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Multidimensional Aspects of Social Networks: Implications for CPS Recurrence

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Abstract: This study examines the social network characteristics of 670 mothers reported to and investigated by the child protection system (CPS) in Milwaukee County, Wisconsin in 2016. Specifically, having a recurrent CPS investigation within one year of an index investigation that did not result in an ongoing CPS case is assessed as a function of positive social network ties, negative social network ties, and perceived neighborhood support. Few studies have explored these aspects of social networks comparatively and simultaneously in relation to CPS outcomes, or within this population. We used cluster analysis to identify particular combinations of network characteristics among mothers with recent investigations and then examined whether different cluster types are predictive of recurrent CPS involvement within one year. Clusters differed on the perceived levels of both positive and negative interpersonal ties as well as perceived neighborhood support and were associated with different levels of known child maltreatment risk factors. Clusters with lower levels of perceived neighborhood support were more likely to be associated with future CPS investigations, but this association becomes statistically insignificant when controlling for mothers' depressive symptoms. The results of this study suggest that a more multi-faceted view of social networks can be helpful to understand the social contexts of mothers as they experience contact with CPS and raises questions about how these contexts interact with parental mental health in relation to CPS recurrence.

Keywords: social networks; perceived neighborhood support; mothers; CPS recurrence

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1. Introduction

1.1. Supportive Social Networks

Social connections, specifically positive interpersonal relationships that provide emotional, informational, instrumental, and spiritual support, have been identified as a key protective factor in nationally recognized frameworks for preventing child maltreatment and promoting child well-being (Centers for Disease Control and Prevention et al. 2014; Harper Browne 2014; Williams-Butler et al. 2018), as well as in the larger extant literature (Taylor 2011; Thompson 2015). Social support can take many distinct forms, including tangible or material support, emotional support, and social companionship, as well as perceived and actualized support, available via social networks (Barrera 1986; Coohey 1996; Giovannoni and Billingsley 1970; Thompson 2015). Sources of social support can also vary within one's social network, inclusive of family members, friends, coworkers, neighbors, and other neighborhood members (Bruhn and Philips 1984; Taylor et al. 2022; Thompson 2015).

Prior research examining the role of social support suggests that it may act as a buffer against child maltreatment risk and child welfare system involvement, as well as reduce parental stress and promote healthy child development (Bronfenbrenner and Crouter 1983; Caliso and Milner 1994; Counts et al. 2010; Fram 2003; Gaudin and Pollane 1983; Kim 2015; Kotch et al. 1997; Moncher 1995; Thompson 1995; Tracy et al. 2018; Tucker and Rodriguez 2014; Vinson et al. 1996), and the lack of social support is associated with child

maltreatment, particularly neglect (Coohey 1996; DePanfilis 1996; Garbarino and Sherman 1980; Gracia and Musitu 2003; Hawthorne 2008; Lee et al. 2022; McDonald 2007). The size and proximity of one's social support network as well as frequency of contact have also shown associations with child maltreatment (Coohey 1995, 2007; Ortega 2002).

In addition to social support received via direct interpersonal relationships, neighborhood-level measures of social connectivity also have substantial empirical support as protective factors against child maltreatment (Austin et al. 2020). Neighborhood social cohesion, i.e., the level of neighborhood bonds and trust residents have in one another (Sampson et al. 1997), is associated with lower rates of parent self-reported stress and child neglect (Maguire-Jack and Showalter 2016; Maguire-Jack and Wang 2016). Neighborhoods with greater social cohesion, social control, and intergenerational ties have lower rates of CPS-substantiated child maltreatment (Molnar et al. 2016) and stronger neighborhood social control and reciprocating exchange have been linked to lower rates of self-reported physical abuse by parents (Freisthler and Maguire-Jack 2015).

1.2. The Complexity of Social Networks

Although the positive influences of social support across individual and neighborhood levels are well-established, a range of studies document substantial diversity in the social networks and types of support available to parents traditionally labeled as "at-risk". Some parents report feeling isolated in communities that lack supportive resources for families, while others are part of thriving kin or neighborhood networks that provide valuable emotional affirmation and concrete support through mutual assistance (Lalayants et al. 2014; Thompson 2015). Additionally, Durden et al. (2007) found that among low-income women, excessive demands from one's social network can exacerbate psychological distress. For example, providing emotional and instrumental support to others without a perceived reciprocal amount of support can lead to psychological distress. Furthermore, listening to the problems of others without being able to provide assistance may lead to feelings of frustration and helplessness (Durden et al. 2007). Social negativity is one term used to describe such aspects of relationships (Brooks and Dunkel Schetter 2011). Additional terms used to represent this construct include but are not limited to, problematic social ties (Rook 1984), negative social interactions (Schuster et al. 1990; Antonucci et al. 1998); problematic social interactions (Brenner et al. 1989; Davis and Rhodes 1994); negative social ties (Offer 2021), social poverty (Halpern-Meekin 2019), and negative social interactions (Lincoln 2000).

While most studies focus primarily on either the protective effects of positive network ties or the risk associated with negative network ties (Holt-Lunstad and Uchino 2019), most social networks are often comprised of both positive and negative dimensions. Uchino and colleagues (2004) examined both the positive and negative dimensions of social networks and identified four different social network categories that are associated with varying dimensions of positivity and negativity. For example, they concluded that supportive networks are high on positivity and low on negativity; aversive networks are high on negativity and low on positivity; ambivalent networks are high on both positivity and negativity; and indifferent networks are low on both positivity and negativity (Uchino et al. 2004). Using these four social network levels, (Williams-Butler et al. 2023) found that, among Black mothers involved in CPS, the positivity can outweigh the negativity in social networks to predict positive parenting outcomes. However, most of the literature on the complexity of social networks focuses on physical health and mental health outcomes and finds that the negativity in social relationships oftentimes outweighs the positivity in social networks (Gilligan et al. 2015; Lincoln 2000; Rook 1984).

Notably, prior studies have also documented important limitations of social support as a buffer against child maltreatment and suggest that not all social support may be beneficial or effective in preventing child maltreatment. For example, a study examining relationships between various aspects of parental alcohol consumption, social support, and risk of child physical abuse found that parents who experienced a high sense of belonging

with others were more likely to report physically abusing their children, especially when companionship involved drinking together outside the home (Freisthler et al. 2014). In a qualitative study of mothers convicted of fatal child abuse, Korbin (1989) found that these mothers reported being actively connected to people in their social networks who were aware of their abusive parenting practices. The social network members of these mothers made efforts to be emotionally supportive and therefore overlooked harmful parenting practices, minimized the seriousness of abuse, and offered reassurance about the mothers' good intentions while providing noncritical emotional affirmation. These findings suggest that the provision of emotional affirmation or acceptance is not sufficient to ensure child protection (Korbin 1989).

1.3. Social Networks and CPS Investigations in Context

The contexts in which social relationships occur can have a substantial influence on both social networks and on risk and protective factors associated with child maltreatment (Harper Browne 2014). Considered in context, social networks can be understood as one influential aspect among the milieu of systems, policies, and structural forces that also shape daily life, maltreatment risk, and the likelihood of CPS contact.

Decades of prior studies document the role of poverty and economic hardship in the etiology of child maltreatment (Bai et al. 2020; Berger et al. 2017; Bywaters et al. 2016; Conrad-Hiebner and Byram 2020; Drake and Pandey 1996; Dworsky et al. 2007; Gelles 1992; Gil 1970; Jones 1990; Landers et al. 2019; Maguire-Jack 2014; Maguire-Jack et al. 2021; Marcal 2018; McLaughlin 2017; Mersky et al. 2009; Pelton 1989, 1994, 2015; Shook 1998; Slack 2002; Slack et al. forthcoming; Stith et al. 2009). These studies find persistent associations between various indicators of poverty and child maltreatment. Specifically, poverty, economic stress, neighborhood economic disadvantage, income inequality, and various forms of material hardship (e.g., utility shutoffs, housing insecurity) have repeatedly been linked to indicators of child maltreatment and CPS involvement (e.g., Berger 2004; Berger et al. 2015; Coulton and Pandey 1992; Coulton et al. 2007; Courtney et al. 2005; Eckenrode et al. 2014; Fong 2017; Font and Warren 2013; Garbarino and Sherman 1980; Giovannoni and Billingsley 1970; Jonson-Reid et al. 2013; Maguire-Jack et al. 2015; Merritt 2009; Johnson-Motoyama et al. 2022; Navarro 2021; Paxson and Waldfogel 2002; Pelton 1978; Shook 1999; Slack et al. forthcoming, 2003, 2004, 2011; Warren and Font 2015; Yang 2015; Zhang et al. 2021). Furthermore, large-scale cross-sectional studies (e.g., the National Incidence Studies) have repeatedly demonstrated an inverse association between income and child maltreatment, particularly neglect (Sedlak and Broadhurst 1996; Sedlak et al. 2010). Inverse associations between increases in a family's economic or financial standing (i.e., family income, earnings, economic mobility, the provision of economic support) and child maltreatment risk are also well-documented in prior studies (Berger 2004; Berger et al. 2017; Bullinger et al. 2022; Cancian et al. 2017; Raissian and Bullinger 2017).

In addition, extensive bodies of literature have established links between structural factors, including systemic, community, and policy-level factors and indicators of both child maltreatment risk and CPS involvement. Prior studies suggest that community-level factors can have an impact on child maltreatment risk above and beyond the collective influence of interpersonal exchanges or family-level characteristics. Research on the role of communities in the etiology of child maltreatment has focused on a range of potential risk and protective factors, such as community parenting norms, social cohesion and disorganization, community poverty, demographic composition, affordable housing, childcare burden, and alcohol availability (Coulton et al. 1995, 1999, 2007; Freisthler et al. 2006; Maguire-Jack and Font 2017; Molnar et al. 2016). These studies demonstrate that child maltreatment cases are concentrated in disadvantaged areas. In addition, one commonality across many studies is that poverty is a consistent structural characteristic shown to elevate resident families' risk for maltreatment (Berger and Waldfogel 2011; Fong 2019; Font and Maguire-Jack 2020).

Importantly, structural racism has been identified as a contextual factor that has historically and currently yielded substantial influence on both conditions of risk for child maltreatment and CPS involvement for Indigenous, Black, and Hispanic/Latinx families. Structural and systemic racism are key contextual factors that account for the racial disproportionality and disparities that persist across modern CPS outcomes and have been defining features of the system since its inception. Across individual, institutional, and systemic levels, racism has substantially influenced the origination, distribution, and evolution of the formal child welfare system in the U.S. (Billingsley and Giovannoni 1972; Briggs 2020; Cantey et al. 2022; Carranza 2022; Dettlaff and Boyd 2020; Merritt 2021; Morton 1999; Roberts 2001, 2022; Williams-Butler et al. 2020). These influences remain active today and the persistent overrepresentation of many racial groups in CPS continues to be driven in large by forms of structural racism, such as racial disproportionalities in poverty rates, wealth, home ownership, and racial inequities in access to government benefits, safe living conditions, health care, and high-quality education. It has also been recognized that ongoing systemic racism within the U.S. social welfare, health care, education, and criminal justice systems (Minoff and Citrin 2022) can compound inequities in service and benefit receipt, which in turn can sustain or exacerbate disparities in CPS involvement.

Furthermore, a growing number of studies have focused on the role of societal-level characteristics, such as policies and systems, in the etiology of child maltreatment. Societal factors shape the choices and conditions to which families are exposed, which can heighten or diminish risk, and suppress or enhance the protective capacities of caregivers (Harper Browne 2014). Economic safety net policies have increasingly been characterized as a structural influence that can shape child maltreatment risk and CPS involvement (Slack et al. forthcoming). For example, variations in the generosity of child support pass-through for parents receiving Temporary Assistance for Needy Families (TANF), tax credits, and minimum wage have been shown to associate with family-level or population-level child maltreatment risk (Berger et al. 2017; Cancian et al. 2013; Raissian and Bullinger 2017). More recently, studies have examined connections between social welfare safety net benefits and child maltreatment risk (Berger et al. 2017; Brown et al. 2019; Cancian et al. 2013; Johnson-Motoyama et al. 2022; Klevens et al. 2016; Livingston et al. 2021; McGinty et al. 2022; Pac 2019; Raissian and Bullinger 2017; Wildeman and Fallesen 2017). Together, findings from these studies suggest that system-level changes to safety net benefits and minimum wage policies are tied to changes in CPS involvement and other key indicators of child maltreatment risk.

Notably, the United States social welfare policy has historically played a role in regulating and controlling the lives of women by rewarding those mothers deemed deserving with social welfare benefits and punishing those mothers deemed unworthy through the lack of social welfare benefits (Abramovitz 2017). Government control related to the support of women increased during the 1980s as a result of neoliberal policies which sought to downsize the government by increasing the use of means-testing and behavioral requirements in determining the receipt of social welfare services (Abramovitz 2014). This trend has continued to the present day, exacerbated by policy decisions such as the transformation of the Aid to Families with Dependent Children (AFDC) program to the transitional work program of Temporary Aid to Needy Families (TANF) (Abramovitz 2006). Given the decrease in economic support from the government over time, the importance of social networks, with their ability to provide mutual aid and other forms of instrumental support (Taylor et al. 1990) has likely increased substantially in recent years.

2. The Current Study

Overall, the literature suggests that the association between both interpersonal and community- or neighborhood-level social support and child maltreatment risk is multifaceted and that the complexity of social networks among families at risk of child protective services (CPS) intervention deserves more attention. Given the array of findings on this topic, we explore both positive and negative aspects of social network characteristics,

including perceived availability of emotional support from one's social network (positive social ties), emotional and material drain from one's social network ("negative social ties") and perceived level of neighborhood support.

The study focuses on mothers whose families have been reported to CPS and underwent a child maltreatment investigation, but whose cases were not opened for ongoing CPS services due to a lack of safety concerns. Prior studies suggest that this "deflected" group of families is at high risk for returning to CPS (Simon and Brooks 2017; Simon et al. 2022; Slack et al. forthcoming). We aim to understand the influence of both positive and negative social ties and perceived neighborhood support on the risk of CPS recurrence (i.e., a re-report that results in another CPS investigation within one year). We use cluster analysis to determine whether there are particular combinations of social network characteristics prevalent among mothers in the sample at baseline. We then explore whether these distinct clusters or network types predict future CPS involvement (i.e., CPS re-investigations within one year). The following research questions guide our analysis:

Q1. Are there different ways that positive and negative characteristics of social networks and perceived neighborhood support cluster among mothers reported to and investigated by CPS?

Q2. How do sociodemographic characteristics and other known child maltreatment risk and protective factors vary across these clusters?

Q3. Are different clusters associated with an elevated risk of another CPS investigation within one year of the index CPS investigation?

3. Methods

3.1. Data and Sample

The data and sample for the current analysis were derived from a randomized control trial designed to evaluate an intervention, Getting Access to Income Now (GAIN), to reduce CPS recurrence. The sample consists of parents and primary caregivers whose families were reported to and investigated by CPS, but for whom no ongoing CPS case was opened. This population of families deflected from CPS has high rates of re-involvement with CPS (Drake et al. 2003; Jedwab et al. 2017; Simon et al. 2022). As such, these families are both at risk for future CPS intervention and potential prime targets for interventions designed to prevent child maltreatment and CPS involvement. The GAIN Study was fielded in Milwaukee County, Wisconsin from 2012 to 2016. In the final months of the study (February through August 2016), 1095 eligible families were recruited to participate in a survey component immediately following the closure of their CPS investigation and prior to study randomization; 727 families completed this survey, representing a survey response rate of 66.4%. Administrative data dating back several years were available for all eligible families, regardless of survey participation, affording the creation of survey non-response weights for the purpose of generating findings that more accurately reflect the full eligible sample. The survey was available in English only. It was approved by the Institutional Review Board at the University of Wisconsin—Madison. Additional details about the sample have been reported elsewhere (Abbott et al. 2021; Slack et al. 2020).

3.2. Participants

The subgroup of survey respondents who identified as female and as the biological or adoptive parent of one or more children in the home (N = 670) constitute the participants for the current analysis and are hereinafter referred to as "mothers". This subgroup was chosen due to the historical and current overemphasis on mothers in child welfare systems and practices. The gendered nature of child welfare involvement is often overlooked in the literature (Breger 2012). This study seeks to place a focus on mothers within the child welfare literature and their unique situations and needs.

3.3. Measures

3.3.1. Outcome

The outcome of interest for this analysis is a CPS investigation that occurs within one year of randomization into the GAIN study, which directly follows the closure of a CPS investigation and the administration (after the investigation) of a baseline survey. CPS investigations resulting from a report within three weeks of the initial index investigation were not counted in the outcome variable, as some of these investigations may be related to the circumstance or events that motivated the initial maltreatment report. CPS investigation data were derived from the state's child welfare administrative system under a data-sharing agreement with the Wisconsin Department of Children and Families and using longitudinal, person-level data linked over time and across state systems, the Wisconsin Administrative Data Core housed at the Institute for Research on Poverty. All survey participants signed a consent form authorizing the linkage of the survey and state administrative data. Other CPS outcomes, such as substantiated reports and foster care placements, were not analyzed due to their low incidence rates within the one-year time-period.

3.3.2. Key Predictors

Positive social network ties were measured using the social connections subscale (9 items) of the Protective Factors Survey (Kiplinger and Harper Browne 2014). Items include: "You have someone who will help you get through the tough times"; "You have someone who can help you calm down if you get upset"; "You have someone who helps you feel good about yourself"; "You have someone who can help you calm down if you get frustrated with your children"; "You have someone who will encourage you when you need it"; "You have someone who will tell you in a caring way if you need to be a better parent"; "You have someone to talk to about important things"; "You have someone you can ask for help when you need it"; and "You are willing to ask for help from your family".

Negative social network ties were measured with a 6-item scale adapted, in part, from Newsom et al. (2005). Three of the scale items were developed for the present study. Items include: "Your family and friends are always meddling in your personal business"; "There are people in your life who try to get you in trouble with others"; "There are people in your life who act in a threatening way toward you"; "Your family and friends often criticize you or put you down"; "There are people in your life who ask for too much help from you"; and "Your family and friends involve you too deeply in their own problems".

Perceived neighborhood support is measured with seven items adapted from the Center for the Study of Social Policy's Protective Factors Framework (Harper Browne 2014): "The neighborhood you live in is a good place to raise children"; In your neighborhood, people reach out and help each other"; "You feel safe in this neighborhood"; "Your neighbors help out with others' children"; "You would move from your neighborhood if you could" (reverse-coded); and "You know many of your neighbors by name".

Response options for all three scales ranged from strongly disagree to strongly agree (range 1–5), and scale values were created by adding up the scores across scale items and dividing by the number of items. Cronbach's alpha for all three scales was above 0.80. Dichotomous cluster variables (analytical technique described below) were created from combinations of scale variables capturing each respondent's ratings of their social network's characteristics (positive and negative ties and perceived neighborhood support).

3.3.3. Control Variables

Sociodemographic controls include the number of minor-aged children in the home, the age of the youngest child in the home, a dichotomous variable indicating respondent education beyond high school, a dichotomous variable indicating whether each respondent worked for pay for 10 or more hours in the previous week, respondent's current age, and a dichotomous variable indicating that the respondent was single (i.e., no current partner). Respondents were asked about their race and ethnicity and could choose from a list of options as well as describe their own race and ethnicity. Some subgroups were quite small

(less than 3% of the sample). We chose to include the largest group (those identifying as Black or African American) and the largest ethnic group (Hispanic, Latino, or Chicano) as dichotomous variables in our analyses; all other respondents were treated as the reference group. We tried operationalizing race and ethnicity as well as the reference group in several different ways, but there were no material differences in our results. It should be noted, though, that these measures and our strategy are not ideal. We include these variables in the analyses because there are well-known disparities in child welfare system involvement by racialized groups (e.g., Dettlaff and Boyd 2020; Edwards et al. 2021; Yi et al. 2023; Williams-Butler 2022) that could emerge in predicting recurrent CPS outcomes.

We also included measures of known correlates of child maltreatment and CPS involvement (Institute of Medicine and National Research Council 2014; Klika and Conte 2018; Korbin and Krugman 2014). The parental distress subscale of the Parenting Stress Index—Short Form, 4th Ed., is intended to capture parental distress related to one's role as a parent (Abidin 2012). Eleven of the 12 subscale items were included in the measure (one was inadvertently omitted from the survey). We also included the 20-item CES-D measure of depressive symptoms (Radloff 1977), a 7-item scale measuring economic stress a 7-item scale measuring self-efficacy (Pearlin and Schooler 1978); a dichotomous indicator of alcohol or drug abuse based on answering "yes" to any of the items from the CAGE Questionnaire (Ewing 1984), and a dichotomous indicator of reporting four or more adverse childhood experiences (Felitti et al. 1998). A dichotomous variable indicating whether the respondent had been investigated by CPS in the three years prior to the index report (derived from state administrative data and excluding the 3-week period prior to the CPS index investigation) was included in an effort to control for unmeasured factors that may be associated with a higher likelihood of being reported to CPS. Finally, we include a control for the random assignment group. Random assignment occurred after the index CPS investigation closed and the survey was completed, but the CPS outcome time-period is the one year following the index investigation (excluding the first three weeks) and thus, could have been influenced by the intervention.

4. Analysis

As a first step, we ran descriptive statistics on the outcome and all covariates. We then conducted a cluster analysis using our three key measures of interest: positive social network ties, negative social network ties, and perceived neighborhood support. Cluster analysis is a data-driven technique that maximizes homogeneity within groups or "clusters" and maximizes heterogeneity across groups (Tan et al. 2019). The optimal number of clusters is determined using the Ward method. We then generated the final clusters using the k-means procedure in SPSS. Once our clusters were computed, we ran one-way ANOVA tests to see how the other covariates and the outcome in our models varied by cluster. Finally, we used logistic regression to predict CPS recurrence within one year of the index CPS investigation.

5. Results

5.1. Descriptives

Table 1 presents the descriptive statistics for the sample, including social network characteristics, sociodemographic variables, and other predictors of CPS involvement. On average, respondents reported highly supportive network ties (4.3 on a 5-point scale), and relatively low negative network ties (2.4 on a 5-point scale). Scores on perceived neighborhood support were average (3.1 on a 5-point scale). The average age of the youngest child in the home was 8.8 and the mothers' average number of minor-aged children in the home was 2.1. The average age of mothers was 33.5. Just under 43% of mothers reported being single, 45.1% had more education than a high school degree, and 54.7% worked 10 or more hours in the week prior to survey administration. Sixty percent of respondents identified their race as Black or African American and 35% as White or another racial or ethnic group; 13.5% identified their ethnicity as Hispanic or Latina.

Table 1. Sample Descriptives (N = 670).

Social Network Characteristics	Mean (SD) or %
Positive social network ties (Range 1–5)	4.3 (0.7)
Negative social network ties (Range 1–5)	2.4 (0.9)
Perceived neighborhood support (Range 1–5)	3.1 (0.9)
Sociodemographic Variables	
Youngest child's age	8.8 (5.9)
Parent age	33.5 (9.5)
Single	42.7%
>H.S. Degree	45.1%
# Children < 18	2.1 (1.2)
Worked 10+ hours past week	54.7%
Black or African American	60.0%
Hispanic or Latina	13.5%
White or other race/ethnicity	26.8%
Predictors of CPS Recurrence	Mean (SD) or %
Parenting distress	2.2 (0.6)
Economic strain	2.4 (0.8)
Depressive symptoms	2.1 (0.7)
Self-efficacy	3.9 (0.6)
Alcohol or drug abuse	21.5%
High ACEs	38.3%
Any past CPS investigations	19.4%
Outcome	%
CPS investigation within one year	21.1%

With respect to other covariates, scores on the scales for parenting stress, economic strain, and depressive symptoms were, on average, low (2.1–2.4 on a 5-point scale), and scores on self-efficacy were moderately high (3.9 on a 5-point scale). Just over one-fifth of mothers answered yes on one of the items in the CAGE measure, indicating a potential problem with drug or alcohol use. Thirty-eight percent reported four or more ACEs and 19% reported an investigated CPS report prior to the index investigation.

5.2. Cluster Analysis

Table 2 presents the four groups that emerged from the cluster analysis. These clusters reflect groupings that are as similar as possible within a group and as different as possible across groups. Cluster 1 has mid-range scores on both positive and negative social network ties and reports low perceived neighborhood support. Cluster 2 scores high on positive ties and low on negative ties, but low on perceived neighborhood support. Cluster 3 is, on its face, the most desirable grouping, with very high scores on positive network ties and very low scores on negative network ties, and above-average scores on perceived neighborhood support. Cluster 4 is similar to Cluster 3, except that scores on negative social network ties are mid-range rather than low. The response range on all scales is 1–5 with 5 being the highest level of reported positive, negative, and neighborhood support, respectively.

Table 2. Social Network Characteristics (N = 670).

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Social Network Variables	N = 97; 14.0%	N = 191; 28.5%	N = 209; 31.6%	N = 170; 25.4%
Positive social network ties (Range: 1–5)	3.2	4.4	4.6	4.3
Negative social network ties (Range: 1–5)	3.4	2.1	1.6	3.2
Perceived neighborhood support (Range: 1–5)	2.1	2.5	3.8	3.6
Cluster Descriptions:	Pos ties avg Neg ties avg Com spt low	Pos ties high Neg ties low Com spt low	Pos ties very high Neg ties very low Com spt above avg	Pos ties high Neg ties avg Com spt above avg

5.3. One-Way ANOVA Results

Using one-way ANOVA tests, we looked at differences across the four clusters in terms of sociodemographic and other known child maltreatment correlates, as well as the outcome variable (CPS recurrence). Table 3 presents the results. F-tests indicating statistically significant differences between one or more clusters are denoted with asterisks. With respect to sociodemographic variables, mother's age, higher levels of education, employment, and identifying as Black produce statistically significant differences. Of note, Cluster 3 respondents have, on average, higher levels of education, are more likely to be employed, and are less likely to identify as Black or African American. In terms of other CPS predictors, Group 3 has, on average, lower levels of parenting stress, economic strain, and depressive symptoms. Compared to other clusters, Cluster 3 respondents are least likely to have a self-reported alcohol or drug abuse problem, a high number of ACEs, and past CPS investigations. They also have the highest scores on the measure of self-efficacy. In contrast, Cluster 1 has, on average, the highest levels of parenting distress, economic strain, and depressive symptoms. In addition, Cluster 1 has the highest rates of self-reported alcohol or drug abuse and the lowest scores on self-efficacy. They have, by far, the highest percentage of respondents with ACEs—71% of Cluster 1 respondents fall into this category, whereas the next highest percentage of self-reported ACEs is from Cluster 4 (42.9%). Cluster 1 has the highest rate of CPS recurrence, but does not have the highest rates of past CPS involvement. They are, on average, younger, have the lowest rates of post-high school education, are least likely to have worked in the past week, and are more likely to identify as Black or African American.

5.4. Logistic Regression Results

Table 4 presents results from the logistic regression models. Controlling for sociodemographic characteristics and the treatment assignment group (Column A), we see that Cluster 1 respondents are 20% more likely than Cluster 3 respondents (the reference group) to have a CPS investigation within one year of their index CPS investigation. Per the results of the one-way ANOVA tests, Cluster 1 has the highest scores on parenting distress, economic strain, depressive symptoms, alcohol and drug abuse, and ACEs. As such, they can be viewed as the most disadvantaged group in terms of CPS risk. Conversely, Cluster 3 is arguably the most advantaged group in this regard. Cluster 2 respondents have an elevated risk of CPS recurrence (although it is only marginally statistically significant; $p < 0.10$), despite that scores on positive network ties are high and scores on negative network ties are low. Like Cluster 1, though, Cluster 2 is characterized by low levels of perceived neighborhood support. Other statistically significant predictors include a greater number of children under 18 in the home and employment within the last week. Having a greater number of children is associated with an increased risk of CPS recurrence, and employment is associated with a reduced risk. Treatment group status was not a statistically significant predictor in the model.

Table 3. Sociodemographic and Key Predictors by Cluster (N = 670).

	Cluster 1	**Cluster 2**	**Cluster 3**	**Cluster 4**
	(N = 97; 14.0%) Pos ties: avg Neg ties: avg Com spt: low	(N = 191; 28.5%) Pos ties: high Neg ties: low Com spt: low	(N = 209; 31.6%) Pos ties: very high Neg ties: very low Com spt: above avg	(N = 170; 25.4%) Pos ties: high Neg ties: avg Com spt: above avg
Sociodemographic Variables				
	Mean (SE) or %	Mean (SE) or %	Mean (SE) or %	Mean (SE) or %
Youngest child's age	9.2 (6.2)	8.9 (6.0)	8.4 (5.9)	9.0 (5.8)
Mother's age *	32.1 (7.8)	33.1 (9.3)	33.9 (9.4)	34.8 (10.4)
Single	45.3%	43.4%	44.1%	38.1%
>H.S. degree ***	33.7%	43.1%	55.3%	41.8%
# Children < 18	2.3 (1.3)	2.2 (1.4)	2.1 (1.1)	2.2 (1.2)
Worked 10+ hours past week ***	44.7%	56.7%	65.2%	45.9%
Black or African American *	66.5%	65.7%	53.8%	60.8%
Hispanic	9.9%	12.7%	16.8%	11.1%
White or other race/ethnicity	25.9%	24.0%	28.5%	30.0%
Predictors of CPS Recurrence				
	Mean (SE) or %	Mean (SE) or %	Mean (SE) or %	Mean (SE) or %
Parenting distress ***	2.7 (0.6)	2.2(0.5)	1.9 (0.5)	2.4 (0.5)
Economic strain ***	3.2 (0.7)	2.5 (0.7)	2.0 (0.6)	2.6 (0.7)
Depressive symptoms ***	2.8 (0.7)	2.1 (0.6)	1.7 (0.5)	2.3 (0.6)
Self-efficacy ***	3.5 (0.6)	3.9 (0.5)	4.2 (0.5)	3.7 (0.5)
Alcohol or drug abuse **	32.4%	22.1%	17.4%	23.6%
High ACEs ***	70.6%	36.4%	22.2%	42.9%
Any past CPS investigations ***	19.7%	18.0%	17.1%	23.5%
Outcome: Recurrent CPS investigation within one year of index investigation				
	%	%	%	%
CPS investigation within one year ***	32.4%	22.0%	15.1%	20.1%

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

In Column B, other common correlates and predictors of child maltreatment are added to the model. The contribution of these covariates improves the fit of the model but attenuates the association between Cluster 1, which is no longer statistically significant, and CPS recurrence. A series of logistic regression models (not shown) added one predictor of CPS recurrence at a time, controlling for sociodemographic variables and treatment group status. Only depressive symptoms explained away the Cluster 1 association with CPS recurrence. Higher scores on the depressive symptoms measure elevated the risk of a future CPS investigation. Additionally, past CPS investigations increased the odds of CPS recurrence. An unexpected finding is that higher levels of parenting distress are associated with a lower risk of CPS recurrence. We discuss this and other findings below.

Table 4. Logistic Regression Predicting CPS Recurrence (N = 670).

	Column A Odds Ratio (SE)	Column B Odds Ratio (SE)
Sociodemographic Variables		
Youngest child's age	1.00 (0.17)	0.98 (0.02)
Mother's age	0.98 (0.22)	0.99 (0.01)
Single	0.80 (0.18)	0.71 (0.18)
>H.S. degree	0.81 (0.18)	0.77 (0.19)
# Children < 18	1.37 (0.07) ***	1.36 (0.07) ***
Worked 10+ hours past week	0.55 (0.18) ***	0.64 (0.19) *
Race and ethnicity		
Black	0.93 (0.20)	1.05 (0.05)
Hispanic	0.65 (0.30)	0.72 (0.31)
White and other racial and ethnic groups		Reference group
Clusters		
Cluster 1	1.20 (0.26) **	1.69 (0.32)
Cluster 2	1.51 (0.23)	1.41 (0.24)
Cluster 3		Reference Group
Cluster 4	1.12 (0.24)	1.00 (0.27)
Predictors of CPS Recurrence		
Parenting distress		0.49 (0.22) ***
Economic strain		1.11 (0.15)
Depressive symptoms		2.03 (0.18) ***
Self-efficacy		1.02 (0.20)
Alcohol or drug abuse		1.20 (0.21)
4+ ACEs		0.81 (0.19)
Any past CPS investigations		2.19 (0.21) ***
Treatment Group	0.93 (0.17)	0.90 (0.18)
Constant	0.33 (0.49) *	0.21 (1.28)
−2 Log Likelihood	863.7 ***	828.54 ***

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

6. Discussion

This study attempted to understand the influence of both positive and negative social ties and perceived neighborhood support on the risk of CPS recurrence. We used cluster analysis to determine whether particular combinations of social network characteristics were prevalent among mothers in our baseline sample. We then explored the extent to which sociodemographic characteristics and other known risk and protective factors for child maltreatment varied across clusters and examined whether distinct clusters of network types were predictive of CPS recurrence within one year.

A total of four distinct combinations of network characteristics emerged from our analysis. Specifically, Cluster 1 had average positive ties, average negative social ties, and low neighborhood support, Cluster 2 had high positive social ties, low negative social ties, and low neighborhood support, Cluster 3 had very high positive social ties, very low negative social ties, and above average neighborhood support, and Cluster 4 had high positive social ties, average negative ties, and above average neighborhood support. Of note, mothers in Cluster 3 appeared to have an optimal combination of social network characteristics (i.e., very high positive social ties, very low negative social ties, and above-average neighborhood support) compared to mothers in the other clusters. Cluster 3 also had the lowest percentage of CPS investigations within one year of the index investigation.

Most mothers in CPS-involved families reported being connected to supportive social networks (Lalayants et al. 2014) and this appeared to be true among the sample members in our study, whose collective average positive network score was 4.3 on a 5-point scale.

Across all clusters, mothers reported average, high, or very high positive social ties. There were no clusters with low scores for positive social ties. Relatedly, average scores on negative social network ties were relatively low (mean of 2.4 on a 5-point scale). The average scores for perceived neighborhood support were mid-range (3.1 on a 5-point scale); as we observed that Clusters 1 and 2 scored relatively low and Clusters 3 and 4 had average scores on this scale.

The high rates of reported positive social support among mothers in this study appear to contrast with findings from prior studies that find lower rates of social support from relatives, friends, and neighbors among parents with histories of confirmed child maltreatment, particularly neglect (Coohey 1996; Gaudin et al. 1993). Considering both the relatively high levels of positive social support and the relatively common experience of CPS recurrence across all clusters in this study, our findings align with prior research that suggests that positive social support alone, and perceived emotional support in particular, may not be effective in preventing child maltreatment (Freisthler et al. 2014; Korbin 1989). Our findings highlight the need for empirical approaches that build evidence about both the effectiveness and limitations of specific types of social support as buffers against maltreatment. For example, in assessing the relationship between social support and child physical abuse, Freisthler et al. (2014) conceptualized social support as both a "vulnerability factor" and a "protective factor" in order to account for the type of support being provided and the potential negative consequences of social support, such as group conformity (e.g., pressure to adapt to similar behavioral norms as one's social network). Though there were no clusters with low scores for positive social ties, Cluster 1 was the only Cluster to score below "high" or "very high" on the scale for positive social ties, with a score in the average range noted for mothers in this group. This finding suggests that among mothers with a history of CPS investigations, having only average levels of positive social ties may represent a red flag and signal the presence of substantial challenges that might typically be expected to stem from low scores in this domain.

Furthermore, we found that controlling for sociodemographic factors and treatment status, Cluster 1 ($p < 0.001$) and Cluster 2 ($p < 0.10$, marginally statistically significant) were predictive of CPS recurrence (i.e., another CPS investigation within one year of the index investigation). Notably, both Cluster 1 and Cluster 2 were characterized by low levels of perceived neighborhood support, and this stands in contrast to clusters 3 and 4, which both had higher than average levels of perceived community support. Cluster 4 (high positive social ties, average negative ties, and above average community support) performed very similarly to Cluster 3 (reference group) in the model predicting CPS recurrence, with no statistically significant difference detected between Cluster 3 and Cluster 4 in the model.

When other factors that might explain differences in the nature of one's personal and community support network are added to the model, the association between Cluster 1 and CPS recurrence is no longer statistically significant. Additional analyses (not shown) identified that mothers' reports of depressive symptomatology were the only covariate to explain away this association. Importantly, all survey measures were collected following the initial index investigation. The investigation itself may have elevated depressive symptoms in the mothers in this study and done so in ways that are related to mothers' perceptions of social network supportiveness.

Considered together, the findings above suggest that community support may play a role in preventing CPS recurrence, but in our statistical models, community support is sensitive to the inclusion of depressive symptoms. Specifically, a lack of perceived neighborhood support coupled with only average scores on positive and negative personal network characteristics is a problematic social network scenario for a population at high risk of CPS recurrence, as evidenced by the ANOVA tests and logistic regression results controlling for sociodemographic characteristics. However, this social network scenario has a relationship with mothers' depressive symptoms that renders it statistically insignificant. While it is possible that depressive symptoms mediate the relationship between Cluster 1 and CPS recurrence, it is also possible that depressive symptoms were present prior to the

index CPS investigation and predicts both initial CPS reports and CPS recurrence. We were not able to tease this out given the lack of information on depressive symptoms prior to the index report.

Our study did not specifically focus on exploring potential racial differences in social networks and their relationship to CPS investigations among mothers in our sample, however, our race-specific findings suggest that future exploration of this nature is warranted. First, in terms of the demographic composition of our study sample, 60% of respondents identified their race as Black or African American. Thus, on a basic level, it is notable that Black mothers are overrepresented in our study sample. According to the one-way ANOVA tests, more Black mothers were represented in Cluster 1 (66.5%) and Cluster 2 (65.7%) compared to their numbers in Cluster 3 (53.8%) and Cluster 4 (60.8%). Further, in terms of demographic differences across the four clusters, Cluster 1 respondents were more likely to identify as Black or African American, and Cluster 3 respondents were less likely to identify as Black or African American. These results indicate that Black mothers in this sample were more likely to be in the cluster with the least desirable grouping of factors (Cluster 1) and less likely to be in the cluster with the most desirable grouping of factors (Cluster 3). To reiterate, Cluster 1 had mid-range scores on both positive and negative social network ties and reported low perceived neighborhood support. Cluster 1 had, on average, the highest levels of parenting distress, economic strain, depressive symptoms, and self-reported alcohol or drug abuse, and the lowest scores on the measure of self-efficacy. This cluster had by far, the highest percentage of respondents with ACEs (71%). Despite not having the highest rates of past CPS involvement, Cluster 1 had the highest rate of CPS recurrence. In contrast, Cluster 3 had very high scores on positive network ties, very low scores on negative network ties, and above-average scores on perceived neighborhood support. Cluster 3 had, on average, lower levels of parenting stress, economic strain, and depressive symptoms and higher levels of education. Cluster 3 respondents were least likely to have a self-reported alcohol or drug abuse problem, a high number of ACEs, and past CPS investigations. Controlling for sociodemographic characteristics and the treatment assignment group, Cluster 1 respondents were 20% more likely than Cluster 3 respondents to have a CPS investigation within one year of their index CPS investigation. While racial disparities were not a focal point of the current study, these findings raise questions about the interaction of contextual factors at the structural and systemic levels, including the potential influence of structural racism on the confluence of social networks and conditions of risk that impact parenting and family functioning. Based on the current child welfare disparities literature, very little is known about the relationship between structural racism, social networks, and CPS recurrence among Black mothers and how their interaction might relate to racial disparity in CPS. These topics deserve more attention.

In line with prior research, the families in our sample had a relatively high rate of CPS re-investigation. Specifically, 21% of mothers experienced another investigated CPS report for alleged maltreatment within one year of the index investigation. Mothers who were currently working experienced a lower likelihood of a CPS re-investigation within one year, while mothers who reported having more children under age 18 were more likely to experience a CPS re-report and investigation within one year. Other key predictors of CPS involvement included a history of any CPS investigations and depressive symptoms, with both elevating the likelihood of recurrence. An unexpected finding emerged in that higher scores on parental distress reduce the likelihood of CPS re-investigation. We have no direct interpretation of this finding; however, a potential explanation is that because sample members just experienced a CPS investigation (and baseline measurement occurred post-investigation), higher levels of parental distress, independent of perceived support, may have stemmed from the experience of an investigation (Fong 2020; Merritt 2020) and, in turn, increased parents' likelihood of taking intentional steps to avoid being re-reported to CPS.

As mentioned, an important limitation of this study is that each mother's baseline measures were taken very soon after a closed CPS investigation. We are unable to account

for the "effects" or any potential influence the experience of the investigation may have had on mothers' perceptions of their social networks and perceived neighborhood support. Indeed, a breakdown in one's social support network may be a contributing factor in the initial CPS report and investigation. Furthermore, findings related to parental distress suggest that the investigation itself may have increased distress and possibly heightened mothers' vigilance related to avoiding future involvement with CPS. Prior studies indicate that the experience of a CPS investigation in itself, regardless of disposition outcome, can produce intensive feelings of fear, distress, prolonged anxiety, and disengagement from critical sources of support (Fong 2020; Merritt 2020). Similarly, the indicators of support assessed in our study reflect the post-investigation social network context. However, this is arguably equally or more important to understand than a pre-investigation context when the outcome of interest relates to CPS recidivism.

7. Conclusions

This study focuses on an overlooked population that frequently comes into contact with CPS—mothers who do not have an ongoing CPS case opened following a child maltreatment investigation. It is essential to understand more about the array of resources, supports, and multi-level challenges these families face given the larger size of this population relative to those whose CPS investigations result in ongoing CPS involvement (U.S. Department of Health & Human Services et al. 2023) and the potentially precarious nature of their ongoing family circumstances given their high rates of re-reports. In addition, this study applied a multifaceted approach in examining social networks among our target population, factoring in measures that account for diverse aspects of mothers' interpersonal support networks in conjunction with a measure of perceived availability of neighborhood support.

Considering our findings in this context, it is essential to recognize and further examine the specific roles that poverty, sexism, and racism play in relation to CPS involvement for women in receiving services. These factors can intersect to influence social networks and family functioning in distinct and important ways. As such, we also acknowledge that social networks are but one important resource that can support families amidst many other fundamental supports.

Our findings confirm the complex nature of social networks among CPS-involved families and call for future research approaches that account for both positive and negative social ties across interpersonal and neighborhood contexts when assessing the risk of CPS recurrence. In terms of a tertiary prevention strategy, which is most relevant to our study population given that participants had already experienced a CPS investigation, our findings suggest that encouraging or incentivizing community support resource take-up following a closed investigation may have a role to play in preventing CPS recurrence, particularly if coupled with access to mental health services to address depression and other mental health challenges. However, a more nuanced understanding of the role of maternal depression in relation to both social network dynamics and the experience of being investigated by CPS is needed to ensure that prevention efforts incorporate an informed perspective on these relationships.

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