availability of support in settings outside the home or serves to regulate adolescent behavior within settings outside the home with limited supervision from other adults (Jarrett, 1997; Zuberi, 2013). This modest association might also reflect less connection to the community of the parents sampled. Involvement in extra-curricular activities was not associated significantly across settings. This was unexpected and may have been because a number of the specified activities were solitary activities (e.g., reading, video games) that have less direct relevance to relational support.

Adolescent perceptions of threats in the neighborhood environment were negatively associated with all three ESS subscales and yielded the largest effect with supportive relationships in the neighborhood. As the measure of neighborhood environment (i.e., NES) focused exclusively on threats in that context, a stronger association with the neighborhood subscale of the ESS supports the convergence of these constructs. As the NES captures exposure to negative influences, the ESS captures environmental support—a related yet distinct construct.

Pertaining to risk behavior, engagement in delinquent behavior was inversely correlated with support in the home and school settings while alcohol use was inversely correlated with perceptions of support in only the school and neighborhood settings. The same pattern emerged for alcohol use assessed one year later while delinquent behavior was associated only with the school subscale one year later. In accordance with previous research on the shared correlates and underlying causes of risk behavior, substance use has been more closely associated with peer use while delinquency may suggest personality

psychopathology in addition to the influence of peers (Moffitt, 1993) and thus supports the stability of the association with perceived support in both home and school settings. Finally, risky weight management was negatively and concurrently correlated with perceptions of support in the home and school contexts but not the neighborhood. However, these associations were modest and did not hold one year later. This modest relationship was unexpected considering that the home environment is where one first learns and develops attitudes and values about food and body, and thus thought to have a strong influence on eating behavior (Story, Neumark-Sztainer, & French, 2002). Consistent with the current findings, however, the impact of the school on adolescent eating behavior has shown to be minimal, whereas the influence of the social environment has received mixed support (Story et al., 2002).

Several limitations of the current study should be noted. First, the ESS relies solely on the adolescent's perception of supportive relationships, thus internalizing and personality psychopathology might influence the accuracy of such perceptions (received versus perceived support) which has been identified as a potential limitation in former research (e.g., Rueger, Malecki, & Demaray, 2010). In previous studies, however, adolescent self-report has been found to be strongly correlated with parent-report of support (e.g., McCaskill & Lakey, 2000). Also, it has been noted that adolescent self-report adds unique information beyond parental reports (Hope et al., 1999) and that, in the home context for example, perceptions about family dynamics and emotions are insufficient from parental reports alone (Waters, Stewart-Brown, & Fitzpatrick, 2003). Moreover, because the ESS relies on self-report, it is well-suited for research in settings where it is difficult, or even unlikely, to obtain parental or teacher reports. Finally, because it is a brief measure of support across three contexts, the ESS does not assess the specific source of support in each context (adult or peer) but rather focuses on perceptions of support in general. The social support adolescents receive and perceive as well as the impact of such support may vary by the source considering that adults have the authority to exert control whereas power is shared in peer relationships (Russell, Pettit, & Mize, 1998).

The ESS items tap core assets of a broad developmental psychopathology framework—that is, the adolescent's perception of relationships that are supportive, caring, and respectful with adults and/or peers across settings. The current work lays a solid foundation for continued evaluation of the psychometric properties of the ESS (e.g., convergent validity with established measures of psychosocial support) in differently characterized samples (e.g., clinical samples, adolescents living in adverse environments). Moreover, an evaluation of the measurement invariance across key demographic characteristics such as gender or race/ethnicity is an important next step. Provided future work supports use of the ESS across a range of populations and settings, researchers will be equipped to study broader questions about adolescent development without the constraints inherent in measures geared toward a particular age group, setting, or non-adolescent observer.

Acknowledgments

Funding

This research was supported in part by a grant from the National Institute on Drug Abuse R01 DA018647.

APPENDIX A The Environmental Supports Scale

ENVIRONMENT AND SITUATIONS

1) How much care and support do you get in each of these places?

	None		Some		A Lot
Home	0	1	2	3	4
School (anywhere on school grounds)	0	1	2	3	4
Neighborhood/Street (not home or school)	0	1	2	3	4

2) How much do people help you in each of these places?

	None		Some		A Lot
Home	0	1	2	3	4
School (anywhere on school grounds)	0	1	2	3	4
Neighborhood/Street (not home or school)	0	1	2	3	4

3) If you are in trouble, how much will other people protect you in each of these places?

	None		Some		A Lot
Home	0	1	2	3	4
School (anywhere on school grounds)	0	1	2	3	4
Neighborhood/Street (not home or school)	0	1	2	3	4

4) How much companionship do you get in each of these places?

	None		Some		A Lot
Home	0	1	2	3	4
School (anywhere on school grounds)	0	1	2	3	4
Neighborhood/Street (not home or school)	0	1	2	3	4

5) How much respect do you get in each of these places?

	None		Some		A Lot
Home	0	1	2	3	4
School (anywhere on school grounds)	0	1	2	3	4
Neighborhood/Street (not home or school)	0	1	2	3	4

References

- Arbona C, Power TG. Parental attachment, self-esteem, and antisocial behaviors among African American, European American, and Mexican American adolescents. *Journal of Counseling Psychology*. 2003; 50:40–51.
- Bass JK, Lambert SF. Urban adolescents' perceptions of their neighborhoods: An examination of spatial dependence. *Journal of Community Psychology*. 2004; 32:277–293.
- Bond L, Butler H, Thomas L, Carlin J, Glover S, Bowes G, Patton G. Social and school connectedness in early secondary school as predictors of late teenage substance use, mental health, and academic outcomes. *Journal of Adolescent Health*. 2007; 40:357.e9–357.e18. [PubMed: 17367730]
- Borowsky IW, Ireland M, Resnick MD. Violence risk and protective factors among youth held back in school. *Ambulatory Pediatrics*. 2002; 2:475–484. [PubMed: 12437395]
- Boudreault-Bouchard AM, Dion J, Hains J, Vandermeersch J, Laberge L, Perron M. Impact of parental emotional support and coercive control on adolescents' self-esteem and psychological distress: Results of a four-year longitudinal study. *Journal of Adolescence*. 2013; 36:695–704. [PubMed: 23849664]
- Bowen GL, Woolley ME, Richman JM, Bowen NK. Brief intervention in schools: The School Success Profile. *Brief Treatment and Crisis Intervention*. 2001; 1:43–54.

- Bronfenbrenner, U. Environments in developmental perspective: Theoretical and operational models. In: Friedman, SL.; Wachs, TD., editors. *Measuring environment across the life span: Emerging methods and concepts*. American Psychological Association Press; Washington, DC: 1999. p. 3-28.
- Brook JS, Brook DW, De La Rosa M, Whiteman M, Montoya ID. The role of parents in protecting Colombian adolescents from delinquency and marijuana use. *Archives of Pediatrics & Adolescent Medicine*. 1999; 153:457–464. [PubMed: 10323624]
- Caldwell, BM.; Bradley, RH. *Home observation for measurement of the environment*. University of Arkansas at Little Rock; Little Rock: 1984.
- Cauce, AM.; Cruz, R.; Corona, M.; Conger, R. Health disparities in youth and families. Springer; New York: 2011. *The face of the future: Risk and resilience in minority youth*; p. 13-32.
- Centers for Disease Control and Prevention. *Youth risk behavior surveillance—United States, 2001*. *Morbidity and Mortality Weekly Report*. 2002; 51:1–64.
- Chorpita BF, Yim L, Moffitt C, Umemoto LA, Francis SE. Assessment of symptoms of DSM-IV anxiety and depression in children: A revised child anxiety and depression scale. *Behaviour Research and Therapy*. 2000; 38:835–855. [PubMed: 10937431]
- Cicchetti D, Rogosch FA. A developmental psychopathology perspective on adolescence. *Journal of Consulting and Clinical Psychology*. 2002; 70:6–20. [PubMed: 11860057]
- Cohen J. A power primer. *Psychological Bulletin*. 1992; 112:155–159. [PubMed: 19565683]
- Costa FM, Jessor R, Turbin MS. Transition into adolescent problem drinking: The role of psychosocial risk and protective factors. *Journal of Studies on Alcohol and Drugs*. 1999; 60:480–490.
- Eccles, JS.; Roeser, RW. Schools, academic motivation, and stage-environment fit. In: Lerner, RM.; Steinberg, L., editors. *Handbook of adolescent psychology*. John Wiley & Sons, Inc.; 2009. p. 404-434.
- Elliott, DS.; Huizinga, D.; Ageton, SS. *Explaining delinquency and drug use*. Sage Publications; Beverly Hills, CA: 1985.
- Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*. 1998; 14:245–258. [PubMed: 9635069]
- Fergus S, Zimmerman MA. Adolescent resilience: A framework for understanding healthy development in the face of risk. *Annu. Rev. Public Health*. 2005; 26:399–419. [PubMed: 15760295]
- Field T, Diego M, Sanders C. Adolescents' parent and peer relationships. *Adolescence*. 2001; 37:121–130. [PubMed: 12003285]
- Floyd FJ, Widaman KF. Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*. 1995; 7:286–299.
- Griffin KW, Botvin GJ, Scheier LM, Diaz T, Miller NL. Parenting practices as predictors of substance use, delinquency, and aggression among urban minority youth: moderating effects of family structure and gender. *Psychology of Addictive Behaviors*. 2000; 14:174–184. [PubMed: 10860116]
- Gullo MJ, Dawe S. Impulsivity and adolescent substance use: Rashly dismissed as “all-bad”? *Neuroscience & Biobehavioral Reviews*. 2008; 32:1507–1518. [PubMed: 18588911]
- Hope TL, Adams C, Reynolds L, Powers D, Perez RA, Kelley ML. Parent vs. self-report: Contributions toward diagnosis of adolescent psychopathology. *Journal of Psychopathology and Behavioral Assessment*. 1999; 21:349–363.
- Jarrett RL. Bringing families back in: Neighborhood effects on child development. *Neighborhood Poverty*. 1997; 2:48–64.
- Kenny ME, Gallagher LA, Alvarez-Salvat R, Silsby J. Sources of support and psychological distress among academically successful inner-city youth. *Adolescence*. 2002; 141:161–182. [PubMed: 12003288]
- Kurlychek MC, Krohn MD, Dong B, Hall GP, Lizotte AJ. Protection from risk exploration of when and how neighborhood-level factors can reduce violent youth outcomes. *Youth Violence and Juvenile Justice*. 2012; 10:83–106.

- Laible DJ, Carlo G, Roesch SC. Pathways to self-esteem in late adolescence: The role of parent and peer attachment, empathy, and social behaviours. *Journal of Adolescence*. 2004; 27:703–716. [PubMed: 15561312]
- Leffert N, Benson PL, Scales PC, Sharma AR, Drake DR, Blyth DA. Developmental assets: Measurement and prediction of risk behaviors among adolescents. *Applied Developmental Science*. 1998; 2:209–230.
- Leventhal T, Selner-O'Hagan MB, Brooks-Gunn J, Bingenheimer JB, Earls FJ. The Homelife Interview from the Project on Human Development in Chicago Neighborhoods: Assessment of parenting and home environment for 3-to 15-year-olds. *Parenting*. 2004; 4:211–241.
- Lloyd-Richardson EE, Papandonatos G, Kazura A, Stanton C, Niaura R. Differentiating stages of smoking intensity among adolescents: Stage-specific psychological and social influences. *Journal of Consulting and Clinical Psychology*. 2002; 70:998–1009. [PubMed: 12182283]
- Luthar SS, Cicchetti D, Becker B. The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*. 2000; 71:543–562. [PubMed: 10953923]
- MacPherson L, Reynolds EK, Daughters SB, Wang F, Cassidy J, Mayes LC, et al. Positive and negative reinforcement underlying risk behavior in early adolescents. *Prevention Science*. 2010; 11:331–342. [PubMed: 20309633]
- Masten AS, Obradović J. Competence and resilience in development. *Annals of the New York Academy of Sciences*. 2006; 1094:13–27. [PubMed: 17347338]
- McCaskill JW, Lakey B. Perceived support, social undermining, and emotion: Idiosyncratic and shared perspectives of adolescents and their families. *Personality and Social Psychology Bulletin*. 2000; 26:820–832.
- Moffitt TE. Adolescence-limited and life-course-persistent antisocial behavior: a developmental taxonomy. *Psychological Review*. 1993; 100:674–701. [PubMed: 8255953]
- Moos, RH.; Insel, PM.; Humphrey, B. Preliminary manual for family environment scale, work environment scale, group environment scale. Consulting Psychologists Press; Palo Alto, CA: 1974.
- Moos, RH.; Moos, BS. Manual for the family environment scale. Consulting Psychologists Press; Palo Alto, CA: 1994.
- Paul C, Fitzjohn J, Herbison P, Dickson N. The determinants of sexual intercourse before age 16. *Journal of Adolescent Health*. 2000; 27:136–147. [PubMed: 10899475]
- Peterson CH, Buser TJ, Westburg NG. Effects of familial attachment, social support, involvement, and self-esteem on youth substance use and sexual risk taking. *The Family Journal*. 2010; 18:369–376.
- Reynolds EK, MacPherson L, Matusiewicz AK, Schreiber WM, Lejuez CW. Discrepancy between mother and child reports of parental knowledge and the relation to risk behavior engagement. *Journal of Clinical Child & Adolescent Psychology*. 2011; 40:67–79. [PubMed: 21229444]
- Roosa MW, Beals J. Measurement issues in family assessment: The case of the Family Environment Scale. *Family Process*. 1990; 29:191–198. [PubMed: 2373214]
- Roosa MW, White R, Zeiders KH, Tein JY. An examination of the role of perceptions in neighborhood research. *Journal of Community Psychology*. 2009; 37:327–341. [PubMed: 20161028]
- Rosenberg, M. Society and the adolescent self-image. Princeton University Press; Princeton, NJ: 1965. p. 326
- Rutter M. Resilience: Some conceptual considerations. *Journal of Adolescent Health*. 1993; 14:626–631. [PubMed: 8130234]
- Rueger SY, Malecki CK, Demaray MK. Relationship between multiple sources of perceived social support and psychological and academic adjustment in early adolescence: Comparisons across gender. *Journal of Youth and Adolescence*. 2010; 39:47–61. [PubMed: 20091216]
- Russell A, Pettit GS, Mize J. Horizontal qualities in parent–child relationships: Parallels with and possible consequences for children's peer relationships. *Developmental Review*. 1998; 18:313–352.
- Ryan RM, Stiller JD, Lynch JH. Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *The Journal of Early Adolescence*. 1994; 14:226–249.
- Sameroff AJ, Fiese BH. Transactional regulation: The developmental ecology of early intervention. *Handbook of Early Childhood Intervention*. 2000; 2:135–159.

- Sanford K, Bingham CR, Zucker RA. Validity issues with the Family Environment Scale: Psychometric resolution and research application with alcoholic families. *Psychological Assessment*. 1999; 11:315–325.
- Sesma, A., Jr; Mannes, M.; Scales, PC. Positive adaptation, resilience and the developmental assets framework. In: Goldstein, S.; Brooks, RB., editors. *Handbook of resilience in children*. Springer; US: 2013. p. 427-442.
- Shochet IM, Dadds MR, Ham D, Montague R. School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child and Adolescent Psychology*. 2006; 35:170–179. [PubMed: 16597213]
- Stattin H, Kerr M. Parental monitoring: A reinterpretation. *Child Development*. 2000; 71:1072–1085. [PubMed: 11016567]
- Steinberg L. A social neuroscience perspective on adolescent risk-taking. *Developmental Review*. 2008; 28:78–106. [PubMed: 18509515]
- Stice E, Rohde P, Gau J, Ochner C. Relation of depression to perceived social support: Results from a randomized adolescent depression prevention trial. *Behaviour Research and Therapy*. 2011; 49:361–366. [PubMed: 21439551]
- Stiffman AR, Dore P, Cunningham RM. Violent behavior in adolescents and young adults: A person and environment model. *Journal of Child and Family Studies*. 1996; 5:487–501.
- Story M, Neumark-Sztainer D, French S. Individual and environmental influences on adolescent eating behaviors. *Journal of the American Dietetic Association*. 2002; 102:S40–S51. [PubMed: 11902388]
- Suldo SM, Friedrich AA, White T, Farmer J, Minch D, Michalowski J. Teacher support and adolescents' subjective well-being: A mixed-methods investigation. *School Psychology Review*. 2009; 38:67–85.
- Totsika V, Sylva K. The home observation for measurement of the environment revisited. *Child and Adolescent Mental Health*. 2004; 9:25–35.
- Tyler FB, Tyler SL, Echeverry JJ, Zea MC. Making it on the streets in Bogotá: A psychosocial study of street youth. *Genetic, Social, and General Psychology Monographs*. 1991; 117:395–417.
- United States Census Bureau. ACS Demographic and Housing Estimates: 2010-2014 American Community Survey 5-year Estimates. 2014a. Retrieved from http://factfinder.census.gov/faces/tables/services/jsf/pages/productview.xhtml?pid=ACS_14_5YR_DP05&prodType=table on December 14th, 2015
- United States Census Bureau. Household Income: 2013. 2014b. Retrieved from <https://www.census.gov/content/dam/Census/library/publications/2014/acs/acsbr13-02.pdf> on November 14th, 2015
- Youngblade LM, Theokas C, Schulenberg J, Curry L, Huang IC, Novak M. Risk and promotive factors in families, schools, and communities: A contextual model of positive youth development in adolescence. *Pediatrics*. 2007; 119:47–53.
- Waters E, Stewart-Brown S, Fitzpatrick R. Agreement between adolescent self-report and parent reports of health and well-being: results of an epidemiological study. *Child: Care, Health and Development*. 2003; 29:501–509.
- Whiteside-Mansell L, Corwyn RF. Mean and covariance structures analyses: An examination of the Rosenberg Self-Esteem Scale among adolescents and adults. *Educational and Psychological Measurement*. 2003; 63:163–173.
- Zuberi A. Neighborhoods and parenting: Assessing the influence of neighborhood quality on the parental monitoring of youth. *Youth & Society*. 2013 0044118X13502365.

Table 1
Exploratory Factor Analysis (EFA) Item Loadings of the 15-Item Environmental Supports Scale

	EFA factor loadings		
	Home	School	Neighborhood/Street
Home items ($\alpha = .80$)	($\alpha = .84$)	($\alpha = .90$)	
How much care and support do you get?	.65	.16	.04
How much do people help you?	.67	.02	-.05
If you are in trouble, how much will other people protect you?	.54	-.02	-.01
How much companionship do you get?	.84	-.07	.04
How much respect do you get?	.48	.15	-.16
School items			
How much care and support do you get?	-.02	.80	-.07
How much do people help you?	.12	.75	.01
If you are in trouble, how much will other people protect you?	.04	.63	.05
How much companionship do you get?	-.09	.79	.01
How much respect do you get?	.18	.47	-.11
Neighborhood/Street items			
How much care and support do you get?	.01	-.03	-.83
How much do people help you?	.06	-.05	-.79
If you are in trouble, how much will other people protect you?	-.05	.02	-.82
How much companionship do you get?	-.10	.07	-.80
How much respect do you get?	.10	-.02	-.77

Table 2
Correlations between Subscales of the Environmental Supports Scale and Concurrent and Convergent Constructs

	Home	School	Neighborhood	Mean	SD	Range (actual)
Home	.67*** [.53,.72]			17.63	2.88	5-15
School	.53*** [.37,.65]	.47*** [.34,.59]		15.64	3.61	0-20
Neighborhood	.41*** [.27,.54]	.37*** [.20,.52]	.66*** [.57,.74]	11.75	5.36	0-20
Depressive symptoms	-.27*** [-.45,-.08]	-.34*** [-.53,-.15]	-.27*** [-.41,-.12]	5.95	4.54	0-29
Self-esteem	.41*** [.29,.52]	.37*** [.24,.49]	.37*** [.26,.48]	22.46	4.75	3-30
Parental monitoring	.32*** [.18,.45]	.30*** [.18,.43]	.19** [.07,.30]	15.43	3.38	4-20
Neighborhood environment	-.19** [-.40,-.00]	-.14* [-.32,.02]	-.35*** [-.47,-.23]	3.02	2.78	0-17
Extra-curricular activities	.12 [-.06,.28]	.12 [.00,.25]	.13 [-.02,.27]	13.54	4.14	0-25
Delinquent behavior	-.18** [-.34,-.02]	-.29*** [-.41,-.17]	-.13 [-.25,.00]	3.83	2.25	0-10
Risky weight loss	-.15* [-.44,.09]	-.14* [-.35,.05]	-.01 [-.18,.13]	.09	.41	0-4
Alcohol use	-.02 [-.16,.12]	-.15* [-.29,-.02]	-.15* [-.27,.00]	.47	.50	0-1

Note. 95% BCa CIs reported in brackets. Test-retest correlations and 95% BCa CIs appear in italics.

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$.