



The Relation Between Perceived and Population Based Environmental Risk and Maternal Stress

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Abstract

Child outcomes can be influenced by many variables, one of the most well-documented variables known to affect child outcomes is maternal interaction. Many studies investigate the relation between maternal interaction and child outcomes, however, very few studies attempt to identify the potential risk factors that may influence the mother's wellbeing and contribute to the way in which she interacts with her child. This current study attempts to identify which environmental risk factors affect maternal stress, and how the difference between perceived and population-based environment risk factors are related to participant's indications of maternal stress. The results of this study suggest that mothers with higher socioeconomic statuses were more likely to report having more indicators of maternal stress. The results of this study also suggested that perceived environmental risk does not have a statistical significance on the severity of maternal stress reported.

The Relation Between Perceived and Population Based Environmental Risk and Maternal Stress

Research suggests that children who are persistently exposed to volatile environments are more likely to present some indicators of negative child outcomes (Leventhal, 2018). The effects of being exposed to an environment with high concentrations of poverty, crime and other environmental risk factors are multifaceted in that they seem to affect children emotionally, socially, and behaviorally (Leventhal, 2018). While an environment can contribute significantly to child outcomes there are factors that can exacerbate, or avert the direction of this relation, one of these factors is maternal interaction. The role that a mother plays in the life of her child can be one that promotes positive outcomes, in which case the mother's behavior towards, and interactions with, her child protects the child from the negative aspects of the environment. Adversely, a mother could, for any number of reasons, worsen the circumstances, causing the child to be exposed and vulnerable to the environmental risk factors and thus promoting negative child outcomes (Defalco et al., 2014).

Children are impressionable, this is a well-known fact because of the emphasis that is typically placed on children in research investigating the relation between environment and life outcomes. While many studies focus on the way in which environment impacts the child, few articles investigate the way in which the environment affects the mother, and in turn how this relation may impede a mother's ability to provide adequate and positive interaction with her child.

In research environment is an elusive construct. The definition of environment varies significantly among research articles and studies. Some researchers define environment broadly, considering the term to encompass any aspect of an individual's life that was not genetically inherited. Others define environment with stricter confines, operationally defining it as pollution, or the spread of infectious diseases (Schmidt, 2007). While both definitions would be considered correct, there are also instances of researchers adopting a more general conceptualization of environment which encompasses both broad and more narrow perspectives of environment. This way of conceptualizing environment defines it as a combination of both perspectives and attempts to investigate psychosocial components that may not have been considered by either of the other perspectives (Schmidt, 2007).

Understanding the versatile definitions of environment is essential to grasping the ambiguous nature of environmental risk factors. Variables considered to be environmental risk factors varies between studies, however they are similar in that they may cause some level of distress in an individual who is exposed to the variable of interest. Some of the factors that have been operationally defined as environmental risk factors include socioeconomic status (SES) and neighborhood safety.

Literature Review

Socioeconomic Status

Like environment, SES is a construct that is ambiguous in the way that it is defined within research. While social scientists have not necessarily come to a consensus on what SES encompasses, the variability between definitions of SES in different studies is far less than that of environment. Research in the field of psychology typically uses SES as a construct to represent capital or resources, whether they be of a monetary or resources and assets of another nature (Bradley and Corwyn, 2002). There are two opposing theories regarding the relation that socioeconomic status has to the development of psychopathology in individuals. One theory, typically referred to as the social selection theory, claims that mental illnesses render individuals' incapable of fulfilling their societal roles, and as a result these individuals begin to drift down the societal ladder. The other theory, the social causation theory, suggests that people develop their illnesses because of their low SES. Research has also suggested the existence of a significant relation between socioeconomic status and the development of psychopathology (Wadsworth and Achenbach, 2005). A study conducted by Martha E. Wadsworth and Thomas M. Achenbach tested the way in which SES affects the incidence and prevalence of cases of psychopathology.

They hypothesized that a higher incidence of new cases and cumulative prevalence of psychopathology would be found in groups of lower SES as opposed to those who are middle and high SES. To test their hypothesis, the researchers examined the self-report measures and interviews of 1,075 participants. The results of this study supported their hypothesis by revealing disproportionately higher incidence and prevalence of mental illnesses among the participants of a lower SES (Wadsworth and Achenbach, 2005).

Neighborhood Safety

Research suggests that the conditions of the neighborhood in which a child resides is another important component when considering factors that may have an impact on child outcomes. A study conducted by Dafina Kohen, Tama Leventhal, V. Dahinten and Cameron McIntosh sought out to explore the relation between a child's neighborhood and their verbal and behavioral outcomes. This study found that children from neighborhoods that were considered disadvantaged were significantly related to children with poor child outcomes, by influencing other variables that have significant interactions with child outcomes negatively (Kohen, Leventhal, Dahinten, & McIntosh, 2008).

Maternal Anxiety and Depression

Maternal mental illnesses, such as anxiety and depression, and their relation to child outcomes have been heavily investigated. Multiple studies have found a moderately significant relationship between postnatal depression within the first two years of a child's life, and a child's delayed cognitive and emotional development (Beck, 1998 & Letourneau, Tramonte & Willms, 2013). Cheryl Tatano Beck's meta-analysis of nine studies on postpartum depression and their relation to the cognitive and emotional development of their children FINISH. When selecting the articles use in her meta-analysis, Beck sought out studies which focused on the way that cognitive and emotional were impacted by postpartum depression. After analyzing the nine articles she determined that mother's postpartum depression did have a significant relation to children delayed cognitive and emotional development.

Current Study

This current study seeks to investigate the relation between environmental risk factors and maternal stress. For the purposes of this study, environmental risk factors have been examined as they are perceived by the mother, as well as through statistical information obtained by geocoding. Maternal stress has been operationally defined as the presence of symptomology or a diagnosis of depression or anxiety disorder. The research questions being investigated throughout this study are 1. Which environmental risk factors affect the presence of indicators of maternal stress, and 2. Does a mother's perceived environmental risk factors affect maternal stress more than the population based environmental risk factors. I hypothesize that as SES goes down, crime index and perceived environmental risk factors increase maternal stress will increase with it.

Secondly, I hypothesize that as perceived environmental risk factors increase maternal stress will increase regardless of population based environmental risk factors.

Method

Participants

The participants included in this study are a subsample of 90 mothers from the larger subject pool of an ongoing longitudinal study. The longitudinal study functions to investigate the development of attention and emotion in children at various points of development. In order to take part in the study participants were required to have had full term pregnancies, a birth that was free of complications, and a healthy child who was over five pounds at birth. Participants were recruited based on geographic location. Participants who were recruited from a larger urban city on the east coast, were contacted after the mothers gave birth in the hospital. Other participants were recruited from a small, mid Atlantic, rural city. Researchers became aware of these participants through birth announcements, after which the participants were contacted for inclusion in the study through the distribution of postcards and the parent's volunteering. The last group of participants were from a small mid Atlantic urban city. Researchers contacted participants from this location through community centers, housing authorities and community engagement centers.

Procedure

Participants are asked to comply with assessments taking place when their child is 4 months, 8 months, 12 months, 18 months and 24 months as a part of their participation in the longitudinal study. The assessments require the participants to complete self-report measures and to attend "lab visits." To compare a participant's perceived environmental risk to population based environmental risk, the mother's perceived environmental risk is determined through evaluating their responses to self-report measures administered to them. Population based environmental risk are determined by evaluating neighborhood statistics related to the variables of interest. After evaluating both components by running statistical analysis on the data.

Measures

Community Survey. The Community Survey is a self-report questionnaire that was designed to assess aspects of the participant's neighborhood. The Community Survey consists of various scales, however the scales that were analyzed throughout the course of this study include those that measure delinquency rates, perceived violence, neighborhood danger and anomie ("Community Survey", n.d.). The delinquency rate scale consists of three items with a four-point Likert Scale response format. The perceived violence scale consists of five items with a four-point Likert Scale response format. The neighborhood danger scale consists of three items with a four-point Likert Scale response format. The anomie scale consists of 5 items with a five-point Likert Scale response format ("Community Survey", n.d.). Within this study the Community Survey was used to obtain some indicator of perceived environmental risk factors.

Beck Depression Inventory (BDI). The Beck Depression Inventory is a self-report questionnaire which is used to measure attitudes and symptoms commonly associated with depression. The inventory consists of 21 items (e.g. This week... I do feel sad, I do not feel sad, I feel sad all the time and can't snap out of it, I am so sad or unhappy that I can't stand it.) with a four-point response format ranging from 0-3, where higher scores indicate severe depression (Beck, Steer & Carbon, 1988). The results are evaluated after summing up the participant's responses to each item. The possible scores range from zero to 63, participants whose scores fall between zero and 10 are experiencing normal mood fluctuations, scores falling between 11 and 16 indicate mild mood disturbances, scores falling between 17 and 20 indicate borderline clinical depression, scores falling between 21 and 30 indicate moderate depression, those whose scores are 31 and over are experiencing severe or extreme depression (Beck et al., 1988). The BDI has an internal consistency that ranges between .73 and .92, and a construct validity of .92 for psychiatric outpatients and .93 for college students (Beck et al., 1988). In this study the BDI was used as a measure of maternal stress. High scores on the BDI indicated more severe maternal stress.

Beck Anxiety Inventory (BAI). Beck Anxiety Inventory is a self-report questionnaire used to measure the severity of anxiety in adults and adolescents. It does so by measuring the presence of subjective, neurophysiologic, autonomic, and panic-related symptomatology (Beck, Epstein, Brown & Steer, 1988). The BAI consists of 21 items (e.g. During the past month, including today, I have been bothered by numbness or tingling) with a four-point response format with answers ranging from zero to three. A participant's scores may range from zero to 63 points (Beck et al., 1988). Scores ranging from zero to seven indicate minimal anxiety, scores ranging from eight to 15 indicate mild anxiety, scores between 16 to 25 indicate moderate anxiety, and scores 26 through 63 indicate severe anxiety. The BAI has an internal consistency ranging between .92 and .94, and a test-retest reliability of .75 (Beck et al., 1988). In this study, the BAI was used as a measure of maternal stress. High scores on the BAI translated to more indicators of maternal stress.

State Trait Anxiety Inventory (STAI). The State Trait Anxiety Inventory is a self-report questionnaire which measures trait and state of anxiety. The inventory consists of 40 items, 20 items which assess trait anxiety (e.g. I get in a state of tension or turmoil as I think over my recent concerns and interests) and 20 items which assess state anxiety (Barnes, Har, & Jung, 2002). The Inventory has a four-point response system, with responses ranging from "Almost Never" to "Almost Always" (Spielberger, 1989). Each item is assigned a weighted score based on the response of the participant. For ten S-Anxiety and eleven T-Anxiety items a response of 4 indicates high anxiety, however for the remaining items a high rating indicates an absence of anxiety ("State-Trait Anxiety (STAI)", n.d.). The STAI has an internal consistency ranging between .86 to .95 and has a test-retest reliability ranging between .65 to .75 ("State-Trait Anxiety (STAI)", n.d.). In this study the trait component of the STAI was used as an indicator of maternal stress, where a higher score on trait anxiety scale translated to higher maternal anxiety.

Geocoding. Geocoding is the twostep process of assigning statistics to a specific geographic location. The first step in the geocoding process is obtaining the address of interest and deriving the census tract and block group of that address. After collecting the census tract and block group of the address, the census tract and block group is put into americanfactfinder.com, which provides statistics about variables of interest pertaining to that specific geographic location. Geocoding was used as a measure of population based environmental risk factors, such as school dropout rates, poverty and income rates, and the prevalence of single parent households within the community.

Crime Index. Crime Indexes were obtained by referencing city-data.com, which is a website that compiles city level statistical information and provides comprehensive views of cities in America. The crime index is a numerical measure based on the average of crime that occurring per 100,000 individuals. Both the national and the local crime indexes are provided. For the purposes of this study, the crime index was used as a measure of an additive component of the population based environmental risk factors, with crime index representing neighborhood safety. A higher crime index is representative of lower neighborhood safety.

Results

The correlational analyses ran on the data suggest that the environmental risk factor that has the most significance on maternal stress is SES, which seems to be related to maternal stress in such a way that as SES increases maternal stress increases as well. The correlations found in this study did not support any significant relation between perceived environmental risk and maternal stress.

Findings

Since this study is a correlational one, one of the limitations that exists is that the correlations discovered through the study do not prove causation. Another limitation that exists in this study is that the process of geocoding is reliant on information provided by the census. The statistics provided through geocoding reflect the information provided by the 2016 census.

The results of this study provide researchers with an indication of structural changes that can be made to communities to promote maternal wellbeing. The results of this study ignite more questions into the relation between SES and maternal stress, and what contributes to this relation existing in the way that it does. The reasoning behind this study producing the results that it did could be related to the how mothers adapt to their surroundings. Mother's living in environments with high concentrations of risk factors could be adapting to the risk that surround them, and because of this process of habituation, these mothers may not be viewing the risk factors in their community as negatively as mother's in environments with less environmental risk factors would.

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