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Child Abuse and Neglect, Social Support, and Psychopathology in Adulthood: A Prospective Investigation

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Abstract

Objective—To determine whether child abuse and neglect predicts low levels of social support in middle adulthood and understand whether social support acts to mediate or moderate the relationship between childhood abuse and neglect and subsequent outcomes (anxiety, depression, and illicit drug use).

Method—Using data from a prospective cohort design study, children with documented histories of physical and sexual abuse and neglect (ages 0–11) during the years 1967 through 1971 and a matched control group were followed up and interviewed in adulthood. Social support was assessed at mean age 39.5, and anxiety, depression, and illicit drug use at mean age 41.2.

Results—Adjusting for age, sex, and race, individuals with documented histories of child abuse and neglect reported significantly lower levels of social support in adulthood [total ($p < .001$), appraisal ($p < .001$), belonging ($p < .001$), tangible ($p < .001$), and self-esteem support ($p < .01$)] than controls. Adjusting for age, sex, race, and prior psychiatric diagnosis, social support mediated the relationship between child abuse and neglect and anxiety and depression in adulthood. Four gender by social support interactions and one three-way [group (abuse/neglect versus control) $\times$ tangible social support $\times$ gender] interaction moderated levels of anxiety and depression, particularly for males who were more strongly affected by high levels of social support.

Conclusions—Social support plays a significant role in mediating and moderating some long term consequences of childhood maltreatment. Efforts to better understand the timing and mechanisms involved in these relationships are needed to guide preventive interventions and treatment.

Keywords

Child abuse and neglect; social support; consequences; anxiety; depression; and drug use

Theoretical models in the field of child maltreatment have become more complex (Belsky, 1981; Cicchetti & Toth, 1998; Garbarino, 1977; Widom, 2000) and emphasize the importance of the social context and the broader environment in which the child develops (Belsky, 1981; Garbarino, 1977). This approach assumes that behavior does not occur in a vacuum and characteristics of the family or community (social support) may influence outcomes for maltreated children. Support from others has been shown to improve a

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person's abilities to cope with life stresses and to enhance their mental and physical health and well-being (Cohen & Wills, 1985; Cohen, Gottlieb, & Underwood, 2000). The loss of social support is also thought to influence the impact of stressful life events (Kaniasty & Norris, 1993; Vaux, 1988).

In the field of child maltreatment research, social support has been hypothesized to be one of the protective factors that buffer children from the impact of these negative early experiences (see Heller, Larrieu, D'Imperio, & Boris, 1999 for a review). Several scholars have called attention to the potential importance of extra-familial support (Conte & Schuerman, 1988; Farber & Egeland, 1987; Heller et al., 1999; Lynch & Roberts, 1982). However, much of the literature has focused on the role of social support as a buffer of risk for child abuse (Caliso & Milner, 1994), rather than as a buffer of consequences of child abuse. For example, Kotch and his colleagues (Kotch et al., 1995; Kotch et al., 1997) have found that social support modified the negative impact of stressful life events on families at risk for child maltreatment. As Thompson (1995:170) noted: "... one secure, supportive social relationship may be all that is necessary to promote more adequate functioning in troubled parents".

In addition to increased risk for serious psychological and mental health consequences (Gilbert, Widom, Browne, Fergusson, Elspeth, & Janson, S. (2009), abused and neglected children often experience additional stressors, including separation from their parents, foster care placement, and multiple forms of revictimization over the course of their lives (Jonson-Reid, Chung, Way & Jolley, 2010; Widom, Czaja, & Dutton, 2008). Those who have social support and/or have developed abilities to cope with these stresses are assumed to have better outcomes. This "buffering hypothesis" (Cohen & Hoberman, 1983, p. 99) postulates that high levels of social support protect individuals from stress-induced pathology, but may be relatively unimportant for individuals with low levels of stress.

Other scholars have suggested that stressors such as child abuse and neglect that are often private, ambiguous, and socially stigmatizing are particularly likely to exhaust social support because they elicit confusion, helplessness, and aversion in others [what has been called the "deterioration model" of social support (Barerra, 1986; Eckenrode & Wethington, 1990; Kaniasty & Norris, 1993; Wheaton; 1985)]. Thus, abused and neglected children are also believed to be particularly likely to experience an erosion of social support that may extend into middle adulthood (Hobfoll, 1989).

Despite these theories, few studies have examined whether child abuse and neglect leads to lower levels of social support in adulthood, compared to non-maltreated children, and, if so, the extent to which these lower levels of social support have an impact on subsequent adult psychopathology. Findings from existing studies are mixed, with some reporting lower levels of social support and others finding no differences (Bradley, Schwartz, & Kaslow, 2005; Marcenko, Kemp, & Larson, 2000; McLewin & Muller, 2006; Pepin & Banyard, 2006; Runtz & Shallow, 1997; Schumm, Briggs-Phillips, & Hobfoll, 2006; Vranceanu, Hobfoll, & Johnson, 2007; Young, Pierce, Hobfoll, & Johnson, 2002). Similarly, relatively few studies have examined whether the lack of social support plays a role in the development of subsequent problems for maltreated children. In cross-sectional studies of young adults, social support has been found to mediate the relationship between self-reported histories of child maltreatment and outcomes of intimacy/trust (Pepin & Banyard, 2006), negative attitudes toward men (Wyatt & Mickey, 1987), psychological adjustment and self-esteem (Runtz & Shallow, 1997), revictimization (Bender, Cook, & Kaslow, 2003), and posttraumatic stress disorder (PTSD) symptoms (Vranceanu et al., 2007). Other studies examining the relationship between child maltreatment and trauma symptoms (Bradley et

al., 2005; Irwin, 1996) and depression (Hobfoll et al., 2002; Vranceanu et al., 2007) have not found that social support acts as a mediator.

In line with the “buffering hypothesis” described above, researchers have examined whether social support acts to moderate (or buffer) the consequences of child maltreatment, with outcomes of depression, anxiety, and substance abuse most common. Again, findings are mixed. One study found that social support acted as a buffer between child maltreatment and depression (Powers, Ressler, & Bradley, 2009), although others did not (Crouch, Milner, & Caliso, 1995; Hobfoll et al., 2002; Schumm et al., 2006). One longitudinal study followed adolescents into young adulthood and found that social support moderated the risk of affective disorders, but not substance abuse or anxiety disorders (Feldman et al., 2004). Another longitudinal study (Schuck & Widom, 2001) found no evidence that social support moderated the relationship between child abuse and neglect and substance abuse in young adulthood.

A related issue is whether certain types of social support are particularly beneficial in relation to certain types of stress, in this case, child maltreatment. Social support is a multidimensional phenomenon (Thoits, 1982) that incorporates a range of interpersonal behaviors or type of social support that may help a person cope with stressful experiences. Cutrona and Russell (1990: 319) noted that “direct assistance, advice, encouragement, companionship, and expressions of affection all have been associated with positive outcomes for person’s various kinds of life strains and dilemmas”. These authors propose the “discovery of optimal matching”, arguing that if one could determine whether particular types of social support are more beneficial to outcomes, we could design better social support-based interventions. Some empirical literature has provided support for this notion that the relationship between social support and stress varies by the type of social support (House, & Khan, 1985; Vaux, 1988). House & Khan (1985) noted that emotional support has generally been the type of support most directly linked to health. Self-esteem and appraisal support were found to buffer against the development of PTSD in sexually abused women, while tangible and belonging support had little influence on this outcome (Hyman et al., 2003). Muller, Goh, Lemieux, & Fish (2000) found that adult abuse survivors reported more emotional than instrumental support from the people most important to them, but they did not provide information on the impact of these types of support on outcomes.

In their discussion of whether individual components of support are differentially associated with positive physical and mental health outcomes, Cutrona and Russell (1990) distinguished between uncontrollable and controllable stressors. Although they did not explicitly include child abuse under uncontrollable stressors, they do include victimization by crime and other threats to physical safety under this category. Based on their model of responses to uncontrollable stressors, childhood maltreatment should require a high level of emotional social support to facilitate better functioning. Furthermore, given that the consequences of child maltreatment include lower levels of economic productivity (Currie & Widom, 2010) and, thus, increased likelihood of scarce tangible resources, one would expect that tangible support would be important to replace missing resources and to lead to better outcomes. Similarly, given that maltreated children have lower levels of academic performance (Widom & Perez, 1994) and self-esteem (Bolger, Patterson, & Kupersmidt, 1998), one would expect that higher levels of self-esteem support should be associated with increases in a person’s chance of better outcomes. Finally, it is also possible that the total amount of social support is a better determinant of outcomes than specific types of social support.

Social support may also play a different role in the lives of abused and neglected men and women. For example, Vaux (1985) noted that variations in social support are at least partly

the result of cultural norms regarding gender appropriate behavior, suggesting that women have greater support resources than men and that support may play a greater role in a woman's well being. Powers et al. (2009) found that social support buffered the impact of child maltreatment on depression in adult females, but not males, whereas Runtz & Shallow (1997) did not find that the mediating role of social support on self-esteem and overall psychological adjustment differed by sex.

In sum, research on the role of social support in the lives of maltreated children and the extent to which this hypothesized lack of social support lead to increased risk for psychopathology in adulthood is relatively sparse and findings are contradictory. It is difficult to draw firm conclusions across these studies because of differences in the definitions and measures of social support, varying samples, designs, type of child abuse, and types of social support studied.. Despite the fact that prospective longitudinal studies have been recommended (Bradley et al., 2005), there has been almost exclusive reliance on cross-sectional designs involving data collection at one point in time and on retrospective self-reports of maltreatment that are open to potential biases (Henry, Moffitt, Caspi, Langley, & Silva, 1994; Offer, Kaiz, Howard, & Bennett, 2000).

The present study overcomes many of these limitations by examining social support and its role in long-term outcomes in a group of individuals with documented histories of child abuse and neglect and a matched control group followed up and assessed in middle adulthood. Using a prospective cohort design, the current study seeks to: (1) determine whether children with documented histories of abuse and/or neglect report lower levels of social support in middle adulthood relative to children without such histories; (2) examine the effects of social support and types of social support on three types of psychopathology (anxiety, depression, and illicit drug use) in adulthood for maltreated children and matched controls; (3) determine whether social support moderates the relationship between child abuse and/or neglect and anxiety, depression, and illicit drug use in adulthood; and (4) determine whether there are sex differences and differences by type of social support in these associations.. There are four main hypotheses:

- Hypothesis I** After accounting for age, race, and sex, maltreated children, compared to matched controls, will have lower levels of social support in middle adulthood.
- Hypothesis II** Social support will mediate the relationship between child maltreatment and anxiety, depression, and illicit drug use in middle adulthood.
- Hypothesis III** Social support will moderate the relationship between child maltreatment and psychopathology (anxiety, depression, and illicit drug use) in middle adulthood, such that maltreated individuals with higher levels of social support will be less likely to manifest psychopathology in adulthood.
- Hypothesis IV** Social support will play a stronger role in the lives of maltreated women, compared to maltreated men, in terms of mediating and/or moderating the relationship between child maltreatment and subsequent psychopathology.

Methods

Research Design and Sample

The data used here are from a larger research project based on a cohort design study in which abused and/or neglected children were matched with non-abused, non-neglected

children and followed prospectively into middle adulthood. Because of the matching procedure, the subjects are assumed to differ only on the risk factor: that is, having experienced childhood physical abuse, sexual abuse, or neglect. Since it is not possible to randomly assign subjects to groups, the assumption of equivalency of the groups is an approximation. However, this design allows us a greater probability of ruling out confounding variables. Widom (1989a) provides complete details on study design and subject selection.

The original sample was composed of substantiated cases of childhood physical and sexual abuse and neglect processed from 1967 to 1971 in the county juvenile (family) or adult criminal courts of a Midwestern metropolitan area. The rationale for identifying the abused and neglected group was that their cases were serious enough to come to the attention of the authorities. Excluded from the sample were cases that represented (a) adoption of the child as an infant; (b) “involuntary” neglect only, usually resulting from the temporary institutionalization of the legal guardian; (c) placement only; or (d) failure to pay child support. *Sexual abuse* cases varied from those with relatively nonspecific charges of “assault and battery with intent to gratify sexual desires” to more specific charges of “fondling or touching in an obscene manner,” sodomy, incest, rape, etc. *Physical abuse* cases included injuries such as bruises, welts, burns, abrasions, lacerations, wounds, cuts, bone and skull fractures, and other evidence of physical injury. *Neglect* cases reflected a judgment that the parents’ deficiencies in childcare were beyond those found acceptable by community and professional standards at the time and represented extreme failure to provide adequate food, clothing, shelter, and medical attention to children.

A control group of children without documented histories of child abuse or neglect was a critical component of the study design. Participants who were under school age at the time of the abuse and/or neglect were matched with participants of the same sex, race, date of birth (± 1 week), and hospital of birth through the use of county birth records. For participants of school age at the time of the abuse and/or neglect, records of more than 100 elementary schools for the same time period were used to find matches with participants of the same sex, race, date of birth (± 6 months), class in elementary school during the years 1967 to 1971, and home address, preferably within a five-block radius of the abused/neglected participant. Overall, matches were found for 74% of the abused and neglected children.

The initial phase of this project involved comparison of the abused and/or neglected group and controls on juvenile and adult criminal arrest records (Widom, 1989b). The second phase of the study involved tracing, locating, and interviewing the abused and/or neglected children and comparison group members. Two-hour in-person interviews that included a standardized psychiatric assessment were conducted between 1989 and 1995 when participants were mean age of 29.1 ($SD=3.77$). Subsequent follow-up interviews were conducted in 2000–2002 when the participants were mean age 39.5 ($SD=3.51$) and information about social support was collected. Another wave of interviews was conducted in 2003–2005 when the participants were mean age 41.2 ($SD=3.50$) and information about anxiety, depression, and illicit drug use was collected.

Of the original sample ($N = 1,575$), 1,307 subjects (83%) were located and 1,196 participated in the first interview (1989–1995). Of those participants, 896 completed the second interview (2000–2002) and 807 completed the third interview (2003–2005). The sample used in the current analyses is composed of non-Hispanic Whites and Blacks ($N = 754$). An additional 58 participants were excluded because they did not complete measures at all three interviews, resulting in a total sample of 696. These 696 participants included 388 who had documented histories of child abuse and/or neglect (318 cases of neglect, 50

cases of sexual abuse, and 63 cases of physical abuse) and 308 controls. The total number in the abuse/neglect groups is more than 388 because some participants had more than one type of abuse or neglect. The sample was 53.0% female and 64.5% non-Hispanic Whites, and had a mean age of 41.2 ($SD=3.53$) years. With the exception of the exclusion of the Hispanics, the sample did not differ significantly from the original interview sample ($N=1,196$) in terms of percent female, White, or who experienced abuse and/or neglect or any specific type of abuse or neglect, and age at initial abuse/neglect petition (details are available from the authors).

Procedure

Participants completed the interviews in their homes or, if they preferred, another appropriate place. The interviewers were blind to the purpose of the study and to the inclusion of an abused and/or neglected group. Participants were also blind to the purpose of the study and were told that they had been selected to participate as part of a large group of individuals who grew up in that area during the late 1960s and early 1970s. Institutional Review Board approval was obtained for the procedures involved, and participants gave written, informed consent. For individuals with limited reading ability, the consent form was presented and explained verbally.

Measures

Social support was assessed during the 2000–2002 interviews. Anxiety, depression, and illicit drug use were assessed during the 2003–2005 interviews.

Social support—We used the Interpersonal Support Evaluation List (ISEL: Cohen, Mermelstein, Kamarck, & Hoberman, 1983), a 40-item scale with “true-false” options. Items referred to the perceived availability of others for a range of supportive functions and resources in four domains, including appraisal or advice, belonging, self-esteem, and tangible support. Appraisal refers to having someone to talk to about one’s difficulties. Belonging refers to having people with whom one can do things. Self-esteem refers to the presence of others with whom one feels he or she compares favorably. Tangible refers to the availability of material, practical, or instrumental help. Perceived availability of support has been reported to be the strongest direct predictor of psychiatric adjustment (Norris & Kaniasty, 1996). Internal and test-retest reliability for the total and four subscale scores ranged from .62–.90 (Cohen et al., 1983). In this study, the measure was adapted to be understandable to individuals with low reading ability and shortened to 20 items, counterbalanced for desirability, and negative items reverse scored. Scores ranged from 0–20 across the four subscales, with higher scores reflecting higher social support. Cronbach alphas for the current sample are Total Social Support .82, Tangible .74, Belonging .66, Appraisal .65, and Self-Esteem .47.

Anxiety—The Beck Anxiety Inventory (BAI: Beck and Steer, 1990), a 21-item self-report scale developed to measure the severity of anxiety in clinical populations, has been used extensively in research with non-clinical samples and was used here. Respondents are asked to rate how much they have been bothered by each of the symptoms over the past week on a scale from 0 (Not at all) to 3 (Severely – It bothered me a lot). The resulting summed scores ranged from 0–56 ($M = 7.36$, $SD = 9.76$). The BAI has been shown to have high internal consistency and test retest reliability as well as good concurrent and discriminant validity (Beck, Epstein, Brown, & Steer, 1988). Cronbach’s alpha for the current sample is .94.

Depression—We used the Center for Epidemiological Studies Depression Scale (CES-D: Radloff, 1977), a 20-item self-report scale designed to measure depressive symptomatology in the general population. Respondents indicate how often within the past week they

experienced the symptoms, with responses ranging from 0 (none of the time) to 3 (most or all of the time). The resulting summed scores range from 0–56 ($M = 11.42$, $SD = 11.44$). The scale has been tested in household interview surveys and in psychiatric settings and found to have high internal consistency and adequate test-retest reliability (Radloff, 1977). Cronbach's alpha for the current sample is .93.

Illicit Drug Use—Items from the Rutgers Health and Human Development Project (Pandina, Labouvie, & White, 1984) were adapted for use here. For each drug (marijuana, cocaine, heroin, and psychedelics), respondents are asked how frequently they used the drug in the past year. Responses to questions about each of these four drugs were dichotomized into whether or not they had been used at all, and summed to create a total score for the number of illicit drugs used during the past year ($M = .32$, $SD = .60$, range = 0–4).

Control variables—In addition to age, sex, and race, we control for prior psychopathology using the number of lifetime symptoms of depression (Major Depressive Disorder), anxiety (Generalized Anxiety Disorder), and drug use (Drug abuse and/or dependence) reported at the first interview (1989–1995) when the participants were mean age 29.1 years old. The National Institute of Mental Health (NIMH) Diagnostic Interview Schedule, Version III Revised (DIS-III-R: Robins, Helzer, Cottler, & Goldring, 1989), was used to assess these psychiatric disorders according to Diagnostic and Statistical Manual of Mental Disorders III-R (DSM-III-R: American Psychiatric Association, 1987) criteria. This highly structured interview schedule, designed for use by lay interviewers, has demonstrated adequate reliability and validity in prior community-based studies of psychiatric disorders (Leaf & McEvoy, 1991).

Data Analysis

Analyses of covariance (ANCOVAs) were computed to determine whether the abuse/neglect group differed significantly from the controls in terms of social support and four specific types of support. ANCOVA is a general linear model that blends ANOVA and regression and assesses whether the means of a dependent variable (in this case, social support) are equal across different levels of a categorical independent variable (child abuse/neglect), while statistically controlling for the effects of other continuous variables (or covariates) (Keppel, 1991). ANCOVAs included an interaction term (group $\times$ sex) to determine whether there are sex differences in levels of social support for maltreated children in adulthood.

To test for mediation, direct and indirect effects were computed using a series of ordinary least squares (OLS) regressions and the bootstrapping procedure recommended by Preacher & Hayes (2004, 2008). The indirect effect reflects the amount by which the total effect of the independent variable (in this case, child abuse and neglect) is decreased when the mediator (social support) is included in the analysis. The significance of the indirect effect, based on the 95% confidence interval (CI) derived from 1,000 bootstrap resamples, is indicated when the CI values do not cross zero. We report the unstandardized coefficient (B) and standard error (SE) for each regression equation to indicate the predicted change in the dependent variable (DV), given a one-unit change in the independent variable, while controlling for the other variables in the equation.

The Hayes PROCESS macro (model 1, release 120504) was used for moderator analyses (Hayes, unpublished manuscript). This macro runs a series of OLS regressions with the centered product term representing the interaction of abuse/neglect $\times$ social support (total and type) as a predictor of the outcomes (anxiety, depression, and illicit drug use). These regressions also included interaction terms (abuse/neglect by sex, social support by sex, and

abuse/neglect by social support by sex) to determine whether there are sex differences in these relationships. Mediation and moderation analyses control for demographic characteristics (age, sex, and race) and for prior history of anxiety, depression, or drug use at approximate age 29. The number of participants varied slightly in some analyses due to missing information. Statistical significance was set at 0.05 and SPSS versions 18–20 were used for all analyses.

Results

Do abused and neglected children have lower levels of social support in adulthood compared to matched controls?

Table 1 presents the results of analyses comparing the abuse/neglect group overall to controls, and separately for males and females, on levels of social support. As hypothesized, individuals with documented histories of childhood maltreatment reported significantly lower levels of total social support and specific types of social support. Although the same general pattern was found for males and females, there were two significant group (abuse/neglect versus control) by sex interactions: tangible support ($p=.02$) and self-esteem support ($p=.04$). For males, the effect of child abuse/neglect on self-esteem support was significant ($p<.001$), whereas for females, it was not significant. In contrast, for females, child abuse/neglect predicted significantly lower levels of tangible support ($p<.001$), whereas for men, the effect of child maltreatment on tangible support in adulthood was not significant. Overall, these findings show that child maltreatment leads to lower levels of social support in adulthood for males and females, but the effects on two particular types of support varied by sex.

Does social support mediate the relationship between a history of child abuse and/or neglect and anxiety, depression, and illicit drug use in adulthood?

Table 2 presents the results of mediation analyses for the effect of child abuse and neglect on anxiety through social support and specific types of social support. The baseline model indicated that the effect of child abuse/neglect on anxiety was significant [$B (SE) = 2.04 (.72)$, $p<.001$]. The first column shows that child abuse/neglect predicted total social support ($p<.001$) and specific types of social support [tangible, $p<.001$; belonging, $p<.001$; appraisal, $p<.001$; self-esteem, $p<.01$]. Column 2 shows that all types of social support predicted anxiety. The introduction of total social support produced a significant mediation effect and reduced the effect of child maltreatment on anxiety to non-significance. In contrast, the introduction of specific types of social support showed mediation, however, child abuse/neglect remained a significant predictor, not through social support.

Table 3 presents the results of mediation analyses for the effect of child abuse and neglect on depression through social support and specific types of social support. The baseline model indicated that the effect of child abuse/neglect on anxiety was significant [$B (SE) = 2.46 (.83)$, $p<.001$]. The first column shows that child abuse/neglect predicted total social support ($p<.001$) and specific types of social support [tangible, $p<.001$; belonging, $p<.001$; appraisal, $p<.001$; self-esteem, $p<.05$]. Column 2 shows that all types of social support predicted anxiety. The introduction of all forms of social support reduced the effect of child maltreatment on depression, indicating mediation. However, total social support and belonging support reduced the effect of child maltreatment on depression to non-significant, whereas for the other forms of social support (tangible, appraisal, and self-esteem), child abuse/neglect continued to have a significant effect on depression, not through social support.

The pattern of results for illicit drug use differs from that of anxiety and depression. While child abuse/neglect predicted illicit drug use [$B (SE) = .09 (.05)$, $p=.05$] and child abuse/neglect predicted total and specific types of support, social support did *not* predict illicit drug use. Therefore, we did not conduct further mediation analyses because of this lack of significance of this pathway in the model.

We also conducted additional regressions to examine whether social support mediated these relationships in males and females (see Table 4). For males and females, child abuse and neglect predicted social support and, in turn, social support predicted anxiety and depression. However, the impact of social support on anxiety and depression differed for maltreated males and females. For females, the total effect of child abuse/neglect on anxiety ($p<.01$) and depression ($p<.01$) was significant and there was evidence of mediation through the introduction of social support which reduced the effect of maltreatment by more than half. For males, the total effect of child abuse/neglect on anxiety and depression was not significant, but there was evidence of mediation as the introduction of social support reduced the impact even further. As noted earlier, social support did not predict illicit drug use and, thus, it is not surprising that it plays a minimal to non-existent role in these mediation analyses, despite the significance for males ($B = -.02$, $p<.05$).

Does social support moderate the relationship between child abuse/neglect and anxiety, depression, and illicit drug use in adulthood?

We conducted a series of OLS regressions that included interaction terms for child abuse and neglect (CAN) by social support (SS), CAN by gender, SS by gender, and a three-way interaction (CAN by SS by gender) for each of the outcomes of anxiety, depression, and illicit drug use and for each type of social support. Table 5 shows the four two-way interactions (two for anxiety and two for depression) and one significant three-way interaction (child abuse/neglect $\times$ tangible social support $\times$ gender predicting depression). The first interaction, total SS by gender, showed a trend ($p<.10$) indicating that the effect of higher levels of social support was somewhat stronger for males than for females (interaction not shown). The second interaction (tangible SS by gender, $p<.001$) showed that higher levels of tangible SS were associated with much lower levels of anxiety in males, whereas there was little reduction in anxiety levels with higher levels of social support for females (see Figure 1A). The appraisal support by gender interaction ($p<.05$) (see Figure 1B) predicting depression shows a similar pattern: there was a greater impact of higher levels of appraisal support on depression for males compared to females. For depression, another significant interaction [tangible SS $\times$ gender ($p<.01$)] indicated that the effect of higher levels of tangible support on depression was larger for males than females (see Figure 1C).

Finally, there was a significant three-way (child abuse/neglect by tangible SS by gender) interaction predicting depression ($p<.01$) (see Figure 1D). Although maltreated females had higher depression scores than control females at low levels of support, higher levels of tangible support reduced both groups' level of depression to the *same* level (that is, a stronger effect for maltreated females). For males, however, there was a crossover effect. At low levels of tangible support, control males reported *higher* levels of depression than maltreated males. However, at high levels of tangible support, control males had lower levels of depression than maltreated males, suggesting that the impact of tangible support had more impact on control males.

Discussion

This is the first prospective longitudinal study to systematically assess whether individuals with documented histories of child abuse and neglect have lower levels of social support and

the extent to which social support plays a role in their anxiety, depression, and drug use. Thirty years after experiencing these childhood adversities, our research shows that maltreated individuals in general report significantly lower levels of social support than matched controls and that social support predicts subsequent anxiety and depression. However, our mediation and moderation analyses indicate that these are complicated relationships, suggesting the inconsistencies in prior literature may reflect differential impact of different types of social support for different outcomes and for different people.

Although we found that child abuse/neglect predicted lower levels of social support in general, we found that males and females differed in two ways. Maltreated males did not report lower levels of tangible support than control males, whereas maltreated females did. Maltreated females did not report lower levels of self-esteem support than control females, whereas maltreated males did not. We believe these findings are important and suggest that it is necessary to know what are the mechanisms by which maltreated children report these lower levels of support, at what point in their lives do these perceptions begin, are they constant throughout their lives. Longitudinal studies with assessments of social support throughout the life course, beginning in childhood, will enable us to determine whether these lower levels of social support are the result of an erosion of resources, what Hobfoll (1989) referred to as a “loss spiral”, or a constant from childhood.

Consistent with the broader social support literature (Cohen, Gottlieb, & Underwood, 2000), we also found that higher levels of social support were related to lower levels of anxiety and depression, but did not find that social support predicted lower levels of illicit drug. Other research has suggested that the relationship between child maltreatment and subsequent drug use and drug problems is complex (Widom, Weiler, & Cottler, 1999; Widom, Marmorstein, & White, 2007) and that the factors that influence illicit drug use, particularly in middle adulthood, may be heavily influenced by other contextual factors, such as neighborhood characteristics (Chauhan & Widom, 2012). Thus, one possibility is that although childhood maltreatment has an impact on social support earlier in a person’s life that influence their developmental trajectories, more proximal factors may influence drug use in adulthood.

As hypothesized, we found that social support acted to mediate the relationship between child maltreatment and anxiety and depression, although we also found that the specific types of social support were important. The introduction of total social support reduced the direct effect of child abuse/neglect on anxiety to non-significance, although this was not the case for the specific types of social support. For those types of social support, the direct effect of child abuse/neglect remained. We found a similar pattern for the impact of total social support on depression. In this case, with the introduction of total social support and belonging support, suggesting strong mediation effects of these types of social support, the direct effect of child maltreatment became non-significant. Together these findings for anxiety and depression suggest that the total amount of social support plays the strongest role in mediating the pathway from child abuse/neglect to these outcomes. At the same time, these results also show the lasting impact of child abuse/neglect, despite having strong social supports.

Contrary to the buffering hypothesis that postulated that the impact of social support would be stronger for people with high levels of stressors (our child maltreatment group) compared to those with low levels of stressors (our control group), we found that social support had a positive impact on anxiety and depression for both groups. We did, however, find noteworthy gender by social support interactions. Interestingly, we found that males were more affected by higher levels of social support than females. Higher levels of tangible social support were associated with much lower levels of anxiety in males, whereas there was little reduction for females. Higher levels of appraisal support and tangible support had

a greater impact on depression for males than females. Thus, although we found sex differences in these relationships, we did not find that social support had a stronger impact on females, as we had predicted. The one exception is the results of the three-way interaction that included the child abuse/neglect term as well as gender and type of social support. Although maltreated females had higher levels of depression than control females under low levels of tangible support, there was a stronger effect for maltreated females under higher levels of tangible support that minimized the difference between the two groups of females. For males, however, there was a more complicated crossover effect, suggesting that the impact of tangible support was more potent for control males.

While this study cannot address the mechanisms that may underlie these findings, it is possible that maltreated individuals are distrustful or unwilling to accept support even when it is available to them. This would be consistent with one study found that adults who reported histories of maltreatment had a more distrustful “network orientation” that prevented them from utilizing the social supports that were available to them (Gibson & Hartshorne, 1996).

Implications

These findings indicate a need for efforts to determine ways to prevent the lower levels of social support reported by individuals with histories of child maltreatment that may, in turn, help prevent the anxiety and depression they experience in middle adulthood. A greater understanding of how individuals with histories of abuse and neglect develop the sense that less support is available to them is needed. It is possible that adults with histories of child abuse/neglect may be less likely to have developed the interpersonal skills necessary to cultivate support or that they are more likely to engage in certain negative behaviors that make others less willing to support them. Furthermore, their lower levels of support may reflect deficits in family rather than friend support as has been found in some studies (Harmer, Sanderson, & Mertin, 1999; Powers et al., 2009; Weber & Cummings, 2003), which may reflect the family dysfunction accompanying a history of abuse and neglect. Finally, it is also possible that these individual’s perceptions of less availability of social support reflect longstanding biases in their social expectations based on their histories of lack of supportive caregiving.

If abused individuals’ distrustful orientations and biased perceptions of others prevent them from accepting social support, interventions will need to first target these perceptions before these individuals will be able to benefit from receiving actual support. Our findings do not permit us to determine whether the reported lack of social support began in childhood (possibly prior to their maltreatment) or whether these perceptions developed as a consequence of their maltreatment. A greater understanding of these temporal relationships would help to determine whether interventions should target the families of these individuals, social attitudes toward abuse survivors in general, the interpersonal and social skills or behaviors of the abuse survivors themselves, cognitive distortions or biases they may have, or some combination of these, and the point at which such interventions would be best undertaken. In addition, future studies need to examine the role of social support in relation to other outcomes such as trauma symptoms, suicidal behaviors, educational attainment, employment, aggression, and criminal behaviors.

Limitations

Several caveats should be noted. Our findings are based on cases of childhood abuse and neglect drawn from official court records and most likely represent the most extreme cases, which are often skewed toward poorer families. The data used here were from cases of abuse and neglect that occurred in the late 1960’s and early 1970’s in the Midwest part of

the United States, and therefore may not generalize to other cases of abuse and neglect. Although groups were matched on demographic characteristics, it is also likely that other factors such as parental alcohol and drug problems may have had an impact on these outcomes. Because the measure used here is of the perceived availability of social support, these results reflect the participants' perceptions and not necessarily the level of support they are offered or what is in reality available to them. A final limitation is that the internal reliability of the self-esteem support sub-scale was marginal and, therefore, these results should be treated with caution.

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FIGURE 1.

A–D. Significant social support (SS) by gender interactions. Outcomes are graphed in relation to the sample mean of social support. High and low social support are defined as $\pm$ one standard deviation from the mean, respectively.

Table 1

Child Abuse and Neglect Predicts Levels of Social Support in Adulthood

	Type of Social Support									
	Total		Appraisal		Belonging		Self-Esteem		Tangible	
	N	M (SE)	F	M (SE)	F	M (SE)	F	M (SE)	F	M (SE)
<u>Overall</u>										
Controls	308	16.61 (.21)		3.88 (.07)		4.39 (.07)		3.83 (.07)		4.52 (.07)
Abuse/Neglect	388	15.22 (.19)	25.23 ***	3.53 (.07)	12.86 ***	4.05 (.06)	14.29 ***	3.57 (.06)	9.25 **	4.09 (.06)
										23.24 ***
<u>Males</u>										
Controls	150	16.58 (.28)		3.84 (.10)		4.30 (.10)		3.99 (.09)		4.46 (.09)
Abuse/Neglect	177	15.40 (.26)	9.86 **	3.53 (.09)	5.22 *	4.10 (.09)	2.38	3.54 (.08)	13.63 ***	4.23 (.09)
										3.28
<u>Females</u>										
Controls	158	16.66 (.30)		3.92 (.11)		4.48 (.09)		3.63 (.09)		4.58 (.10)
Abuse/Neglect	211	15.05 (.26)	16.37 ***	3.52 (.09)	8.16 **	4.00 (.08)	14.92 ***	3.59 (.08)	.47	3.94 (.08)
										25.42 ***

Note. M=adjusted mean, with controls for age at first interview and race; SE=standard error; F=F statistic. ANCOVAs also revealed significant group (abuse/neglect versus control) $\times$ gender interactions for self-esteem support ($p = .04$) and tangible support ($p = .02$).

* $p < .05$

** $p < .01$

*** $p < .001$

Table 2
Does Social Support Mediate the Relationship Between Child Abuse and Neglect (CAN) and Anxiety in Adulthood?

Social Support	Effect of CAN on Social Support			Effect of Social Support on Anxiety			Direct Effect: CAN on Anxiety			Mediation Effect: CAN on Anxiety		
	B	SE		B	SE		B	SE		B	SE	95% CI
Total Support	-1.31***	.28		-0.79***	.10		1.01	0.70		1.03 ^a	.26	.57–1.63
Tangible Support	-0.42***	.09		-1.94***	.29		1.22*	0.71		0.82 ^a	.21	.47–1.34
Belonging Support	-0.32***	.09		-1.61***	.30		1.53*	0.71		0.51 ^a	.18	.21–0.93
Appraisal Support	-0.33***	.10		-1.74***	.27		1.47*	0.70		0.58 ^a	.21	.24–1.07
Self-Esteem Support	-0.24**	.09		-1.87***	.30		1.60*	0.70		0.44 ^a	.19	.14–0.93

Note: B = unstandardized coefficient; SE = standard error; CI = confidence interval. Analyses control for age, sex, race, and anxiety at the first interview (1989–1995). Baseline effects [B (SE)] for Abuse/Neglect on Anxiety = 2.04 (.72)**.

^aSignificant at least at $p < .05$; statistical software did not distinguish p -values $< .05$.

* $p < .05$

** $p < .01$

*** $p < .001$

Table 3

Does Social Support Mediate the Relationship between Child Abuse and Neglect (CAN) and Depression in Adulthood?

Social Support	Effect of CAN on Social Support			Effect of Social Support on Depression			Direct Effect: CAN on Depression			Mediation Effect: CAN on Depression		
	B	SE		B	SE		B	SE		B	SE	95% CI
Total Support	-1.21***	.27		-1.28***	.10		0.90	0.76		1.56 ^a	.35	0.93–2.32
Tangible Support	-0.40***	.09		-3.06***	.33		1.22*	0.80		1.24 ^a	.30	0.73–1.91
Belonging Support	-0.29***	.09		-3.24***	.33		1.50	0.79		0.96 ^a	.31	0.44–1.69
Appraisal Support	-0.31***	.10		-2.50***	.31		1.67*	0.80		0.79 ^a	.26	0.30–1.31
Self-Esteem Support	-0.20*	.09		-2.85***	.35		1.89*	0.80		0.56 ^a	.25	0.11–1.10

Note: B = unstandardized coefficient; SE = standard error; CI = confidence interval. All analyses control for age, sex, race, and depression at the first interview (1989–1995). Baseline effects [B (SE)] for Abuse/Neglect on Depression = 2.46 (.83)**.

^aSignificant at least at $p < .05$; statistical software did not distinguish p-values $< .05$.

* $p < .05$

** $p < .01$

*** $p < .001$.

Table 4

Does Social Support Mediate the Relationship between Child Abuse and Neglect (CAN) and Anxiety, Depression, and Illicit Drug Use in Adulthood in Males and Females?

Outcomes	Effect of CAN on Social Support		Effect of Social Support on Outcome		Total Effect: CAN on Outcome		Direct Effect: CAN on Outcome		Mediation Effect: CAN on Outcome	
	B	SE	B	SE	B	SE	B	SE	B	SE
Anxiety										
Male	-1.12**	.38	-0.58***	.13	0.76	0.93	0.11	0.92	0.65 ^a	.28
Female	-1.53***	.39	-0.92***	.14	3.15**	1.08	1.75 [#]	1.04	1.41 ^a	.41
Depression										
Male	-1.03**	.37	-1.12***	.15	1.54	1.07	0.39	1.00	1.15 ^a	.47
Female	-1.39***	.40	-1.38***	.15	3.34**	1.25	1.41	1.14	1.93 ^a	.56
Illicit Drug Use										
Male	-1.15**	.38	-0.02 [*]	.01	0.10	0.07	0.07	0.07	0.02	.02
Female	-1.55***	.40	-0.01	.01	0.08	0.06	0.08	0.06	0.01	.01

Note: B = unstandardized coefficient; CI = confidence interval. Analyses control for age, race, and anxiety, depression, or drug abuse the first interview (1989–1995).

^aSignificant at least at $p < .05$; statistical software did not distinguish p-values $< .05$.

[#] $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

Table 5
Significant Two-Way (Social Support by Gender) and Three Way (Child Abuse/neglect by Social Support by Gender) Interactions

	Anxiety						Depression					
	Total Social Support			Tangible Social Support			Appraisal Social Support			Tangible Social Support		
	B	95% CI		B	95% CI		B	95% CI		B	95% CI	
Child Abuse/Neglect (CAN)	.96	-.41 -- 2.33		.92	-.47 -- 2.32		1.66*	.09 -- 3.23		.88	-.70--2.45	
Social Support (SS)	-.79***	-.98 -- -.60		-2.06***	-2.68 -- -1.43		-2.45***	-3.06--1.84		-3.34***	-4.04--2.63	
Gender (G)	2.58***	1.21 -- 3.96		2.61***	1.22 -- 4.00		2.61**	1.04--4.19		2.83	1.26--4.39	
CAN × SS interaction	.16	-.24 -- .55		.77	-.54 -- 2.07		0.84	-.39--2.07		1.12	-.35--2.58	
CAN × G interaction	1.40	-1.34 -- 4.14		.39	-2.40 -- 3.17		1.08	-2.04--1.20		-.74	-3.87--.38	
SS × G interaction	-.35#	-.73 -- .03		-2.35***	-3.59 -- -1.10		-1.26*	-2.49 -- -.04		-2.26**	-3.65 -- -.86	
CAN × SS × G interaction	.32	-.46 -- 1.11		1.88	-.72 -- 4.48		-1.44	-3.91--1.04		3.78**	.86--6.70	

Note: B = unstandardized coefficient; CI = confidence interval. All analyses control for age, race, and prior diagnosis of the outcome; these effects are not shown in the tables

p<.10

* p<.05

** p<.01

*** p<.001