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The impact of social support on depressive symptoms among adolescents in the child welfare system: A propensity score analysis

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ABSTRACT

Background: Observational studies consistently have identified that social support is negatively associated with depression among adolescents. The causal connections between these two factors, however, are not well understood. Does the relationship between social support and depression indicate that social support protects against depression, or that characteristics of these less depressed adolescents make it easier for them to obtain social support? To address this, this study examines whether social support predicts later depressive symptoms, controlling for earlier clinical presentation.
Methods: The sample comprised adolescents ($n=777$) who were assessed as part of the National Survey of Child and Adolescent Well-Being. Caregivers and youth provided information about children's clinical characteristics and family background. Propensity scoring was used to adjust for baseline covariates when examining the impact of social support at eighteen months post-baseline on depressive symptoms at three years post-baseline.
Results: Children who received more social support at eighteen months post-baseline had fewer depressive symptoms at three years post-baseline, even after adjusting for baseline covariates using the propensity score; however, the adjusted effect size was small.
Conclusion: Previous attempts to study the impact of social support without adjusting for possible confounders have likely inflated the independently predictive role of social support.

1. Introduction

Depressive disorders are the most common psychiatric problems among adolescents and are highly associated with psychiatric comorbidity, academic failure, social impairment, physical impairment, and suicide (Birmaher, Ryan, Williamson, Brent, Kaufman, Dahl et al., 1996). One consistently-identified protective factor against depression is social support. Individuals who possess greater social resources are less likely to experience depression (Peirce, Frone, Russell, Cooper, & Mudar, 2000), and deficits in social support prospectively predict depressive symptoms (Lewinsohn, Roberts, Seeley, Rohde, Gotlib & Hops, 1994; Sheeber, Hops, Alpert, Davis & Andrews, 1997; Windle, 1992). This relationship also has been found among physically (Ezzell, Swenson, & Brondino, 2000) and sexually (Feiring, Taska, & Lewis, 1998) abused children.

The causal pathways from social support to depressive symptoms are not well understood. Competing with the hypothesis that social support protects against depression are two alternative hypotheses. First, depressive symptoms may make it more difficult to garner social support. For example, concurrent links have been identified among shyness, withdrawal, and depressive symptoms in children (Joiner, 1997). Second, the association between social support and depression may be confounded by another variable, such as low socioeconomic status, poor cognitive functioning, or parental psychopathology (e.g., Birmaher et al., 1996; Lewinsohn et al., 1994; Reinherz, Paradis, Giaconia, & Fitzmaurice, 2003), all of which are more common among depressed adolescents. These three hypotheses are not mutually exclusive. For example, Wade and Kendler (2000) found that 1) low levels of social support increased the risk for major depression, 2) major depression changed the level of social support, and 3) genetic liability increased the risk for both major depression and low levels of social support among adults.

Advances in statistical methods have facilitated disentangling these relationships. One particularly powerful technique utilizes propensity scoring (Rosenbaum & Rubin, 1983), which can be used to address selection bias for a naturally occurring exposure, such as social support. The goal of propensity score analysis is to balance nonequivalent groups on observed covariates to provide more accurate estimates of the effects of the exposure. Children who experience low versus high social support probably differ in many other respects, such as their social skills and externalizing behavior. Propensity score analyses account for these

Abbreviation: NSCAW, National Survey of Child and Adolescent Well-Being.

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differences when estimating the effect of social support on subsequent depression.

While an alternative approach could instead utilize an ordinary least squares (OLS) regression and control for the same covariates, propensity score methods confer several advantages. First, OLS regression models do not offer a straightforward method to compare the high and low social support groups and determine if they overlap sufficiently in their baseline attributes to examine the impact of social support. If all of the children who received high social support were high functioning based on their baseline attributes, and all of the children who received low social support were low functioning based on their baseline attributes, we would be unable to estimate the impact of social support separate from these preexisting characteristics. By reducing the collection of background attributes to a single composite score, propensity score analyses allow for the straightforward assessment of whether the comparison groups overlap enough on background characteristics to estimate the effect of the exposure (i.e., the effect of social support) (Rubin, 1997). The propensity score allows us to see the "whole picture" of the child's baseline attributes with a single score, and consider whether comparison between the two groups is appropriate. When comparison is deemed appropriate, the propensity score approach conceptually matches children on these baseline characteristics while allowing them to vary on the exposure itself. By attempting to isolate social support as the sole characteristic on which these conceptually matched children vary, we can get a better sense of the impact of social support separate from other baseline covariates.

The aim of this study is to implement a propensity score analysis to test the hypothesis that the relative availability of social support is an independent predictor of depressive symptoms among maltreated adolescents. The propensity score approach attempts to account for differences between adolescents with high and low social support by identifying the likelihood of receiving high social support based on key baseline attributes. If two adolescents have the same likelihood of receiving high social support based on their baseline attributes, but only one adolescent receives high social support, comparisons between these adolescents are more informative than comparisons made between two adolescents with discrepant levels of both baseline attributes and social support. We hypothesized that, using these methods, social support would predict depressive symptoms, but that the relationship would be attenuated relative to findings from previous studies.

2. Methods

2.1. Data source and sample

The National Survey of Child and Adolescent Well-Being (NSCAW) is a nationally-representative sample of children in the United States who have had contact with Child Protective Services (CPS; Dowd, Kinsey, Wheeless, Thissen, Richardson, Suresh et al., 2004). The cohort includes 5501 children (50% female), ages <1 year to 14 years when sampled, who were subjects of child abuse or neglect investigations conducted by CPS from October 1999 to December 2000. For information on the sampling strategy, see Dowd & colleagues (2004).

At baseline (wave 1), face-to-face interviews were conducted with children and their caregivers, teachers and caseworkers (when applicable). At 12 months post-baseline (wave 2), telephone interviews were conducted with caregivers and caseworkers. At 18 and 36 months post-baseline (waves 3 and 4), face-to-face interviews were conducted with children, current caregivers, and caseworkers. Caregivers provided informed consent and consented on behalf of children (active assent was obtained from children age 7 years and older).

Because the incidence of depression dramatically increases in adolescence, the current analyses were restricted to children who were 11 years or older at wave 1 ($n=1179$). We also excluded children with missing data for social support at 18 months post-baseline or depressive symptoms at three years post-baseline ($n=402$). These children did not differ significantly from the remaining sample in age, sex, ethnicity, type of abuse, depressive symptoms, trauma symptoms, externalizing symptoms, social skills, IQ, academic achievement, income, or caregiver psychopathology.

The final sample ($n=777$) ranged in age from 11 to 15 years at wave 1 ($M=12.65$, $SD=1.25$), from 12 to 16 years at wave 3 ($M=13.91$, $SD=1.31$), and from 13 to 18 years at wave 4 ($M=15.22$, $SD=1.29$). Data from wave 2 were not used in our analyses because not all relevant data were collected. Forty-seven percent of children were White (non-Hispanic), 32% were Black (non-Hispanic), 14% were Hispanic, and 8% were of other races or ethnicities.

Caseworkers rated the most serious form of abuse children experienced based on the child's file and their ratings of the frequency, severity, and duration of each alleged or substantiated instance of abuse or neglect; for 27% of children this was physical abuse, for 20% it was sexual abuse, for 8% it was emotional abuse, for 35% it was neglect and for 10% it was some other form of abuse (e.g., abandonment, exploitation).

2.2. Key measures

2.2.1. Social support

To determine adult sources of support, youth completed the Resiliency Scale (Runyan, Curtis, Hunter, Black, Kotch, Bangdiwala et al., 1997). From this scale, three items on the child's access to parents, other adult family members, and adults outside of the family were used to determine three of the four major areas of social support ("Do you feel you can go to a parent or someone who is like a parent with a serious problem?", "Could you go to another relative [not a parent] with a serious problem?", and "Has there ever been an adult outside of your family who has encouraged you and believed in you?"). Responses to these three items were scored with either 0 'no' or 1 'yes'.

Determination of peer support was based on a single item in the Loneliness and Social Dissatisfaction Questionnaire for Young Children (Asher, Hymel, & Renshaw, 1984; Asher & Wheeler, 1985): "Can you find a friend at school when you need one?" Responses were initially scored with a 1 'never', 2 'hardly ever', 3 'sometimes', 4 'most of the time', or 5 'always'. To make this scale consistent with the adult items, items 1 through 3 were recoded to 0 (no) and items 4 and 5 were recoded to 1 (yes).

The four items on the sources of the child's social support were summed to form a count variable for the total number of sources of social support available to the child. Scores ranged from 0 (no sources of social support available) to 4 (social support available from parents, other family members, other non-familial adults, and peers). Because they were highly skewed, these scores were split to form a dichotomous measure for high versus low social support. After examining the data, we chose a cut-off point that would ensure that we had at least 10% of youth in the low support group at baseline. Youth with two or fewer sources of social support were categorized as having low social support, while youth with three or four sources of social support were categorized as having high social support. At wave 1, 12% of youth reported low social support, and 88% reported high social support; at wave 3, 9% reported low social support vs. 91% reporting high social support; and at wave 4, 8% reported low social support vs. 92% reporting high social support.

2.2.2. Depressive symptoms

Youth reported on their depressive symptoms using The Child Depression Inventory (CDI; Kovacs, 1992), a measure of children's negative mood, anhedonia, and negative self-esteem in the past week. Responses were scored on a three-point scale (0 = absence of symptom, 1 = mild symptom, 2 = definite symptom). The mean depression score was 9.68 ($SD=7.91$, range = 0 to 45) at wave 1, 8.03 ($SD=6.94$, range = 0 to 42) at wave 3, and 7.68 ($SD=6.76$, $SD=6.76$, range = 0 to