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Understanding Social Support's Role in the Relationship Between Maltreatment and Depression in Youth with Foster Care Experience

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Abstract

This study investigated whether more complex maltreatment experiences predicted higher levels of depressive symptomatology for young adults and examined the role of social support during late adolescence in that association. Specifically, the study tested whether social support had a direct effect on depression and whether it mediated and/or moderated the relationship between self-reported maltreatment and depression in a sample of 513 youth exiting the child welfare system. Indices of maltreatment types (neglect and physical, sexual, psychological abuse) experienced during two periods (pre-care and during-care) were used in conjunction with a measure of perceived social support (reflecting support availability and social network sufficiency) in negative binomial regression models predicting depressive symptoms. Both pre- and during-care maltreatment were associated with depressive symptoms as a young adult. Social support had a direct effect on depressive symptoms as well as moderation and partial mediation effects on the relationship between maltreatment and depression. Social support's buffering effect was stronger for those experiencing fewer types of maltreatment. This buffering effect appears to diminish as maltreatment histories become more complex.

Youth transitioning out of the child welfare system typically have histories that pose a variety of challenges as they begin their adult lives. According to the Casey National Alumni Study, over 90% of adults formerly in care had suffered maltreatment of one form or another (Pecora et al, 2003). Youth aging out of care also have rates of mental health diagnoses higher than the general population (Keller, Salazar, & Courtney, 2010; McCann, James, Wilson, & Dunn, 1996; McMillen et al, 2005; Pecora et al, 2003). Furthermore, these youth often experience disruptions in their sources of social support due to being removed from the home and experiencing frequent placement and school changes (Courtney, Piliavin, Grogan-Kaylor, & Nesmith, 2001; Perry, 2006). However, the links among maltreatment, mental health outcomes, and social support have been studied much more thoroughly in the general population.

Maltreatment and Mental Health

The association between child maltreatment and poor mental health outcomes has been well-established in the general population for many types of maltreatment, including sexual abuse, physical abuse, psychological abuse, and neglect (Bagley & Mallick, 2000; Brayden, Deitrich-MacLean, Dietrich, Sherrod, & Altemeier, 1995; Cohen, Mannarino, Murray, & Igelman, 2006; Johnson et al, 2002). Depression, anxiety, and emotional disorders are mental health conditions commonly associated with maltreatment (Bagley & Mallick, 2000; Carlson et al, 2001; Johnson et al, 2002; Nelson et al, 2002; Reinherz, Paradis, Giaconia, Stashwick, & Fitzmaurice, 2003). A study by McMillen et al (2005) focusing specifically on older youth in foster care found that the number of types of maltreatment experienced, rather than whether youth had experienced individual types of maltreatment, was a strong predictor of a variety of psychiatric disorders, including major depression. However, the processes by which maltreatment may contribute to mental health problems still require investigation.

For youth who have been in foster care, one distinction to make regarding maltreatment is whether it occurred before entering care or while in care. The Casey National Alumni Study (Pecora et al, 2003) reported that 21% of alumni had experienced maltreatment by a member of their foster family, while the Northwest Foster Care Alumni Study (Pecora et al, 2005) found that almost one-third (32.8%) of alumni had experienced maltreatment while in care. Although maltreatment both before and during time in care could lead to mental health problems, it is not clear whether one type or the other is more predictive of problematic mental health outcomes as a young adult. Examining this distinction will improve understanding of how maltreatment may contribute to mental health problems for this population.

The Role of Social Support

One factor related to both child maltreatment and mental health outcomes (Carlson et al, 2001) and perhaps responsible for links between foster care experiences and mental health outcomes is social support. An examination of a sample of female sexual abuse survivors by Testa, Miller, Downs, and Panek (1992) offers evidence of these relationships. They found that, among women not enrolled in treatment, those who received support following abuse disclosure experienced fewer psychiatric symptoms and had higher self-esteem than those who did not receive support following disclosure. This pattern was not observed for women receiving treatment. Several studies looking at samples of child maltreatment survivors have identified social support, specifically family-based social support, as key protective factor. Ezzell, Swenson, and Brondino (2000) found both family and peer, although not teacher, social support to provide protection against the development of depression and anxiety in a sample of child physical abuse survivors. Similarly, Thompson et al (2007) found that vulnerable family environment, which included low social support in addition to poor family functioning and caregivers' psychological distress, was predictive of child internalizing and externalizing mental health problems as well as lower mental health service use for children who were maltreated or at-risk. Both lack of social support from an adult or sibling and poor family functioning were found by Conte and Schuerman (1987) to be factors associated with increased behavioral problems following child sexual abuse. Likewise, Perry (2006) found

stronger social networks with both biological and foster families to be related to lower levels of depressive symptomatology in a sample of foster youth.

In the foster youth population, social support is often developed and experienced differently than in the general population due to a high degree of instability and challenging home circumstances prior to entering care, as well as to a variety of harsh circumstances related to being in foster care (Rosenfeld et al, 1997). Such circumstances include being removed from one's biological family (and thus lacking family support), moving from placement to placement, being placed in non-family settings such as residential treatment facilities, changing schools frequently, and missing or being held back in school (James, Landsverk, & Slymen, 2004; Northwest Working Group on Foster Care and Education, 2007). Each of these experiences could result in tenuous, short-term, unreliable, and potentially non-existent, or very likely atypical, sources of social support (Perry, 2006; Unrau, Seita, & Putney, 2008). Furthermore, previous cross-sectional, person-oriented research based on the sample in the current study found that distinctive subpopulations exhibiting difficulties in a number of domains not only reported more extensive abuse histories but also less social support than those groups that demonstrated higher functioning (Keller, Cusick, & Courtney, 2007).

Social support as a mediator

Social support has been conceptualized as both a mediator and moderator of the effects of child maltreatment on mental health outcomes. For example, Vranceanu, Hobfoll, and Johnson (2007) theorized social support could act as a mediator, suggesting that the experience of maltreatment may have a variety of effects on the subsequent development of social support. First, maltreatment could influence cognitions regarding interpersonal interaction in a way that subsequently affects how one relates to others, perhaps causing one to be anxious, wary, or avoidant of close relationships. Second, the circumstances surrounding maltreatment could affect the extent to which social support is actually available to the child. In the case of children going into foster care, this second explanation may be particularly salient due to being removed from one's home, being moved from placement to placement, frequently changing schools and peer groups, and other experiences that alter one's ability to develop healthy, lasting sources of social support. In these models, the way social support (both perceived and actual) develops and functions, in turn, affects adult functioning, namely mental health outcomes such as depression. For instance, individuals lacking social support may experience feelings of severe loneliness or isolation, or they may have difficulty coping with overwhelming stress without access to support and assistance.

Several studies have investigated social support as a mediator. A study of low-income inner-city women by Vranceanu, Hobfoll, and Johnson (2007) found social support to partially mediate the relationship between experiencing multiple types of child maltreatment and developing PTSD, but not depression. Runtz and Schallow (1997) found social support and coping strategies to mediate the relationship between child sexual and physical abuse and later psychological distress and self-esteem in a sample of university students. In another sample of college students, Pepin and Banyard (2006) found that social support mediated the

relationship between child maltreatment and measures of developmental achievement based on the first six stages of Erikson's theory of psychosocial development.

Social support as a moderator

Conceptual frameworks of social support as a moderator often describe social support as having a buffering effect against the deleterious effects of negative or stressful events. Cohen and Wills' (1985) buffering hypothesis proposed that social support could act as a buffering agent in two ways. First, social support could intervene between the stressful event and one's reaction to this event so that the event is not perceived as particularly stressful. Second, social support could intercede between the stressful event and the development of mental health problems by offering resources or solutions to deal with the stressful experience. The second mechanism may be more likely with foster youth, given that the stressful events they experience (e.g., maltreatment) are often perpetrated by their primary sources of social support. Furthermore, foster youth are often removed from a range of typical social support resources as a result of maltreatment and thus are not likely buffered from this experience of stress following maltreatment. The buffering hypothesis suggests that there is little difference between mental health symptomatology for those with low versus high social support when stress is low, but as one's stress level increases, higher social support becomes a stronger buffer against the development of mental health symptomatology.

Several studies test social support as a moderator. Social support has been reported to moderate the association between psychological abuse and PTSD symptomatology (Babcock, Roseman, Green & Ross, 2008), number of types of abuse and PTSD (Schumm, Briggs-Phillips, & Hobfoll, 2006), child sexual abuse and dimensions related to loss (Murthi & Espelage, 2005), and dating victimization and psychological well-being (Holt & Espelage, 2005). However, some studies have failed to find this moderating effect, including one in which social support did not moderate the relationship between number of types of abuse and depression among low-income inner-city women (Schumm, Briggs-Phillips, & Hobfoll, 2006). Taking into consideration the research on social support's role, it appears that social support may act as both a mediator and a moderator in the relationship between maltreatment and subsequent mental health outcomes.

Current Study

The current study focuses on the relationships among child maltreatment, perceived social support, and mental health outcomes, specifically depression, among a large sample of youth aging out of foster care in three Midwestern states. Given the lack of research for youth in foster care, it is unclear whether maltreatment will predict depression as a young adult, and whether social support during older adolescence will play a role in this relationship. Thus, the first research question we addressed concerned whether self-reported experiences of pre- and during-care maltreatment predicted depressive symptomatology as a young adult. It was hypothesized that maltreatment would have main effects on depression, with multiple types of maltreatment, both pre- and during-care, predicting higher levels of depressive symptomatology in young adulthood. The second research question we addressed involved whether having social support as an older adolescent has a direct effect on subsequent

development of depressive symptomatology as a young adult. Furthermore, we asked whether social support plays a mediating and/or moderating role in the relationship between maltreatment and depression. Testing for mediation implies that early adverse circumstances, here maltreatment, would have an effect on how later social support was developed. In turn, the nature of social support available would affect later mental health outcomes, explaining the subsequent consequences of the maltreatment. In contrast, moderation would imply that the social support available in late adolescence interacts with earlier maltreatment experiences to affect later depression. Social support was hypothesized to have a direct effect on depressive symptomatology as a young adult. Furthermore, social support was hypothesized to have both moderating and mediating effects on the relationship between maltreatment and depression because the two mechanisms are not mutually exclusive and partial evidence has been found for each in the literature cited above.

Method

Sample

The current study represents a secondary analysis of data from three time points in a longitudinal panel study tracking a cohort of youth exiting the public child welfare systems of three Midwestern states. The purpose of the original study was to determine how well these youth transition to independent living (Courtney & Dworsky, 2006). The population of interest included adolescents who: a) were in out-of-home care supervised by the public child welfare agencies of the three states; b) were 17 years or older; and c) had been in out-of-home care for at least one year. Exclusion criteria were developmental disability, current in-patient psychiatric institutionalization, or current incarceration, as these factors were thought to interfere with a typical transition process.

A representative sample was obtained using a systematic sampling procedure (Henry, 1990). The sampling frame consisted of youth with active cases identified by the public child welfare agencies between April and June 2002, and included all eligible youth in two of the states and a random selection of 67% of eligible youth in the third, most populous state. In some cases, the initial contact with potential subjects revealed that they were ineligible. Of the 880 adolescents identified for recruitment into the study, 110 of those contacted were discovered to be ineligible and excluded for the following reasons: physically or mentally incapable *(n*=33); incarcerated or in a lock-down facility such as a psychiatric hospital *(n*=40); runaway or missing from assigned home prior to start of data collection (*n*=16); out of state prior to start of data collection (*n*=13); or ineligible for other reasons, such as being adopted (*n*=8). Of the remaining 770 cases, 732 consented to participate and completed an in-person baseline interview, for a response rate of 95%. Out of the 732 participants originally recruited, 513 participants (70.1%) completed all of the three study interviews. The responses from these 513 participants were used for the current analysis. Compared to those left out of the analysis, the selected participants were significantly more likely to be female (54.8% versus 43.8%, χ^2=7.36, *df*=1, *p*=.007) less likely to be African American (54.8% versus 63.1%, χ^2=4.33, *df*=1, *p*=.037), and slightly younger ($\bar{x}$ =17.4 versus $\bar{x}$ =17.5 years old, *t*=2.064, *p*=.040).

Participants were 281 females (54.8%) and 232 males (45.2%). Over half of participants (54.6%, *n*=280) reported being African-American; 33.3% (*n*=171) reported being Caucasian. Almost 10% of the sample reported being mixed race (*n*=50), while less than 2% reported being American/Alaskan Native (*n*=7) or Asian/Pacific Islander (*n*=2).

Procedure

The foster care providers of prospective participants were informed of the study through a letter and verbal communication with the child's caseworker. Youth were sent letters regarding the study and then were contacted for in-person interviews at which time informed consent was obtained. All recruitment and data collection activities followed IRB-approved protocols. Interviews were conducted by the University of Wisconsin Survey Center. At the first interview, all participants were either 17 or 18 years old; the sample had a mean age of 17.39 years (*SD*=0.49). The second interview took place two years later (mean=19.03 yrs, *SD*=0.19), and the third interview was approximately two years after the second (mean=21.09 yrs, *SD*=0.30).

Measures

Maltreatment—Self-reported pre-care and during-care maltreatment experiences were assessed using the Lifetime Experiences Questionnaire (LEQ; Rose, Abramson, & Kaupie, 2000). This scale consisted of 24 abusive or neglectful behaviors that could have been exhibited by a caregiver, and youth responded yes or no to indicate which they had experienced. The items reflected four types of maltreatment: physical abuse, sexual abuse, psychological abuse, and neglect. An affirmative response to any item within a domain was coded as experience of that type of abuse. Summary scores were derived by counting (0-4), reflecting the number of types of maltreatment experienced before entering care and during their time in care. Pre-care maltreatment experiences were collected at Time 1 (except sexual abuse, which was collected at Time 2 due to participant age restrictions), and during-care abuse was collected at Time 2.

Social support—Two measures of social support were used, the Medical Outcomes Study (MOS) Social Support Survey (Sherbourne & Stewart, 1991) and a measure of social network sufficiency. Both were collected at Time 2. The MOS includes 19 items that measure how often (none, a little, some, or most of the time) particular types of social support are available to the respondent and provides an overall social support availability index in addition to four social support subscales: emotional/informational support, tangible support, affectionate support, and positive social interaction. Scores had a possible range of 1-5, with 1 indicating low support and 5 indicating high support. The overall scale had α=0.96 for the current sample. This social support measure will be referred to as social support availability.

The social network sufficiency measure consisted of four items reflecting ways in which individuals might need support—when feeling low, when needing small favors, when needing money, and when needing encouragement. Respondents indicated whether they felt they had enough people, too few people, or no one to count on for these things. An overall

count (0-4) reflects the number of types of social support for which the participant reported a sufficient network. The social network sufficiency scale had α=0.81 in the current sample.

Depressive symptomatology—The dependent variable in the analysis was depressive symptomatology at the third time point of the study. This variable was a count of the depressive symptoms that participants reported experiencing in the past 12 months as part of the Composite International Diagnostic Interview, Core Version 2.1, 12-Month Version (CIDI; World Health Organization, 1997). Twenty-four possible symptoms, rated "yes" or "no", were included in this count variable. The count was the result of screening participants in a two-step process; if participants responded "yes" to one of the first two key depression screening items, then and only then were they were asked to respond to the remaining items. The first two questions asked whether, in the past twelve months, the respondent had for two weeks or longer 1) felt sad, empty, or depressed most of the day nearly every day, and 2) lost interest in most things they usually enjoyed most of the day nearly every day.

Data Analysis

The variables used in the analysis were assessed in a time ordered sequence: pre-care maltreatment (Time 1), during-care maltreatment (Time 2), social support (Time 2), and depressive symptoms (Time 3). The use of a count of maltreatment types was based on the findings of McMillen et al (2005) that showed, with a very similar population, the number of types of maltreatment experienced was a stronger predictor of depression than particular maltreatment types. Furthermore, correlation analysis with the current data revealed that all types of maltreatment (except for pre-care sexual abuse) were significantly related to depression symptomatology with little variation in the size of the correlations (all correlations ranged from .073 to .211), so the maltreatment types were treated as equivalent in the count. Because the two measures of perceived social support were highly correlated, a combined overall perceived social support variable was calculated by standardizing and taking the mean of the two measures. This constructed variable preserved the patterns of correlation of social support with other variables in the analysis; thus, it was used in the subsequent regression models.

Because the outcome variable was an over-dispersed count of depressive symptoms with a highly skewed distribution, data were analyzed using negative binomial regression analysis. No imputation methods were found by the authors to handle over-dispersed count data; therefore, only participants who responded to all three time points were used in analysis. Comparisons on the four key variables (pre-care maltreatment, during-care maltreatment, social network sufficiency, and social support availability) for participants included in the analysis versus those left out of the analysis revealed that only one of the variables differed significantly between the two groups. For during-care maltreatment, those included in analysis experienced a mean of 0.67 types of maltreatment, while those not included who had data for wave 2 experienced a mean of 0.37 types of maltreatment (t=−3.90, p<.001).

The analysis was conducted in several phases. After descriptive and correlational analyses, negative binomial regression was used to test whether each maltreatment variable had a direct effect on depressive symptomatology as a young adult. Next, the direct effect of social

support on depressive symptoms was examined. To evaluate mediation, the combined social support variable was first regressed on each type of maltreatment to test the initial indirect pathways in the mediation model. Next, the second indirect pathway in the mediation model was assessed by adding the social support variable to the negative binomial regression with maltreatment to predict depression. These equations reflect the "causal steps" approach to establishing mediation outlined by Baron and Kenny (1986). As a direct test of mediation, the Freedman and Schatzkin (1992; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) "difference in coefficients" approach was used to determine whether the change in the coefficient for maltreatment with the addition of social support into the equation was statistically significant. Finally, to evaluate moderation, an interaction term was created by multiplying the social support and maltreatment variables and adding this term to a negative binomial regression equation containing both factors.

Results

Descriptive Statistics

Table 1 reports descriptive statistics for the variables in the analysis. Almost two-thirds of the sample had experienced at least one type of maltreatment prior to entering care, and approximately 40% of the sample reported some type of maltreatment while in care of the child welfare system. A higher proportion of females reported experiencing any maltreatment and each type of maltreatment, although these differences reached statistical significance only for sexual abuse (both pre- and during-care). A significantly higher proportion of Caucasian participants reported experiencing any pre-care maltreatment and pre-care physical and sexual abuse than African American or Mixed/Other Race participants. There were no racial differences for during-care maltreatment experiences. For social support network sufficiency, over 80% of the sample reported having a sufficient level of at least one of the four types of social support discussed, but only 39.8% of the sample reported having sufficient levels of all four types. Caucasian participants reported slightly higher mean social support network sufficiency than African American participants and slightly higher social support availability ratings than both other racial groups. Counts of depressive symptoms experienced for at least two weeks during the previous year ranged from 0 to 21, with a sample mean close to 3 symptoms. As noted, however, the distribution of symptoms was highly skewed, with a proportion of the sample not meeting the threshold set for reporting symptoms. Females reported experiencing significantly more depressive symptoms than males. There were no racial differences in depressive symptoms.

A correlation matrix of all variables is presented in Table 2. Pre- and during-care maltreatment, the combined social support measure, and depressive symptom count were all significantly correlated with each other. Higher maltreatment counts were associated with higher depressive symptom counts, while both were associated with lower social support scores. All correlations fell between 0.1 and 0.2, indicating rather weak associations as outlined by Rosenthal (1996). Based on the patterns of correlation, gender and race were used as control variables in subsequent analyses. Gender was associated with both pre-care maltreatment and depressive symptoms. Race was associated with both maltreatment and social support, potentially confounding an indirect pathway in the mediation model. For

consistency and for comparability across results, the control variables were used in all regression equations.

Testing Main Effects of Maltreatment and Social Support

Each maltreatment predictor variable was entered into a separate negative binomial regression with depressive symptom count as the dependent variable. The left side of Table 3 reports the results for predicting depressive symptoms from the control and maltreatment variables excluding social support; the top of the table presents pre-care and the bottom during-care maltreatment experienced. Both pre- and during-care maltreatment were statistically significant predictors of depressive symptomatology, and in the expected direction. Gender was also a statistically significant predictor of depression, with females being more likely to experience higher depressive symptomatology. The direct effect of social support on depression was then tested by using negative binomial regression. This test was also significant in the expected direction (B=−.299, p<.001).

Testing Social Support's Role as Mediator

For the next stage of analysis, social support's role as mediator was tested. Pre-care and during-care maltreatment were again evaluated separately. To establish the final criterion for testing mediation, social support was regressed onto pre- and during-care maltreatment (B= −.121, p<.001 and B=−.165, p<.001, respectively) using OLS regression, again controlling for gender and race. As expected, these tests indicated that maltreatment experiences were associated with lower levels of social support.

Results for the meditational analyses with support added to the control and maltreatment predictors are presented in the right side of Table 3. In the negative binomial regression equation with social support and maltreatment as predictors of depression, both social support and maltreatment (pre- and during-care) were found to be statistically significant predictors of depressive symptomatology, in the expected direction. Being female remained a significant predictor of higher depressive symptomatology in all regressions. Freedman-Schatzkin difference-in-coefficients tests indicated statistically significant partial mediating effects of social support for both pre-care maltreatment (t=3.31, p=.001) and during-care maltreatment (t=2.07, p=.039).

Testing Social Support's Role as Moderator

To test social support's role as moderator, an interaction term (maltreatment × social support) was added into each regression (Agresti & Finlay, 1999). Results are reported in Table 4. For both pre- and during-care maltreatment, the interaction terms were statistically significant. Figure 1(a) represents the interaction for pre-care maltreatment with social support showing a protective relation with depressive symptoms for those with fewer types of maltreatment experiences. Figure 1(b) shows a similar pattern for during-care maltreatment. However, in this case, depression is actually lower at high levels of maltreatment for those with low versus moderate to high social support.

Discussion

The current study explored the relationships among self-reported maltreatment, perceived social support during late adolescence, and depressive symptomatology as a young adult in a large sample of youth aging out of foster care. The analysis evaluated whether maltreatment was a predictor of later depressive symptomatology and explored what role social support in late adolescence played in this relationship. Experiences of maltreatment both before entry into care and during care were assessed and analyzed. In addition, the study provides information regarding the prevalence of maltreatment and depression among youth exiting foster care. Although studied less frequently, abuse during care is an important consideration given its prevalence. The current study found during-care maltreatment rates higher than those found in comparable studies (39.2% versus 32.8% and 21%) (Pecora et al, 2003, Pecora et al, 2005). An explanation may be that the current study relied on respondent self-report while the other two studies used information from participants' child welfare case files. Comparing this sample to others with respect to depression is difficult because the current study uses symptom counts rather than diagnoses or scales with item ratings. Although the average of approximately three depressive symptoms may appear to indicate a low level of depression for a high-risk sample, the overall mean incorporates a sizable proportion with no symptoms in the past year lasting more than two weeks. Among those experiencing any signs of depression, however, the mean number of symptoms was 9.9 (SD=4.7, N=153). The analysis accounted for assessment of the more extreme end of the distribution of depression with count data by using negative binomial regression models.

The results of the analysis were consistent with the hypotheses and helped to clarify the role of social support. The first hypothesis, that experiences of multiple types of maltreatment would predict higher rates of depressive symptomatology as a young adult, was supported. Higher counts of both pre-care and during-care maltreatment were associated with higher counts of depressive symptomatology, results similar to those found by McMillen et al (2005). The hypothesis that social support would have a main effect on depressive symptomatology also was supported. The analysis revealed that higher levels of social support were associated with fewer depressive symptoms, results similar to those found by Perry (2006) regarding the importance of social network strength with biological and foster families.

Finally, the hypothesis that social support would serve as a mediator and moderator of the relationship between maltreatment and depression, was also supported. Social support appears to be a factor in the development of depressive symptoms following experiences of maltreatment by playing both a mediating and moderating role. A portion of the effect of maltreatment on subsequent depressive symptoms operates indirectly through social support. Although statistically significant, this indirect pathway represents only partial mediation of maltreatment, which still has a substantial main effect on depressive symptoms through mechanisms other than social support. The level of social support also can alter the effect of maltreatment on depressive symptoms. Specifically, when fewer types of maltreatment (especially pre-care maltreatment) are experienced, level of social support in late adolescence distinguishes depressive symptomatology as a young adult. However, as types of pre-care maltreatment experienced increase, social support appears to have less of a

buffering effect and participants tend to experience more depressive symptoms regardless of social support level. It seems that social support is more influential when maltreatment is less severe, but as multiple types of pre-care maltreatment experiences combine the buffering effects of social support seem to diminish. For during-care maltreatment, those with little social support have rather constant experiences of depression regardless of maltreatment complexity; however, those with moderate to high social support fluctuate from having very few depressive symptoms when maltreatment history is less complex to a higher number of depressive symptoms than those with low social support when maltreatment history is more complex.

The findings regarding moderation suggest that social support has a buffering effect, but in a way almost opposite to that outlined by Cohen and Wills (1985). The buffering hypothesis suggests that social support's buffering role would become more important in combating against mental health symptomatology as stress level increases. However, the current study found social support to be a more notable buffering agent when maltreatment was less severe and diminishing buffering effects as maltreatment experiences grew more complex. One explanation may be that Cohen and Wills' hypothesis is based primarily on data from community samples rather than populations, such as foster youth, that generally have more complex and severe maltreatment and trauma histories than those experienced by the general population. The findings of the current study suggest that severe trauma experiences may overpower the buffering power of social support typically observed. Frameworks that may better explain the experiences of this population are those involving an examination of trauma and resilience (Heller, Larrieu, D'Imperio, & Boris,1999; Herrenkohl, Herrenkohl, & Egolf,1994). Research has shown a strong correspondence between the number of personal and environmental risks and the likelihood of mental health or behavioral problems (Sameroff, Gutman, & Peck, 2003). In cases when individuals demonstrate resilience, protective factors such as social support are sufficient to counteract or mitigate the effects of risk and enable successful adaptation despite adversity. However, as cumulative risk grows, the adequacy of compensating factors may diminish, and the chances of negative consequences may increase (Sameroff et al, 2003). Complex trauma may represent a circumstance when, even with social support, coping is taxed beyond the limit and outcomes like depression become more likely.

Implications for Practice

Findings from this study highlight the importance of understanding the early experiences of foster youth, as well as the ongoing consequences of trauma, when designing and providing services to meet their mental health needs as young adults. When multiple types of maltreatment have occurred, there is a greater probability of subsequent symptoms of depression. A full assessment of abuse and neglect history is therefore valuable in determining service needs and case planning. Furthermore, the current study points to the importance of social support as an important resource to consider when exploring intervention approaches with this population, particularly when they have had less severe maltreatment experiences. If social support can be reinstated through consistent and reliable sources, this could be an avenue worth pursuing as a target or change mechanism for interventions. Interventions can work toward strengthening existing social support resources

for those who have them, and helping to develop them for those who do not. For young adults, this could be achieved in a variety of ways, such as through mentoring programs, or through increasing social networks by helping young adults to integrate themselves in the environments they may find themselves in after entering care, such as a community or postsecondary setting. Increasing both size of social networks and support availability could be targets of intervention. One plausible approach for youth aging out of care could be supporting their continuing education as a means supplying a post-care, school-based environment for integration and social support. Experiencing stable school situations while in care is associated with more positive outcomes for youth who have spent time in care, including increased likelihood of graduating from high school (Rumberger, Larson, Ream, & Palardy, 1999), and reduced mental health service use (Rubin et al, 2004). While social support may be a promising means of intervention for those with less severe maltreatment histories, this may not be as fruitful for those with more complex histories. These youth may need to first be supported in addressing mental health issues related to processing their experiences of maltreatment before more socially integrative approaches become helpful.

Limitations

Certain limitations of the current study are common to secondary data analysis. The data available did not always address the research questions in the most ideal way. For example, maltreatment variables were represented by counts of types of maltreatment experienced, but this measure did not reflect the number of times or length of time maltreatment was experienced. Furthermore, there is potential inaccuracy of maltreatment self-reports in general for a variety of reasons, including memory error, inaccessibility of memory due to experiences of trauma, or the wording or scoring of the measure (Delillo et al, 2006). The diagnostic interview used to collect information on depressive symptomatology used skip patterns for respondents who did not meet the first two criteria of major depression. Although it is unlikely that individuals not experiencing the two primary depressive symptoms would have high counts on the remaining symptoms, they were not given the opportunity to answer these questions so the counts may be biased downward. Finally, questions regarding maltreatment during care were only asked at Time 2, when just under half of the youth (45.8%) were still under state supervision and some were in settings where they could have been maltreated by the adults caring for them. Their experiences of during-care maltreatment could have changed after data was collected at Time 2. However, because over half of the young people still “in care” at age 19 were actually living in supervised independent living arrangements or other settings where they were not under the direct care of adults, the likelihood of significant maltreatment after Time 2 seems low.

Another limitation is attrition over the time points of the study. Participants who did not respond to all three waves of data collection were left out of data analysis. Comparisons of those excluded with those included revealed few differences, but the results may have differed if all participants responded at all time points. Imputation is preferred to sample deletion; however, the over-dispersed nature of the count data meant imputation methods were not accessible.

Conclusion

The current study finds social support in late adolescence to be a factor in the association between experiences of maltreatment and development of depressive symptomatology as a young adult. While time in foster care can certainly be alienating and have a negative impact on social support resources, aging out of care with few positive social connections may be even more difficult. If social support during transition is in fact related to more positive mental health outcomes for youth who have had less severe maltreatment experiences, finding ways to bolster this support may be a valuable intervention. However, for those with more complex maltreatment experience, working through past traumas first may be key.

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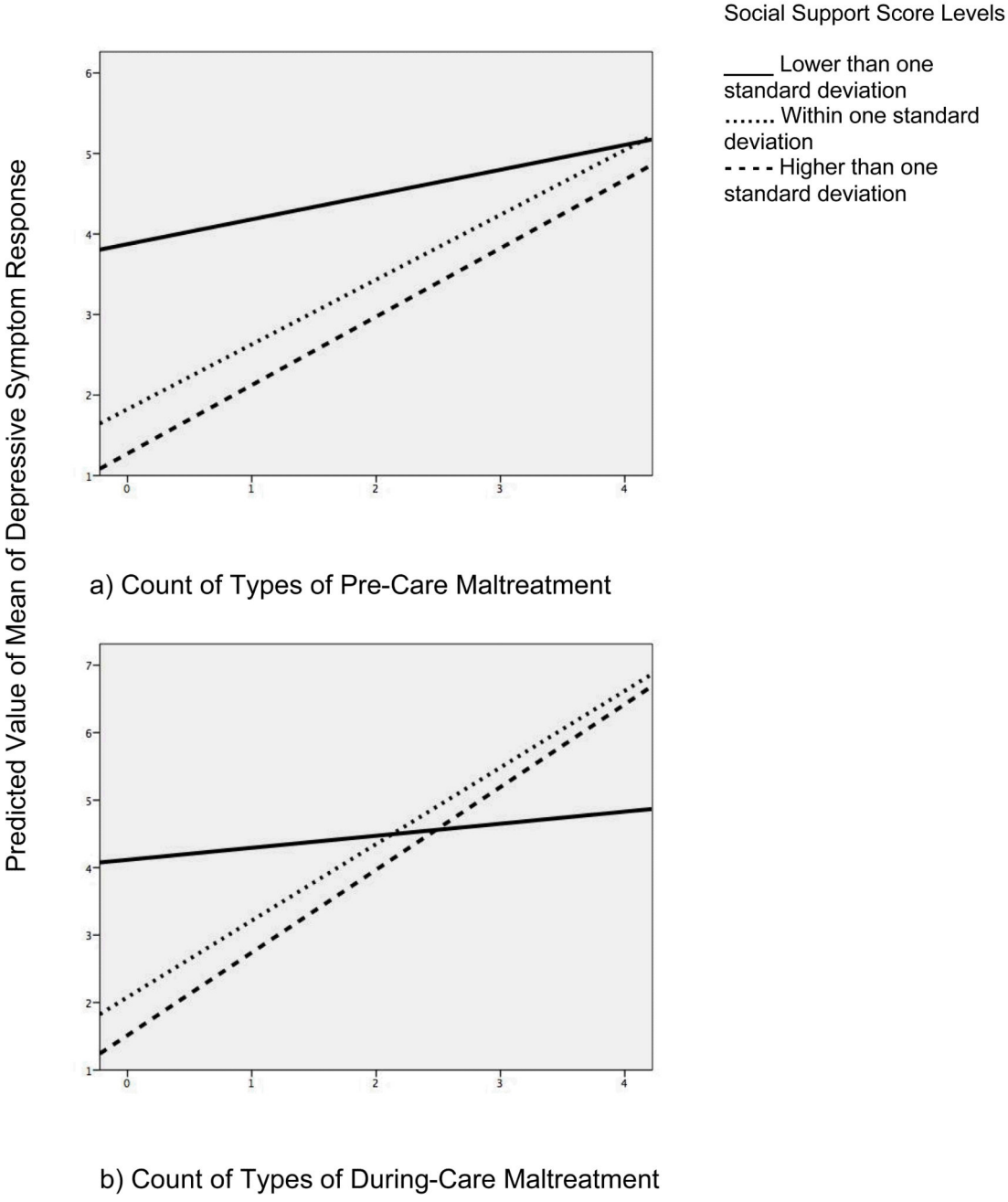

Figure 1.
Interactions of maltreatment and social support predicting depressive symptomatology.

Table 1

Descriptive Statistics of Current Sample

	Overall		By Gender					By Race						
			Female		Male			African American		Caucasian		Other or Mixed Race		
Primary Variables	M	SD	M	SD	M	SD	t	M	SD	M	SD	M	SD	F
Types of PreCare Maltreatment Experienced (0-4)	1.23	1.20	1.33	1.23	1.12	1.16	2.02*	1.06	1.11	1.50	1.23	1.28	1.38	7.43**
Types of Maltreatment experienced during care (0-4)	0.67	1.02	0.74	1.06	0.59	0.96	1.67	0.70	1.07	0.60	0.89	0.68	1.08	0.50
Number of sufficient social support network types (0-4)	2.50	1.54	2.52	1.53	2.49	1.56	0.18	2.34	1.61	2.72	1.43	2.67	1.42	3.65*
Mean MOS Social Support Availability Score (1-5)	3.84	0.88	3.89	0.90	3.78	0.86	1.41	3.75	0.89	3.96	0.87	3.93	0.82	3.47*
Depressive Symptom Count (0-24)	2.96	5.22	3.65	5.75	2.12	4.35	3.42**	2.79	4.93	3.26	5.54	2.73	5.43	0.50
Participants who have experienced (pre-care) …	N	%	N	%	N	%	χ^2	N	%	N	%	N	%	χ^2
Any Maltreatment	328	63.9	189	67.3	139	59.9	2.97	164	58.6	127	74.3	36	60.0	11.82**
Physical Abuse	169	32.9	101	35.9	68	29.3	2.61	70	25.0	77	45.0	21	35.0	20.32***
Sexual Abuse	88	17.2	63	22.4	23	9.9	12.12***	25	8.9	50	29.2	12	20.0	31.33***
Psychological Abuse	182	35.5	103	36.7	78	33.6	0.41	93	33.2	67	39.2	22	36.7	1.96
Neglect	194	37.8	107	38.1	86	37.1	0.04	109	38.9	63	36.8	22	36.7	0.18
Participants who have experienced (during care) …	N	%	N	%	N	%	χ^2	N	%	N	%	N	%	χ^2
Any Maltreatment	201	39.2	120	42.7	81	34.9	3.24	109	38.9	67	39.2	24	40.0	0.02
Physical Abuse	102	19.9	59	21.0	43	18.5	0.36	59	21.1	31	18.1	11	18.3	0.53
Sexual Abuse	72	14.0	48	17.1	24	10.3	4.78*	35	12.5	25	14.6	12	20.0	2.36
Psychological Abuse	80	15.6	47	16.7	33	14.2	0.49	46	16.4	25	14.6	8	13.3	0.44
Neglect	89	17.3	53	18.9	36	15.5	0.83	56	20.0	22	12.9	10	16.7	3.43

Note. The number of respondents experiencing each individual type of maltreatment will not add up to the number of participants experiencing maltreatment overall because many participants experienced multiple types of maltreatment.

* = p<.05

** = p<.01

*** = p=.000

Table 2

Correlation Matrix of Key Variables

	1	2	3	4	5	6	7	8
1. Depression symptom count	--	0.160***	0.226***	−0.119**	−0.033	0.044	−0.014	0.146**
2. Pre-care maltreatment		--	0.198***	−0.138**	−0.160***	0.158***	0.015	0.089*
3. During-care maltreatment			--	−0.183***	0.038	−0.044	0.006	0.074
4. Social support measures combined				--	−0.128**	0.106*	0.042	0.040
5. African American					--	−0.781***	−0.402***	0.001
6. Caucasian						--	−0.259***	−0.036
7. Other/Mixed Race							--	0.052
8. Female								--

* =p<.05

** =p<.01

*** =p=.000

Table 3

Negative Binomial Regressions testing Direct Effect of Maltreatment and Mediational Role of Social Support on Relationship between Maltreatment and Depressive Symptomatology

	Social Support Not Included		Social Support Included	
Pre-Care Maltreatment as Predictor	**B (95% CI)**	**p**	**B (95% CI)**	**p**
Control Variables				
Other or Mixed Race	−0.189 (−0.522−0.145)	0.267	−0.112 (−0.448−0.225)	0.516
Caucasian	0.074 (−0.149−0.298)	0.515	0.135 (−0.092−0.362)	0.244
African American (ref)				
Female	0.512 (0.304−0.720)***	0.000	0.570 (0.359−0.781)***	0.000
Male (ref)				
Predictor Variables				
Number of Types of **Precare Maltreatment** Experienced	0.238 (0.149−0.326)***	0.000	0.217 (0.128−0.305)***	0.000
Social Support	--	--	−0.272 (−0.394-−0.150)***	0.000

	Social Support Not Included		Social Support Included	
During-Care Maltreatment as Predictor	**B (95% CI)**	**p**	**B (95% CI)**	**p**
Control Variables				
Other or Mixed Race	−0.131 (−0.465−0.203)	0.441	−0.064 (−0.400−0.272)	0.709
Caucasian	0.179 (−0.044−0.401)	0.115	0.238 (0.012−0.464)*	0.039
African American (ref)				
Female	0.492 (0.284−0.701)***	0.000	0.548 (0.336−0.759)***	0.000
Male (Ref)				
Predictor Variables				
Number of Types of **During-Care Maltreatment** Experienced	0.269 (0.177−0.362)***	0.000	0.251 (0.158−0.343)***	0.000
Social Support	--	--	−0.270 (−0.392-−0.147)***	0.000

*=p<.05

**=p<.01

***=p=.000

Table 4

Negative Binomial Regressions testing Social Support as Moderator between Maltreatment and Depressive Symptomatology

	Pre-Care Maltreatment		During-Care Maltreatment	
	B (95% CI)	**P**	**B (95% CI)**	**p**
Control Variables				
Other or Mixed Race	−0.124 (−0.462−0.214)	0.472	−0.093 (−0.431−0.246)	0.592
Caucasian	0.123 (−0.104−0.351)	0.287	0.263 (0.036−0.490)*	0.023
African American (ref)				
Female	0.572 (0.361−0.783)***	0.000	0.542 (0.331−0.754)***	0.000
Male (ref)				
Predictor Variables				
Number of Types of Maltreatment Experienced	0.217 (0.127−0.307)***	0.000	0.269 (0.173−0.364)***	0.000
Social Support	−0.437 (−0.629-−0.244)***	0.000	−0.389 (−0.540-−0.237)***	0.000
Social Support × Maltreatment	0.119 (0.013−0.225)*	0.027	0.147 (0.041−0.252)**	0.007

*=p<.05

**=p<.01

***=p=.000