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NEIGHBORHOOD STRESS AND SUBSTANCE USE IN DISADVANTAGED INNER
CITY MOTHERS:
An Examination of Executive Functioning as a Moderator

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Abstract

Substance use in urban disadvantaged mothers and neighborhood stress were examined in this study. It was posited that higher levels of neighborhood stress can lead to a withdrawal from the environment in the form of substance use, and that executive functioning capacity moderates this relationship. The sample was comprised of 55 low IQ, urban, disadvantaged mothers, an understudied population in substance use research. Neighborhood stress was measured in two ways, through participants' perception of crime and through actual levels of assault rate in the census tract in which they reside. It was posited that: 1.) as neighborhood stress level increases, participants' substance use will increase 2.) as executive functioning capacity increases, substance use will decrease, and 3.) mothers' executive functioning capacity would moderate the relationship between neighborhood stress level and substance use (i.e. that mothers with higher executive functioning will exhibit less substance use when faced with higher levels of neighborhood stress). Results showed that, as predicted, participants' perception of crime in their environment was positively related to substance use ($r = .260, p < .05$). No statistically significant relationship, however, was found between the number of assaults per 1000 people in mothers' census tract and substance use. Contrary to the study's second hypothesis, no statistically significant relationship was found between executive functioning and substance use. Regression analyses produced no support for executive functioning as a moderator. Additional analyses were done using an alternative measurement of participants' stress to further explore the moderation hypothesis, though these also failed to show moderation effects. Implications for women's substance use are discussed and future directions outlined.

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Neighborhood Stress and Substance Use in Disadvantaged Inner City Mothers: An Examination of Executive Functioning as a Moderator

Introduction:

This study attempts to shed light on the correlates to an increased occurrence of substance use in an understudied population, urban disadvantaged mothers. Women are underrepresented in substance use research, which has historically focused on men (National Institute of Drug Abuse, Women and Sex/Gender Differences Research). However, more recent statistics show that an increasing number of women are using illicit substances, with the rate of current illicit drug use increasing from 9.7 percent in 2006-2007 to 10.6 percent in 2008-2009 among women aged 15 to 44 who were not pregnant (Substance Abuse and Mental Health Services Administration, 2010). We, therefore, need to have a better understanding of women's substance use. In this spirit of refining understanding, this study focused on neighborhood influences on the occurrence of substance use in order to better understand the context in which substance use in women occurs. The neighborhoods in which these disadvantaged, inner-city mothers live are highly stressful environments; the present study argued that this stress is related to increased rates of substance use in the population studied. Substance abuse has been studied as an avoidant coping response to such stress (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986); previous research has shown that ineffective coping responses to stress and substance abuse are related (Wills, 1986). The reasons why this coping strategy is selected remain unclear. However, an emerging literature posits that

neurocognitive factors, including executive functioning, may be at the root of many disorders involving problems in regulatory behaviors (Blume & Marlatt, 2009).

Therefore, the present study sought to determine the role executive functioning may play in the relationship between stress and substance use.

We know that these stressful neighborhood environments present a great number of challenges. Many of these challenges require executive functioning and other neurocognitive capacities in order for the residents of these neighborhoods to thrive. In this study, it was posited that cognitive flexibility, the ability to change when confronted with changing circumstances (Monchi, Petrides, Petre, Worsley, & Dagher, 2001), may be most relevant aspect of executive functioning. Executive functioning can be thought of in terms of a maze. When navigating the maze, a path may be blocked. In order to complete the maze, the navigator must be able to back up and find a new path towards the goal. In this way, when presented with challenges, individuals in stressful neighborhoods like the mothers in the current study must be able to work with the new information presented and try to find a new solution. This kind of flexibility is at the core of executive functioning. In this study, substance use was conceptualized as an outcome of the stressful neighborhood environment, with executive functioning, and more specifically cognitive flexibility as a moderating factor. Thus in high stress neighborhoods, it was argued that mothers with higher cognitive flexibility will exhibit less substance use than those mothers with lower cognitive flexibility.

This need for executive functioning has been most studied in periods of transition. More specifically, some research has been done on the challenges found in periods of flux and the occurrence of substance use; alcohol abuse has been studied in the transition

to college for adolescents. Giancola (2002) examined alcohol abuse in college age individuals positing that executive functioning moderates this relationship. While this study did not examine periods of transition, a similar question was examined: whether or not executive functioning moderates the relationship between stress and substance use.

Substance Use, Societal Costs, and the Link to Disadvantage in Neighborhoods

Substance use is a topic of great societal concern. Estimates of economic costs to society run as high as \$484 billion per year (National Institute on Drug Abuse (NIDA) Archives, 2005). Many other costs also exist, including costs felt at the community, familial, and individual level. Families bear much of the cost, with abuse, neglect, and relational strain often present in conjunction with substance use. Individual level costs include loss of job, health risks, and strained and broken relationships. In order to address these costs and increase understanding, a great deal of research has been conducted on substance use. Previous research has examined the relationship between personal stress (in general) and substance use (Dawes et al., 2000; Kosten, Rounsaville, & Kleber 1986; as cited in NIDA Archives, 2002). Less research has been done on the effect context, including neighborhood context, has on substance use.

Context is an important concept because it can influence the incidence of psychopathology. For instance, we know that living in extremely high stress environments (war-zones, natural disaster sites, etc.) can lead to psychopathology (Fontana & Rosenheck, 1993; Rubonis & Bickman, 1991). While environmental stress is not as well represented in substance use research, some studies have addressed the relationship between this particular type of stress and substance use. For example, rates of substance abuse are high in disadvantaged neighborhoods, even when controlling for

individual socio-economic status (Boardman, Finch, Ellison, Williams, & Jackson, 2001). Building upon this research, it was argued here that neighborhood-based stress may explain this differential incidence of substance abuse.

Stress and Substance Use in Mothers

Mothers and substance use have not been examined with consideration to the context of high stress neighborhoods. This study examined substance use as an outcome of the stressful neighborhood environment with regards to mothers. The mothers in the current study live in disadvantaged neighborhoods. Deborah Belle, who is an expert on women and stress, based on the literature in this area, provides a nice summary of the nature of their stressors. She states:

...poor women experience more frequent, more threatening, and more uncontrollable life events than does the general population (Brown et al., 1975; Dohrenwend, 1973; Makosky, 1982). Poor women are disproportionately exposed to crime and violence (Belle, with Longfellow, Makosky, Saunders, & Zelkowitz, 1981; Merry, 1981), to the illness and death of children (Children's Defense Fund, 1979), and to the imprisonment of husbands (Brown et al., 1975) (Belle, 1990, p. 386).

The above description goes far in helping to detail the need for well-developed cognitive capacities to orchestrate and cope with stressors and provide care for children. Each of these stressors, and hundreds of others that might be noted, require parents to solve problems: both their own and aid in their children's. Executive functioning encompasses a number of cognitive capacities (e.g. divergent thinking, ability to maintain set, etc.); therefore it is important to understand the role cognitive capacities may play in carrying

out parenting effectively and in particular how mothers may cope with the stresses they face.

Coping with Stress and Links to Substance Use

Coping strategies for stress can vary in focus: from active and problem-centered to avoidant or wishful thinking. Mothers' coping strategies when faced with stress is an important topic of research, affecting both the mothers' mental health and their parenting skills (and any possible outcomes for their children). For mothers living in disadvantaged neighborhoods, substance use may be an avoidant coping strategy that could provide some escape from the stressors of everyday life. The present study points to cognitive flexibility as a moderating factor in the relationship between neighborhood stress and substance use. Cognitive flexibility can be thought of as part of the broader concept of executive functioning.

Executive Functioning

Executive functioning encompasses a variety of skills and cognitive abilities. The overarching concept behind executive functioning is personal modulation and modification of cognitive processes in pursuit of some end, or goal (Giancola & Moss, 1998). Giancola and Moss detail more specific abilities associated with executive functioning, such as:

...the ability to create a strategic goal-oriented plan, initiate it at the proper time, self-monitor the execution of that plan, attend to its after effects, and finally, the ability to use internal and external feedback to further modify the plan in order to successfully achieve the desired goal (Giancola & Moss, 1998, p.228).

Concepts associated with this capacity, as identified by Stevens, Kaplan, & Hesselbrock (2003) include: set shifting, abstract reasoning, and cognitive flexibility, among others. Executive functioning is used when automatic functioning no longer works in a given situation. Hasher and Zacks (1979) describe automatized functions. Automatic functions require little energy. Cognitive activity continues to take place without interference while these functions occur. Indeed, “Automatic operations function at a constant level under all circumstances. They occur without intention and do not benefit from practice,” (Hasher & Zacks, 1979, p. 356). When confronted with novel situations or stimuli, this automatic functioning does not always work, and executive functioning is required. Executive functioning has been posited as playing a role in stress management and regulation (Williams, Suchy, & Rau, 2009). Stress management is typically thought of as a set of strategies to respond to novel events. Disadvantaged neighborhood environments present stressors that require executive functioning.

Conceptualizations of Neighborhood Stress

Thus far, this review has discussed but not defined neighborhood. Theories have been developed in neighborhood research that aid in defining neighborhood. These theories aid in the process of identifying the stressful elements within neighborhoods and how these stressful elements relate to maladaptive responses. From the word neighborhood, numerous descriptors may abound; a collection of homes may make a neighborhood, or perhaps a collection or network of people found in a particular place serve as the neighborhood. In other instances it may be the general geographic area surrounding a particular person. Some research has been done on neighborhood effects, especially the impact of neighborhood on parenting (one of the primary roles of inner city

women) and risk for difficulties in parenting. For example, Garbarino and Sherman (1980) (described in depth below) examined maltreatment. Ross (2000) examined the effect of neighborhood disadvantage on depression, finding that poor neighborhoods have higher levels of depression. Getting an accurate picture of the neighborhood was therefore, integral to the current study.

Numerous theories have addressed neighborhood disadvantage as presenting a stressor to individuals living within them and altering their behavioral patterns. These behavioral alterations may lead to maladaptive behavior. Garbarino and Sherman (1980) studied families at high-risk for maltreatment and high-risk neighborhoods. A key point identified within this study is the concept of examining the entire environment; not merely stopping at the high-risk family, but placing the family in the neighborhood context. The authors identify the high-risk environment in terms of both the absolute number of maltreatment cases in a population, and the rate of maltreatment when accounting for the socioeconomic status of the neighborhood.

Social disorganization theory dates back to the 1920s and 30s with Park, Burgess, and McKenzie (1925) and focuses on how disorganized or unstable neighborhoods represent a potential source of stress. This theory states that there is a continuum of organization in neighborhoods ranging from socially organized to socially disorganized. Socially organized communities have a number of characteristics: consensus on norms and values, bonds among neighbors, and social interaction between these neighbors. These qualities incorporate other important aspects of neighborhood including: monitoring of the streets by residents, avoidance of unsafe areas, and monitoring of suspicious activities by inhabitants. Disorganized communities are marked by a failure to

realize and communicate these aspects of community (Kubrin, 2009, pg. 226). Shaw and McKay (1942) were able to incorporate this theory in the study of criminal activity in neighborhoods. In particular, Shaw and McKay studied variations in the rates of delinquency in different areas. They sought to determine the extent to which the variations in these rates paralleled the differences in economic and sociocultural characteristics (Kubrin, 2009). Two major findings emerged from these early forays into social organization research: 1.) that crime and other deviance co-occur with other social problems (e.g. poverty, unemployment, etc.) and 2.) that high-crime areas remain high-crime areas, despite changes in the make-up of the population in terms of socioeconomic and cultural characteristics. This last finding in particular points to research focusing on the types of places as well as the types of people that make up problem urban areas (Kubrin, 2009, pp. 226).

How does this neighborhood context affect the individual? A disadvantaged environment can be thought of as part a system of cumulative disadvantage. Similar to the tenants of social disorganization theory, the concept of cumulative disadvantage is more concerned with the many different stressors placed on a person within a disadvantaged environment, and the impact these stressors may have. Arditti, Burton, and Neeves-Bothelo (2010) argue that maternal distress is best understood within the context of cumulative disadvantage with a focus on the mothers' different roles (e.g. economic provider, as a party in an intimate relationship, and as an individual with a distinct psychological state). Mothers' concerns in these different aspects may affect their functioning as a parent. In relation to the current study, the authors found that while maternal distress characterized by substance use is connected to harsh disciplinary

behavior, distress characterized by substance abuse, "...did not preclude mothers engaging in positive parenting behavior," (Arditti, Burton, & Neeves-Bothelo, 2010, p. 142). This study examined neighborhood using crime rates in the participants' census tract and their perception of crime in their neighborhood. In the theories described above, neighborhood crime plays a role in the organization of neighborhoods, and as an aspect of cumulative disadvantage. Crime is therefore a source of stress within the neighborhood environment, and was selected as the conceptualization of neighborhood stress within the current study. As this review has detailed above, a literature exists on the effects of neighborhood stress on many behaviors (maltreatment, depression, etc). As far as it is known, this study will be the first to examine substance use.

Substance Use and Neighborhood

As described above, the magnitude of substance use is great, and it has tangible costs to society. Additionally, as described above, disadvantaged, stressful areas see higher rates of substance use. These areas could be broken down into neighborhoods. According to the National Household Survey on Drug Abuse (NHSDA), more than one in four youths ages 12 to 17, agree that, "...there is a lot of drug selling," within their neighborhood (Substance Abuse & Mental Health Services Administration, 2001). This survey finding represented the youths' perception of their neighborhood, not the actual amount or prevalence of drugs within the neighborhood. Regardless, these youths perceived that drugs play a large role in their neighborhood. Perception of neighborhood encompasses the neighborhood as a whole, including social embeddedness, sense of community, satisfaction with community, and perceived crime (Martinez, Black, & Starr,

2002). This concept of perception of neighborhood was used as one of two ways to define neighborhood stress with the mothers in this study.

Substance Use and Avoidant Coping

The concept of avoidant coping is part of a larger coping theory developed by Lazarus and Folkman (1984) in which the authors developed a theory of coping in regards to stressful situations. Coping, according to these authors is the constant adjusting of both cognitive and behavioral efforts in order to control demands (both internal and external) that the individual deems to be difficult, and/or outside the realm of resources available to the individual (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). Substance use may be tied into escape-avoidance coping. The authors describe this style of coping as both wishful thinking about the situation and behavioral efforts to escape or avoid, such as using substances (Folkman et al., 1986).

Disadvantaged neighborhoods or living environments are associated with depression, a withdrawing from the environment (Ross, 2000). Depression and substance abuse (a form of avoidant coping) have also been linked. Indeed, research has examined avoidant coping styles leading to depressive symptoms (Seiffge-Krenke & Klessinger, 2000). Substance abuse is a form of avoidant coping. This style of avoidant coping may prove problematic. Avoiding the problem rarely solves anything. While the ill effects of substance abuse on some roles in mothers' lives have been documented (i.e. parenting- Nair, Schuler, Black, Kettinger, & Harrington, 2003) it has not been addressed in terms of executive functioning capabilities and the choice of substance use as an avoidant coping strategy.

Substance Use and Cognitive Deficiencies

Research concerning the effects of substance use on cognitive deficiencies has primarily focused on areas of the brain associated with certain cognitive functions. Many studies use a battery of tests in order to account for different aspects of executive functioning (Verdejo García, López Torrecillas, Aguilar de Arcos, & Pérez García, 2005). A connection has been identified between cognitive deficits and substance abuse. Results pointed to impairment of executive cognitive functions in the substance abusers studied (Verdejo García et al., 2005). A numbers of things could drive these results. In this study, the executive functioning deficits could be due to the chronic nature of the substance abuse. Indeed, substance abuse research has examined executive functioning impairment as a result of chronic substance abuse. In young adulthood however, in the absence of chronic substance use, it can be argued that substance use behavior is an avoidant coping strategy. This is to say that executive functioning impairments make it difficult for participants to handle the many stressors found within their environment. If unable to handle these stressors, some may turn to substance use.

The Present Study

Building upon previous research described above, the present study will provide an examination of the ways in which neighborhood and life stress are related to increased substance use, utilizing two different ways of measuring neighborhood stress. It was posited that increased levels of neighborhood stress would be related to increased levels of substance use. Using measures of participants' substance use, cognitive flexibility, and neighborhood stress, it was argued that mothers' cognitive system quality is involved in dealing with the stress of disadvantaged neighborhood environments. It was posited that

mothers with high executive functioning capacity would be at lower risk of being substance users.

This study was unique in two regards. The first unique aspect is that this study attempted to determine if neurocognitive factors, namely cognitive flexibility, moderate the relationship between neighborhood and life stress and substance use in women living in stressful, urban, disadvantaged environments. Women are an understudied population in substance use research. The second unique aspect of this study is that it offered an on-the-ground examination of the ways stressful neighborhood environments and life stress affect substance use behavior. In order to accomplish this, the present study utilized two different methods of operationalizing neighborhood disadvantage: mothers' perception of neighborhood crime and the actual assault rate in the mothers' census tract. This study utilized both the system level data from the neighborhood and the larger environment surrounding the women in this study (i.e. census tract assault rates), and data detailing the mothers' cognitions relating to the environment surrounding them (i.e. perception of crime). Using measures of participants' substance use, cognitive flexibility, and neighborhood stress, it has been argued that mothers' cognitive system quality is involved in dealing with the stress of disadvantaged neighborhood environments. In this study, cognitive flexibility was seen as necessary to navigate the stressful environments that surround the mothers in this study and crucial to meeting the challenges presented by these neighborhoods. Furthermore, it was posited that mothers with higher executive functioning capacity would be at lower risk of needing to turn to the avoidant coping mechanism of substance use under stressful neighborhood conditions. This study sought to determine whether higher levels of cognitive flexibility were related to lower substance

use. Using measures of participants' substance use, cognitive flexibility, and neighborhood stress, it was argued that mothers' cognitive system quality is involved in dealing with the stress of disadvantaged neighborhood environments. It was posited that mothers with high executive functioning capacity would be at lower risk of being substance users.

Methods

Participants

The sample of the present study consisted of 55 women. They were sampled from a larger study, A Study of Parenting (ASOP) (Azar, NICHD #5R01HD053713). Participants were sampled from the population of mothers in low-income households living within inner city Philadelphia. Participants were all 18 years of age or older ($M=26.39$ years, $SD=5.44$), and had at least one child between the ages of 3 and 5 ($M=2.27$, $SD=1.22$). Mothers were recruited from day care centers that served low socioeconomic status families and were provided an honorarium for participation. As a group, the participants in this sample were below average in IQ ($M=82.51$, $SD=10.51$). Full demographic information relevant to the current study is presented in Table 1.

Procedure

Data was collected over three visits, each two and a half hours in length, conducted in the participant's home. The measures in this study were part of a larger protocol. To control for literacy, all measures in this protocol were read to each participant. Of the measures used in the current study, the Wisconsin Card Sort Test was conducted during the first home visit, the Perception of Neighborhood Scale were conducted during the second home visit, and the Simple Screening Instrument for Substance Abuse was administered during the third visit. Exploratory analyses described below utilized an additional measure, the Life Stress Scale that was administered in visit one. Each measure is described below and copies can be found in the appendices.

Measures

Simple Screening Instrument for Substance Abuse (SSI-SA) (Center for Substance Abuse Treatment, 1994; Appendix A) This measure was used to assess participants' substance use. The original measure consisted of 16 yes-no items. Three items were added for the ASOP project, and this 19-item measure was used in the ASOP protocol. For the first 13 items, the participant was instructed to think about their substance use during the past 6 months. The first 3 items asked about alcohol or other drug use, whether the participant feels they use too much alcohol or other drugs, and if the participant has tried to cut down or quit drinking or using drugs. A gating procedure was used; if the participant answered yes to any of the first three items they were asked items 4 through 13. Items 4 through 13 asked more detailed questions about the participants substance use. Items 14 through 19 were not confined to the past 6 months and asked about drinking and drug use behaviors, family members' drinking and drug use behaviors, and if the participant feels that they have a drinking or drug problem now. The current study used 7 items that dealt with the participants' substance use behaviors to compute a score for each participant, with possible scores ranging from 0 to 7. This measure has been shown to accurately detect drug and alcohol dependence in a prison population when compared with the Structured Clinical Interview for the Diagnostic and Statistical Manual (DSM-IV) (Peters et al., 2000).

Wisconsin Card Sort Test (WCST) (Berg, 1948) The WCST served to assess executive functioning. During this test, the participants were given cards marked with symbols differing by number, color, and shape. Participants were asked to sort the cards, but not given instruction as to how to sort. The test examiner determined whether the

correct category was color, number, or form, based on the pre-determined order of color-form-number. The rule is changed during the test each time the participant achieves 10 correct responses (Berg, 1948). This measure requires cognitive flexibility and other cognitive functions associated with the broader concept of executive functioning (Ozonoff, Pennington, & Rogers, 1991). The number of perseverative errors was used in the present study to measure cognitive flexibility. This score is the number of responses in which the participant persists in using the previous rule for correct responses after the criteria has changed (i.e. after they receive feedback that the previous rule no longer holds) (Heaton, Chelune, Talley, Kay, & Curtiss, 1993). The WCST is correlated with other measures of the “shift” element of attention or, “...the ability to change attentive focus in a flexible and adaptive manner,” (Mirsky, Anthony, Duncan, Ahearn, & Kellam, 1991, p. 112). The WCST is also correlated with other neuropsychological measures that assess different aspects of executive functioning (O'Donnell, MacGregor, Dabrowski, & Oestreicher, 1994).

Perceived Neighborhood Scale (PNS) (Martinez, Black, & Starr, 2002; Appendix B) The perceived crime subscale of this measure assessed neighborhood stress. This 9-item subscale asked about drug abuse (“There is open drug abuse/dealing in my neighborhood,”), violent crime (“People are scared of being murdered in my neighborhood,”), and threats to the safety of both self (“It’s safe to walk alone in my neighborhood at night,”) and others (“Some friends and relatives don’t visit me at home because they don’t feel safe,”). Participants were read these statements and, using a five-point Likert scale (1= strongly agree, 5= strongly disagree), rated to what extent the statement described their neighborhoods (Martinez, Black, & Starr, 2002). This subscale

has shown good internal reliability within the current sample, with an $\alpha = .913$. PNS has been linked to elevated allostatic load, a physiological measure of chronic exposure to stress, in women (Mair, Cutchin, & Peek, 2011).

Geographic Information Systems: Assault Rate (GIS) (Philadelphia Neighborhood Information System, University of Pennsylvania) GIS is a way to organize information about a geographic area. The current study focused on crime statistics, namely assaults. The mothers' addresses were used to identify their census tract. Using the Philadelphia Neighborhood Information System data on crime statistics gathered from police data, the assault rate for the mothers' census tract was detailed. Studies have examined violent crime in neighborhoods as a stressor and linked it to poorer mental health outcomes including substance use disorders (Stockdale et al., 2007). Census tract assault rate represented a stressful aspect of the neighborhoods in the current study.

Life Stress Scale (LSS) (Egeland, Breitenbucher, & Rosenberg, 1980; Appendix C) This measure was used in exploratory analyses and assesses stress in other areas of the participants' lives (including unemployment, money issues, and relationship issues). The measure consisted of 49 events that are applicable to low-income families. Participants were asked whether each item has been present in their life during the past 6 months. The total number of stressful life events was used in the present study and is the total number of stressful life events the participant rates as present in their life during the last 6 months. This total number of stressful life events was used within the present study along with the PNS perceived crime subscale to create a composite variable of stress. This measure has been linked to depressive symptoms in disadvantaged mothers (Pianta & Egeland, 1994) and child maltreatments (Egeland, Breitenbucher, & Rosenberd, 1980).

Results

Descriptive statistics for each of the study variables and those variables used in exploratory analyses are listed in Table 2. To examine the first hypothesis, that stressful neighborhoods are related to substance use, a Pearson's correlation was done. In order to operationalize neighborhood stress, the perceived crime subscale on the PNS and the number of assaults from GIS data were used. As detailed in Table 3, a statistically significant positive relationship was found between the perceived crime subscale of the PNS and the SSI-SA measure of substance abuse ($r = .260, p < .05$). No statistically significant relationship was found between GIS data for the number of assaults per 1000 people by census tract data and the SSI-SA measure of substance abuse ($r = -.150, n.s.$).

In order to test the second hypothesis, that executive functioning capacity is related to substance use, a Pearson's correlation was done. As shown in Table 3, no significant result was found between the perseverative errors on the WCST and the SSI-SA measure of substance abuse ($r = -.076, n.s.$).

Regression analyses were performed in order to test the third hypothesis, that executive functioning moderates the relationship between neighborhood stress and substance use. Moderation was only tested using PNS data and not census tract assault rate data because of the lack of a significant relationship between GIS data on the number of assaults per 1000 people and the SSI-SA measure of substance abuse, as deemed necessary by Baron and Kenny (1986). An interaction variable was created by multiplying the predictor, PNS perception of crime, by the moderator, perseverative errors. PNS perceived crime scores were entered in block 1, perseverative errors were entered in block 2, and the interaction term was entered in block 3. The SSI-SA measure

of substance abuse was entered as the dependent variable. As shown in Table 4, this regression showed no statistically significant interaction effects ($b = -.001$, $t(49) = -.427$, n.s.), providing no support to the moderation hypothesis.

Exploratory Analyses

As described in the measures section above, the Life Stress Scale (LSS) is comprised of items that tap into stressful aspects of the participants' life across a number of areas. For the purposes of exploring the relationship between life stress and substance use, a Pearson's correlation was done. Participants' perception of neighborhood crime was positively related to substance use, a composite score was created using participants' scores from the perceived crime subscale on the PNS and the participants' total number of stressful life items. These scores were normed and the z-scores were added together to create a new variable. Analyses were then run using this new variable. First, a Pearson's correlation was done. As shown in Table 3, a significant positive relationship was found between the composite stress variable detailed in the methods section above and the SSI-SA measure of substance abuse ($r = .275$, $p < .05$). The same regression analyses used to test the *a priori* moderation hypothesis was also used with this newly created composite variable, with an interaction term created by multiplying the predictor, the composite of PNS perceived crime scores and LSS total stressful life items, by the moderator, perseverative errors on the WCST. The composite stress score was entered in block 1, perseverative errors were entered into block 2 and the interaction term was entered in block 3. The SSI-SA measure of substance abuse ever was entered as the dependent variable. As shown in Table 5, this regression showed no statistically significant interaction effects ($b = -.005$, $t(49) = -.733$, n.s.).

Discussion

The present study sought to examine the relationship between neighborhood stress and substance use, and if executive functioning moderated this relationship in urban, disadvantaged mothers. Three hypotheses were tested: 1.) as participants' substance use will increase as neighborhood stress level increases 2.) as executive functioning capacity increases, substance use will decrease, and 3.) mothers' executive functioning capacity would moderate the relationship between neighborhood stress level and substance use, (i.e. that mothers with higher executive functioning will exhibit less substance use when faced with higher neighborhood stress). Results offered support for the first hypothesis, but only for participants' perception of stress in their neighborhood. Results offered no support for a relationship between indicators of actual risk in the participants' neighborhoods (assault rate) and substance use. This discrepancy is discussed below in terms the implications it has on future substance use research with women. Contrary to what was predicted, executive functioning did not seem to be linked to substance use. Furthermore, executive functioning did not moderate the relationship between perceived neighborhood stress and substance use. The meaning of these mixed findings is discussed below.

The lack of a significant relationship between perseverative errors and substance use may be explained in part by the characteristics of the current sample. While a relationship between executive functioning deficits and substance abuse has been documented (see Verdejo García et al., 2005), these results may not replicate within the present study because the current sample may not have a history of severe substance use that could drive a relationship between cognitive deficits and substance use. This kind of

data was not available due to measurement issues. No longitudinal data was collected on participants' cognitive deficits, meaning that the relationship between substance use and cognitive deficits may not be seen in this sample because the mothers may have only just begun substance use. The lack of support for executive functioning as a moderator also requires some explanation. The mothers' in this sample were not chronic substance users and their substance use was at a low level. Mothers' executive functioning therefore may not play a role in their substance use. However, a significant relationship was found between participants' perception of neighborhood stress and substance use.

Participants' perception of crime in their neighborhood was related to increased substance use behavior. Sociology, as a discipline, has been interested in macro level neighborhood processes, which is to say that sociology has historically studied neighborhood effects on anti-social behaviors at a population based level (see Park et al., 1925; Shaw & McKay, 1942). Psychology has studied neighborhood processes and the individual in terms of other forms of psychopathology (e.g. maltreatment; Garbarino & Sherman, 1980; depression; Cutrona et. al, 2006), but has not, as of yet, examined the link between neighborhood stress and substance use. Based on findings, crime based terror in the mothers' neighborhood, at least as felt by these women, is related to increased substance use. This finding represents, to the best of my knowledge, the first evidence for a relationship between stressful neighborhoods and substance use at an individual level. It also extends understanding on the effects neighborhood can have on the individual, in this case expanding our knowledge about the relationship between neighborhood stress and psychopathologies to include substance use. It should be acknowledged that the finding is limited to perception of crime, and may not offer a

complete picture of neighborhood stress. However, an individual's perception of their neighborhood is an important part of their connection with the environment around them. In addition to the objective reality that exists around them (i.e. high number of assaults), the way in which they perceive crime in their neighborhood is an important aspect of the relationship between neighborhood stress and psychopathology. If an individual perceives their neighborhood as improving, it may alter their feelings that their neighborhood is a stressful environment, with the opposite also being a possibility. Furthermore, their feelings of isolation as well as feelings of control over their environment may influence how stressful and/or threatening they find their environment. Even with these mixed results, this relationship between perception of crime and substance use may offer a point of entry to better understand the substance use in women living in areas they perceive as being high in crime.

Due to the correlational nature of this finding, no causation can be inferred between perception of crime-based stress within a mothers' neighborhood and her substance use. Indeed, further research must be done in order to correctly interpret this finding. For example it could be that the women who engage in substance use are exposed to more threatening circumstances in the process of trying to obtain substances (e.g. exposure to drug dealers, possible exposure to gang/other criminal activity). A more detailed understanding of the types of threats women who use substances are exposed to is crucial to understanding this finding.

Previous research has also addressed how women in particular perceive threats in their neighborhood environment. The study, Moving to Opportunity, studied neighborhood effects by enabling families to move from low-income neighborhoods to

higher income neighborhoods. In addition to the economic benefits that were found, mental health benefits were seen in those families that moved to more advantaged neighborhoods. In the families in the in the experimental group (those families that were given vouchers to move to low poverty neighborhoods, along with services to help them in their search) adolescent girls, and not adolescent boys, benefitted from this move in terms of mental health outcomes (Orr et al., 2003). Using Moving to Opportunity samples, other studies have attempted to understand why the mental health benefits appeared in adolescent girls, but not adolescent boys. Research has pointed to the way women (in this case young women) experience threats in their neighborhood environment. Popkin, Leventhal, and Weismann (2010) argue that the women living in high-poverty areas face gender specific threats including: pressure to begin sexual activity at a young age, intimate partner violence, sexual harassment and assault. In moving to low poverty neighborhoods, the impact of these threats is reduced, and this safety explains the differential mental health outcomes between adolescent boys and girls. This perception of threat within the neighborhood environment may apply to the women sampled in the current study. While the measure of perception of crime used within the current study did include an item about fear of rape in the mothers' neighborhood, further research using measurement more tooled toward gender specific threats may provide a more accurate representation of the ways in which women perceive their neighborhood environment. Additionally, all the women in this study are mothers. Their perception of their environment as threatening for their children may influence the way in which they perceive their environment in general. There are also clinical implications to this finding between perception of neighborhood stress and substance use.

Community based interventions like the one described above are a way to address the ways in which neighborhood may influence psychopathology. Especially when this finding is viewed alongside the Moving to Opportunity studies, providing families the opportunity to move out of high crime areas may have mental health benefits related to substance use disorders. Additionally, community based intervention that alters individuals perception of their neighborhood may decrease the neighborhood related stress they feel.

As described in the methods section above, the current study utilized two methods of operationalizing neighborhood stress. The results detailed that while the mothers' perception of crime in their neighborhood was related to their substance use, the seemingly more objective data on neighborhood stress (number of assaults per 1000 people in the mothers' census tract) was not. This discrepancy requires some explanation. The PNS may have offered a broader picture of crime related neighborhood stress than the GIS data did in regards to crime. The data gathered on the census tract level offers a picture of the external reality of the neighborhood. This has its strengths and limitations. Martinez, Black, and Starr (2002) describe the difference between the objective measures and more subjective perception measures of neighborhood. The authors acknowledge that the objective side to neighborhood, especially in economic data and unemployment rates, affects the inhabitants of the neighborhood environment. The authors also note however that many neighborhoods are not regulated by formal governmental bodies, and therefore these objective measures cannot provide a conceptualization of neighborhood that is as focused as the inhabitants' description of their surroundings. Stated differently, the women in this study may be more aware of crime that may not make its way into the

police reports. With disparate findings, this study attempted to use both types of measures. A possible explanation for this lack of significant finding with both neighborhood conceptualizations could be that more objective crime data was purely based on number of assaults per 1000 people using census tract level data, while the perceived crime subscale of the PNS includes items that as about crimes other than assault (i.e. “There is open drug abuse/dealing in my neighborhood,”). Future studies could utilize measure that were more comparable to examine at identical constructs in terms of both inhabitants’ perceptions and objective data in order to get as accurate a conceptualization of neighborhood stress as possible.

While this study was focused on neighborhood stress, this type of stress is certainly not the only type of stress to which the mothers in the present study are exposed. Focusing exclusively on neighborhood stress alone may not offer a complete picture of stress. In this line of thinking, exploratory analyses were run examining different aspects of stress in the mothers’ lives and their relationship to substance use. Frequency distributions showed that among the most common stressors were: unemployment, child-rearing problems, money problems, serious restriction of social life, and serious physical illness or injury requiring hospitalization, detailing a wide variety of stress in the mothers’ lives. A significant positive relationship was found between a composite stress variable of perceived crime in the mothers’ neighborhood and life stress and substance use. This result is indicative of the relationship between stress (in general) and substance use, which has been documented previously in the literature (see Dawes et al., 2000; Kosten, Rounsaville, & Kleber 1986; as cited in NIDA Archives, 2002). Especially when viewed alongside Belle’s work on women and poverty, this finding

indicates that understanding the way in which women experience their total environment (including neighborhood stress) is crucial to understanding the association between impoverished, stressful neighborhoods and mental health issues.

Limitations

Some potential limitations of this study include limited generalizability, sample size, and the measures used to examine substance use and neighborhood. The present study sampled from mothers within an urban population; although the results may have limited generalizability, substance use is more prevalent in urban disadvantaged environments, and therefore may be better studied within urban environments.

Neighborhood stress by its very nature is constrained to a particular environment. The stress felt in a certain neighborhood may be non-existent in another. Future research would have to examine different populations in order to understand neighborhood stress in suburban and rural women. Relatively small sample size ($n = 55$) may also limit the generalizability of these results to a larger population.

While the measurement issues associated with neighborhood stress have already been discussed, the measure of substance use within this study, the SSI-SA, may also have been problematic. It is a self-report measure of substance use. Although Bellack and Hersen (1988) feel that self-report assessment is generally, "...quite reliable and valid," and is often the preferred method of substance abuse assessment due to both cost and ease of administration issues still remain. Self-report measures have been criticized for their validity and reliability. More specifically, Bellack and Hersen (1988), identify two problems with assessment using self-reported measures of what they refer to as, "appetitive disorders," in this case drinking. A social stigma has been attached to

drinking, and therefore the authors believe that participants may be more reluctant to accurately report their drinking behavior. Additionally, these self-report assessments are usually collected retrospectively, possibly leading to confounding effects of time, and lack of recall. Toxicology screens, while certainly more objective, have been criticized for their cost and for the equipment required in administration.

Future Directions

The results in this study provide compelling reasons for conducting further research. A more detailed conceptualization of neighborhood is needed. In order to get a more complete picture of neighborhood stress, many different types of neighborhood statistics could be included in an aggregate score of neighborhood stress. This has been utilized in previous studies using measure of drug dealing, violence and crime, abandoned buildings and homelessness, welfare statistics, and employment statistics (NegNeb scale, Hadley-Ives, Stiffman, Elze, Johnson, & Dore, 2000). In addition to these measures of neighborhood stress, future studies could examine if other personal factors (i.e. social support) may serve as buffers between neighborhood stress and substance use.

Overall, this study was able to further understanding of a topic of growing concern, neighborhood stress and substance use. Participants' perception of crime was positively associated with substance use. This provides a starting point to examine women's substance use in the context of stressful neighborhoods. While no support was offered for the hypothesis that executive functioning moderates the association between neighborhood stress and substance use, further research should be done to identify if there are any possible moderating factors.

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TablesTable 1-
Sample Demographics

	N (%)	M (SD)
Age (years)		26.393 (5.44)
Income (approximated in \$)		14,799.60 (10,683.66)
IQ		82.51 (10.52)
Number of Children		2.27 (1.22)
Ethnicity		
Caucasian/White non-Hispanic	1 (1.8)	
Caucasian/White Hispanic	4 (7.3)	
African American/Black non-Hispanic	42 (76.4)	
African American/Black Hispanic	5 (9.1)	
Other Hispanic	1 (1.8)	
Other	1 (1.8)	
Mixed	1 (1.8)	
Education (Last grade completed)		
Eighth Grade	1 (1.8)	
Ninth Grade	1 (1.8)	
Tenth Grade	5 (9.1)	
Eleventh Grade	5 (9.1)	
Twelfth Grade	40 (72.7)	
1 year of higher education	1 (1.8)	
2 years of higher education	2 (3.6)	

Table 2-
Descriptive Statistics for Study Variables

Measure	Mean	Standard Deviation
Simple Substance Use (SSI-SA)	.800	.989
Perceived Crime (PNS)	26.87	8.33
Assaults per 1000 population (GIS)	21.91	45.70
Perseverative Errors (WCST)	14.81	9.98
Life Stress Event Total (LSS)	10.95	4.93

Note: Life Stress Event Total was used in exploratory analyses

Table 3-
Correlations Between Study Variables

Variable	1.	2.	3.	4.	5.
1. Simple Substance Use (SSI-SA)	-	.260*	-.150	-.076	.275*
2. Perceived Crime (PNS)		-	-.113	-.121	.727†
3. Assaults per 1000 population (GIS)			-	.095	-.059
4. Perseverative Errors (WCST)				-	-.060
5. Composite Stress Variable					-

* $p < .05$, † $p < .01$

Table 4-
Summary of Regression Analyses Executive Functioning as Moderator

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
PNS Perceived Crime	.033	.016	.272	.033	.017	.267	.041	.026	.337
Perseverative Errors				-.004	.014	-.044	.012	.041	.122
PNS Perceived Crime x Perseverative errors							-.001	.002	-.182

Table 5-
Summary of Exploratory Regression Analyses for Executive Functioning as a Moderator

Variable	Model 1		Model 2			Model 3			
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Composite Stress Variable	.167	.091	.248	.164	.092	.244	.345	.145	.512
Perseverative Errors				-.006	.014	-.062	-.012	.014	-.122
Composite Stress Variable x Perseverative errors							-.014	.009	-.352

Note: Composite Stress Variable was computed by adding the *z*-scores of PNS perceived crime and LSS Life Stress Event Total

Appendix A

Simple Screening Instrument for AOD Abuse - Interview Form

[Note: **Boldfaced questions** constitute a short version of the screening instrument that can be administered in situations that are not conducive to administering the entire test. Such situations may occur because of time limitations or other conditions.]

Introductory statement:

As I have said throughout our interviews, we are trying to get a picture of mother's lives – the strengths they have and the burdens they struggle with. Some families struggle with problems around their own or their partner's (BF/partner) or other family members- use of alcohol or drugs. Lots of moms we talk to mention this to us. I am going to ask a few questions about this. I WANT YOU TO THINK ABOUT THE

LAST SIX MONTHS [use a concrete anchor for mother – like Christmas or the 4th of July]”

As with all our interview questions, what you tell me remains private and if what I ask is too personal, just tell me and we will go onto the next question. The only time we would not keep information private is if there is serious harm to yourself or others.

During the past 6 months...

1. **Have you used alcohol or other drugs? (Such as wine, beer, hard liquor, pot, coke, heroin or other opiates, uppers, downers, hallucinogens, or inhalants.)** (yes (1) /no (0))
2. **Have you felt that you use too much alcohol or other drugs?** (yes (1)/no (0))
3. **Have you tried to cut down or quit drinking or using drugs?** (yes (1)/no (0))

If Yes to 1, 2, or 3, ask questions 4 through 13. If no, go to item

4. Have you gone to anyone for help because of your drinking or drug use? (Such as Alcoholics Anonymous, Narcotics Anonymous, Cocaine Anonymous, counselors, or a treatment program.) (yes (1)/no (0))
5. Have you had any of the following? (yes (1) /no (0))
 - Blackouts or other periods of memory loss _____
 - Injury to your head after drinking or using drugs _____
 - Convulsions, or delirium tremens ("DTs") _____
 - Hepatitis or other liver problems _____
 - Feeling sick, shaky, or depressed when you stopped drinking or using drugs _____
 - Feeling "coke bugs," or a crawling feeling under the skin, after you stopped using drugs _____
 - Injury after drinking or using drugs _____
 - Using needles to shoot drugs. _____
6. Has drinking or other drug use caused problems between you and your family or friends? (yes (1)/no (0))
7. Has your drinking or other drug use caused problems at school or at work? (yes (1)/no (0))
8. Have you been arrested or had other legal problems? (Such as bouncing bad checks, driving while intoxicated, theft, or drug possession.) (yes (1)/no (0))
9. Have you lost your temper or gotten into arguments or fights while drinking or using drugs? (yes (1) /no (0))
10. Are you needing to drink or use drugs more and more to get the effect you want? (yes (1)/no (0))
11. Do you spend a lot of time thinking about or trying to get alcohol or other drugs? (yes (1)/no (0))

12. When drinking or using drugs, are you more likely to do something you wouldn't normally do, such as break rules, break the law, sell things that are important to you, or have unprotected sex with someone? (yes (1)/no (0))
13. Do you feel bad or guilty about your drinking or drug use? (yes/no)

Now I have some questions that are not limited to the past 6 months.

- 14. Have you ever had a drinking problem? (yes/no)**
- 15. Have you ever had a drug problem? (yes/no)**
- 16. Have any of your family members ever had a drinking problem? (yes/no)**
- 17. Have any of your family members ever had a drug problem? (yes/no)**
- 18. Do you feel that you have a drinking problem now? (yes/no)**
- 19. Do you feel that you have a drug problem now? (yes/no)**

- Thanks for answering these questions.
- Do you have any questions for me?
- Notes:

Observation Checklist

The following signs and symptoms may indicate an AOD abuse problem in the individual being screened:

CIRCLE ANY YOU NOTICE

- Needle track marks
- Skin abscesses, cigarette burns, or nicotine stains
- Tremors (shaking and twitching of hands and eyelids)
- Unclear speech: slurred, incoherent, or too rapid
- Unsteady gait: staggering, off balance
- Dilated (enlarged) or constricted (pinpoint) pupils
- Scratching
- Swollen hands or feet
- Smell of alcohol or marijuana on breath
- Drug paraphernalia such as pipes, paper, needles, or roach clips
- "Nodding out" (dozing or falling asleep)
- Agitation
- Inability to focus
- Burns on the inside of the lips (from freebasing cocaine)

_____ None observed

Appendix B

PNS

INSTRUCTIONS : For this one, I'd like you to think about the neighborhood you live in. I am going to read some general statements about neighborhoods. Please tell me how each statement fits the way you feel about your neighborhood.

First, how long have you lived in your neighborhood _____ years
 _____ (Note: if the respondent just moved – have them think about their past neighborhood and find out how long they lived there)

Does your neighborhood have a name? If yes, _____.

1	2	3	4	5
Very Likely	Likely	Not Sure	Unlikely	Very Unlikely

1. How likely is it that you could ask a neighbor to loan you a few dollars for some food?	1 2 3 4 5
--	-----------

2. How likely is it that a neighbor could ask you to borrow a few dollars for some food?	1 2 3 4 5
--	-----------

3. How likely is it that you get help from a neighbor (e.g., watch your place if you're away, take care of your child when you're sick)?	1 2 3 4 5
--	-----------

4. How likely is it that you help a neighbor (e.g., watching their place if they're away, taking care of their child if they are sick)?	1 2 3 4 5
---	-----------

1	2	3	4	5
Very Often (daily)	Often (1/week)	Sometimes (1/month)	Seldom (1/3 month)	Very Seldom

5. How often do you greet your neighbors when you see them?	1 2 3 4 5
---	-----------

6. How often do you casually visit with neighbors, either going over to their place or their coming over to yours?	1 2 3 4 5
--	-----------

7. How often do you go to neighborhood activities (e.g., church fair, neighborhood meetings, sports events)?	1 2 3 4 5
--	-----------

8. How often do you exchange/share child care with a neighbor?	1 2 3 4 5
--	-----------

9. How often do you talk to neighbors who are also parents?	1 2 3 4 5
---	-----------

1	2	3	4	5
Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
10. There are people I can rely on among my neighbors.		1 2 3 4 5		
11. People trust each other in my neighborhood.		1 2 3 4 5		
12. I feel I belong in my neighborhood.		1 2 3 4 5		
13. I care about what my neighbors think of my actions (e.g., how I dress, how I treat my child).		1 2 3 4 5		
14. I feel close to some of my neighbors.		1 2 3 4 5		
15. People in my neighborhood are usually warm and friendly.		1 2 3 4 5		
16. We help each other out in my neighborhood.		1 2 3 4 5		
1	2	3	4	5
Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
17. My neighborhood is a good place to live.		1 2 3 4 5		
18. My neighborhood has been getting worse recently.		1 2 3 4 5		
19. I have good access to public transportation in my neighborhood.		1 2 3 4 5		
20. The building and yards in my neighborhood are really run down.		1 2 3 4 5		
21. I would move out of my neighborhood if I could.		1 2 3 4 5		
22. I have easy access to a telephone (e.g., pay phone close by, neighbor with phone, etc.)		1 2 3 4 5		
23. There is a good place (e.g., playground) for children to play in my neighborhood.		1 2 3 4 5		
24. My neighborhood is a good place to raise a family.		1 2 3 4 5		
25. It's safe for my child to play outside If 4 or 5, ask why?		1 2 3 4 5		
1	2	3	4	5
Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
26. There are troublemakers hanging around in my neighborhood.		1 2 3 4 5		
27. There is public drinking in my neighborhood.		1 2 3 4 5		
28. There is open drug abuse/dealing in my neighborhood.		1 2 3 4 5		
29. It's safe to walk alone in my neighborhood at night.		1 2 3 4 5		
30. Some friends and relatives don't visit me at home because they don't feel safe.		1 2 3 4 5		
31. People are scared of being robbed in my neighborhood.		1 2 3 4 5		
32. People are scared of being raped in my neighborhood.			1 2 3 4 5	
33. People are scared of being mugged in my neighborhood.			1 2 3 4 5	
34. People are scared of being murdered in my neighborhood.			1 2 3 4 5	

Appendix C

Life Stress Scale

In this questionnaire, we're interested in learning a little about the kinds of stresses you've experienced in the last six months. All mothers have stresses on them, and I want you to think about the last six months and the things that have happened to you, and I am going to ask you some questions – if you feel that any of the questions are too personal and you don't want to answer, just let me know and we'll go on to the next one. OK? Any questions?

The first set of questions have to do with work, where you live and money issues.

1. Have you been unemployed in the last six months? How about your husband/boyfriend? (If says yes to either ask for how long and write in response. Probe to get enough detail to rate.)

^{1/0 Intensity}

- M ___ ___ Unemployed mother ___; husband (boyfriend) ___ (how long?)
 0 – anticipated end of job or contract; vacation (e.g., summer vacation for teachers) or other planned termination
- H/B ___ ___ 0 – mother unemployed by choice (e.g., to take care of infant)
 1 – unsteady job – works off and on
 1 – chronic unemployment of husband or boyfriend who is not living in the home*
 2 – husband or boyfriend who ordinarily works is temporarily unemployed (family is dependent upon his income but is able to compensate for the loss)
 2 – chronic unemployment of husband or boyfriend who is not living in the home because of his unemployment
 3 – great degree of disorganization due to unemployment (e.g., requires moving, results in serious marital discord)
 3 – chronic unemployment of husband or boyfriend who is living in the home

* chronic – no permanent job of longer than 6 months since getting out of school

2. If mother says yes to #1, ask her if she is on welfare. If yes, say the following: “Sometimes when mothers are on welfare they have trouble about their check (e.g., it's late, gets lost, they lose benefits, etc.). Have you had any trouble with welfare in the last six months? If yes, get details for rating #2.

- ___ ___ Troubles with welfare (explain) _____
 0 – threatened delay or revoke of welfare (e.g., threat due to problems in paperwork – however, actual delay or loss of welfare does not occur)
 1 – delayed welfare due to problems with paperwork*
 1 – lost welfare because of other sources of income
 1 – delay after application was submitted to welfare*
 2 – loss of welfare but basic necessities still provided for (perhaps by some other support)**
 2 – delay after application longer than 30 days
 3 – loss of welfare with loss of basic necessities for any period of time

*delay – 7 to 30 days

**loss – mother is without welfare for more than 30 days

+Rate only if mother sees as stressful to herself or the family

If mother or her partner have worked at all in the last six months, ask number 3 through 7. Begin with “You said you/your partner have worked in the last six months. Work can be stressful.”

3. Trouble with bosses at work (explain) ___ Mother ___ partner +

M ___ 0 – use of poor relationship with supervisor as reason to quit job which was initially unsatisfactory

H/B ___ 1 – problems at work provide day to day tension

4. New job in same line of work ___ Mother ___ partner+ Note: “Job” could include return to school.

M ___ 0 – promotion

1 – item check with no elaboration (no indication of disruption)

H/B ___ 2 – change involving financial risk

2 – difficulty in transition to new job

5. New job in new line of work ___ Mother ___ partner+

1 – check with no elaboration (no indication of disruption)

M ___ 1 – change seems to be a demotion

2 – new job with excessive, increased demands

H/B ___ 2 – multiple impacts, i.e., requirement of move or time spent out-of-town

6. Change in hours or conditions of present job ___ Mother ___ partner+

M ___ 0 – preferred change in hours or conditions

0 – check with no elaboration (no indication of disruption)

H/B ___ 1 – nonpreferred change in hours or conditions

7. Promotion or change of responsibilities at work ___ Mother ___ partner+

M ___ 1 – promotion with implication of more responsibility

1 – nonpreferred change in job

H/B ___ 2 – promotion/change with indication of stress and disruption (e.g., bad hours, too much responsibility, negative effect on friendships)

Along with work your living situation can be stressful.

8. Moving to different house _____ (date)
- _____
- 1 – one move, routine
 - 1 – two moves, one of which is back to parents
 - 1 – two moves; however, one is within the same apartment building
 - 2 – two or more moves
 - 2 – stressful circumstances precipitate one move (e.g., eviction, fights with neighbors)
 - 2 – stress associated with move, e.g., lowering of housing standards
 - 3 – move due to fire, property destruction; threatening boyfriend or other life-threatening life-threatening situation
 - 3 – more than one eviction
- +Rate only if mother sees as stressful to herself or the family.

Follow-up

You said you haven't moved recently.

Have you had trouble paying rent/mortgage (e.g., payments overdue by a month or more)?

Even if you've not had trouble paying rent, do you feel that you need a less expensive rental?

Have you gotten eviction notices? [Get details]

Do you worry about getting evicted (is there a threat they might need to relocate – e.g., family is not wanting them to live with them any more)?

(If they have moved, get reason for move and security of current housing situation)

9. Purchasing own house _____
- _____
- 0 – looking for a new home
 - 1 – buying own home

10. New neighbor _____
- _____
- 0 – check with no elaboration (no indication of disruption)
 - 0 – no problems
 - 1 – some disruption associated with new neighbors (e.g., increase in noise)

11. Quarrel with old/other neighbors _____ (explain)
- _____
- 1 – check with no elaboration (no indication of disruption)
 - 1 – constant or minimal annoyance, interferences; no threats of physical fights
 - 2 – calls to police necessary
 - 2 – physical fights and threats of physical harm
 - 2 – problems resulting in eviction
 - 3 – fights result in personal or property damage, requiring doctor's care or hospitalization
 - 3 – intense ongoing conflict

Money problems are always a source of stress.

12. Money problems (shortage so there is trouble getting along if not in debt) ___ Note: Do not score this item if event is scored in item 2.

- ___ ___
- 1 – check with no elaboration
 - 2 – money problems, severe but not life-threatening
 - 3 – money problems, life-threatening situation

13. Income decreased substantially (25% or more) _____

- ___ ___
- 1 – check with no elaboration (no indication of undue hardship)
 - 1 – no noticeable, or minor change in living standard (e.g., leaving parents' home with no stress involved)
 - 2 – change in living standard, not too serious
 - 3 – substantial change with pervasive consequences, e.g., not enough money for basic needs

14. Getting into debt beyond means of repayment _____

- ___ ___
- 1 – check with no elaboration (no indication of change in style of living)
 - 2 – mother or another household member goes into debt which results in repossession of major item such as automobile, television, etc.
 - 2 – any loan resulting in court procedures

Follow-up

When have you had trouble keeping up with bills for utilities like heat, water, electricity? Do you sometimes need to turn the heat way down or even off to save money?

Does your landlord supply all the utilities you expect and when there's a problem quickly fix it?

Have there been any problems with utilities in the last six months ? (lost at least one essential service (e.g., heat, water, lights, electricity, fuel for cooking) for several days or more or it took along time to be restored?)

Sometimes family members get into trouble, become ill or die. This can be very stressful. The next set of questions have to do with these questions. Again, think about the last six months.

+Rate only if mother sees as stressful to herself or the family.

15. Conviction for minor violation (e.g., traffic violation, misdemeanor) _____ (immediate family)

- _____
- 0 – check for minor problems (e.g., relative picked up for driving without a license)
 - 0 – minor violations, no consequences besides warning or parking ticket
 - 1 – minimal impact; immediate family member upon whom mother is not dependent or who has no direct contact (not living with mother) commits more serious crime, e.g., drunken driving
 - 1 – speeding or other moving violation
 - 2 – drunken driving; loss of license leading to hardship, loss of transportation
 - 3 – more serious charge, e.g., carrying weapon
 - 3 – murder or rape by grandparents, boyfriend or mother

16. Jail sentence (immediate family) _____ (who?)* _____

- _____
- 1 – family member in contact with mother or upon whom mother depends;
 - 1 – more serious crime committed by family member who has infrequent contact with mother
 - 2 – felony results in trial or sentence for any family member with whom mother has close relationship
 - 3 – jail sentence for mother, husband or family member upon whom mother is dependent (sentence of 30 days or greater)

*This item applies only to immediate family members

17. Involvement in physical fight _____ with whom? _____

- _____
- 1 – physical fights in extended family
 - 1 – mother involved in one minor fight (e.g., just shoved)
 - 2 – close, depended upon person fights with someone else (e.g., boyfriend or husband has a fight with someone else); severe (personal property damage) or frequent (3 or more times)
 - 2 – husband and wife fight once or twice; not serious
 - 3 – mother severely beaten (medical attention required) or relatively less serious physical fights involving mother occur frequently (3 or more times)

18. Immediate family member starts drinking heavily _____

- _____
- 1 – immediate family member engages in heavy drinking, little contact with mother at present
 - 2 – immediate family member with direct impact or frequent contact with mother starts heavy drinking or is alcoholic
 - 2 – household member is alcoholic (e.g., brother)
 - 3 – husband, boyfriend or mother has a drinking problem

19. "Sometimes people feel so bad they try to hurt themselves": Immediate family member attempts suicide _____

- _____ 1 – family member with little contact or closeness makes attempt
- _____ 2 – family member with close contact or impact makes attempt
- _____ 2 – close family member, boyfriend or mother claims consideration of suicide*
- _____ 3 – husband, boyfriend or mother actually attempts suicide
- _____ 3 – immediate family member on whom mother is dependent attempts suicide

*Threats which are clearly seen by mother as a bid for her attention in the sense that they occur frequently and without serious intent to commit suicide are scored 1

+Rate only if mother sees as stressful to herself or the family.

20. Death of immediate family member (what relationship?)* _____

- _____ 0 – not immediate family member, e.g., great-grandmother
- _____ 1 – limited contact with immediate family member who dies
- _____ 1 – baby of immediate family member dies
- _____ 1 – extended family member with whom mother has close relationship dies
- _____ 2 – moderately close relationship, immediate family member (other than mother or father of target mother) dies
- _____ 2 – alleged father of infant dies (not living with mother before death)
- _____ 2 – sibling of mother with whom she is not close dies
- _____ 3 – close family relation dies

*These have to do only with the mother's family unless she has a close relationship with her husband's or boyfriend's family. If mother does not have a close relationship, these ratings can apply but the score is lowered by 1. If these items are used to score deaths in the extended family, the scores are lowered by 1.

21. Death of a close friend _____

- _____ 1 – close friend's baby dies
- _____ 1 – close friend dies
- _____ 2 – boyfriend (non-serious relationship) dies
- _____ 3 – boyfriend (serious relationship, cohabitation) dies

22. Immediate family member seriously ill _____ (do not score alcohol problems here – see item #24; the husband family rule applies to this item – see item #20)

- _____
- 0 – extended family member with non-serious disease
 - 1 – extended family member who has limited contact with mother, has serious illness*
 - 1 – immediate family member with less serious illness, (e.g., ulcers, high blood pressure, etc.); no close relationship with mother
 - 2 – serious illness of immediate family member upon whom mother is not dependent
 - 2 – family member upon whom mother is dependent; moderately serious illness
 - 2 – immediate family member with whom mother is in close relationship has less serious illness (e.g., ulcers, high blood pressure, etc.)
 - 2 – extended family member, close relationship, with serious illness
 - 3 – serious illness of immediate family member upon whom the mother is dependent or any family member with whom she is living or with whom she has a close relationship

*Serious illness: terminal, threat of death, or life-threatening surgery

+Rate only if mother sees as stressful to herself or the family.

23. Gain of new family member (immediate family only – birth or marriage _____)

- _____
- 0 – marriage in immediate family
 - 0 – birth in immediate family
 - 1 – family member with whom mother lives has a baby
 - 1 – housemember has baby
 - 1 – depended-upon person has a baby
 - 1 – target mother's mother has a baby
 - 2 – target mother gets married
 - 3 – birth of second baby to target mother within 12 to 18 months of first birth

*If mother's birth had medical complications go back and score in item #22

24. Problems related to alcohol or drugs (do not score if identical to #18 or if scored on 18 with no elaboration to clarify items) _____

Note: _____

- 1) score events in order of seriousness as indicated in the scale.
- 2) the first event is given a full score (i.e., if mother is involved, this gets a 3);
- 3) reduce the value of each subsequent score by one point. Thus, the maximum score given for this item would be 6 (in a case where 3 events if scored individually would be given 3 points each);
- 4) if it is indicated only that an entire family is involved, score this unit as a unit receiving a total value of 3.

- 1 – extended family member or immediate family member without direct impact on mother has alcohol-based problems
- 1 – immediate family member upon whom the mother is not dependent has non-serious problems*
- 2 – immediate family member upon whom mother depends has non-serious alcohol-related problems
- 2 – immediate family member upon whom mother is not dependent has serious problems*
- 3 – immediate family member or household member upon whom mother is dependent has chronic or serious problems as perceived by mother; disruptive effect upon mother's relationship and ability to care for child
- 3 – mother has drinking or drug problem

*serious: requires treatment or severe effects (e.g., fighting, accidents, loss of income, etc.)
 Note re: #18 and #24 In some cases Mom and other immediate family member(s) have ongoing alcohol problems (not just started in last six months as required by #18). In these cases, separate Mom by scoring her in #18 and writing "ongoing" on the form and then pick up the other family member(s) in #24. The point here is that Mom's drinking plus other immediate family members drinking may yield more than a 3 level for stress and should be separated and captured on this form. For example: If Mom is ongoing and brother is last six months put brother in #18 and Mom in #24. If Mom is recent and brother also recent put Mom in #18 and brother in #24. If both ongoing, Mom in #18 and brother in #24 with notation of "ongoing" in #18.

+Rate only if mother sees as stressful to herself or the family.

This last set of questions has to do with you, your husband (boyfriend), and your child(ren).

25. Serious restriction of social life (explain) _____

- 0 – genuine lack of concern about restriction
- 0 – night school causes restriction
- 0 – normal restrictions due to having a baby
- 1 – lack of money somewhat limits social life
- 1 – loner, no friends and mother cares about lack of friendships
- 1 – works at night resulting in restriction of social life
- 2 – stays away from friends to avoid drug/alcohol involvement or avoids others because of extreme fear or mistrust
- 2 – lack of money, destitution with no babysitter available results in restriction
- 2 – disease/handicap of baby or mother results in restriction
- 2 – boyfriend or husband does not let mother out of house

26. Period of homelessness (no permanent residence) _____

- 1 – staying with parents or friends while looking for house or apartment
- 1 – brief homeless periods between apartments
- 2 – staying with friends due to lack of money for housing
- 2 – frequent periods of homelessness
- 2 – homelessness with separation from those upon whom mother is dependent
- 3 – frequent periods of homelessness (less than 1 month) resulting in mother-infant separation 2 or more times
- 3 – prolonged period of homelessness with separation of mother and baby over one month

27. Serious physical illness or injury requiring hospital treatment (explain) _____

- Note: 1) This item applies only to mother, father or baby;
 2) repeated hospitalizations are cumulative if they are unrelated illnesses or non-scheduled recurrences of the same illness, (e.g., if child goes for 3 planned operations for cleft palate, this is a score of 2 and is treated as one event. If subject goes for heart surgery and has to return (unplanned) this is scored 6, i.e., two events)

- 0 – stitches, minor emergency room visits
- 1 – in hospital for routine operation or broken bones
- 1 – hospitalization for non-serious illness
- 1 – baby in hospital for less than 1 week for routine observation or illness
- 2 – serious injury or illness requires hospitalization
- 2 – emotional problems with prolonged hospitalization (1 week or more)
- 2 – baby in hospital for more than one week with serious illness
- 2 – mother hospitalized for 2 weeks or more
- 3 – life-threatening hospitalization for mother, father or child (e.g., heart surgery)

+Rate only if mother sees as stressful to herself or the family

28. Prolonged ill health requiring treatment by own doctor _____
 1 – allergies
 1 – ongoing ill health but treatment will control (e.g., ear infections, recurring bladder infection)
 ____ 1 – baby’s problem, mother is told by pediatrician that child will outgrow it, (e.g., heart murmur)
 2 – mother or baby has illness with questionable outcome or serious chronic problems (e.g., multiple sclerosis, poorly controlled epilepsy)
 3 – terminal illness or chronic disabling problem
 3 – schizophrenia or other diagnosed psychosis of mother, father, or child
29. Sudden and serious impairment of vision or hearing (mother, father, or child)
 1 – hearing aid since birth
 ____ 1 – moderate hearing or visual loss
 3 – disease or accident involving loss which is sudden and severe
30. Unwanted pregnancy _____
 1 – planned pregnancy
 ____ 1 – unplanned pregnancy with acceptance
 2 – unplanned pregnancy with period of difficult adjustment but with eventual acceptance
 3 – unplanned, unwanted pregnancy
31. Miscarriage _____
 0 – accepted miscarriage occurring within first three months of conception
 ____ 1 – unwanted miscarriage
32. Abortion _____
 ____ 1 – abortion
33. Marriage (see scoring for #23; DO NOT SCORE marriage twice. If marriage is not scored on #23 but is noted on this item, score it using the scale for #23) _____

34. Boyfriend (or girlfriend) moves in or out (explain) _____
 1 – moving out; mutual agreement
 ____ 1 – moving in
 2 – undesired moving out; being thrown out, (e.g., husband or boyfriend throws mother out of house or mother leaves because of fear)
 2 – move in and out during time covered by measure
 2 – moving out: undesired or forced (e.g., jail term or unwanted job transfer)

+Rate only if mother sees as stressful to herself or the family.

35. Other people moving in or out _____
 _____ 0 – moving out with no ramifications or implications
 1 – moving in
 1 – moving out creates money problems for mother
36. Increase in number or arguments with spouse (or boyfriend or girlfriend) _____
 _____ 0 – check with comment “usual amount” (unless information says that the
 usual amount is frequent)
 1 – general increase with no elaboration
 1 – check with comment that there is no particular increase, however, added
 comments indicate that the fights are frequent or constant
 2 – more serious increase
37. Other marriage/relationship problems:
 _____ 0 – husband not spending enough time at home; not helping with chores; out
 with friends too much or bringing too many friends home unexpectedly
 2 – moderate (e.g., jealousy; fears about extramarital affairs; disagreements
 about how to raise children; disagreement about how much husband
 should be involved with childrearing)
 3 – severe (e.g., physical fights or threats of physical harm)
38. Increase in arguments with other relatives _____
 _____ 1 – increase in arguments or trouble with other relatives
 2 – close family relationship with serious feud or consequence
39. Problems with relatives;
 _____ 0 – mentions problems but nothing specific
 1 – mild (e.g., intrusive or critical in-laws or parents; disagreement with in-
 laws or parents about childrearing)
 2 – moderate (e.g., unwanted relative living in home)
 3 – severe (e.g., broken relations with parents/in-laws due to family
 disagreement)
40. Increase in number of arguments with close friend (severe enough to have seriously
 affected the relationship) (explain) _____
 _____ 1 – increase in arguments
41. Problems with friend:
 _____ 0 – mentions problem, but nothing specific
 1 – mild (e.g., minor disagreements)
 2 – moderate (e.g., many disagreements, conflict to the point of decrease in
 contact)
 3 – severe (e.g., loss of friends because of baby; friend going after their
 boyfriend or spouse)
42. Increase in child rearing problems:
 _____ 1 – general increase in difficulties with child (e.g., tantrums, etc.)
 2 – major increase in childrearing problems (e.g., child diagnosed as retarded;
 child behavior problems required a clinic visit)

Note – illness in the child is rated under health problems
 +Rate only if mother sees as stressful to herself or the family.

43. Childrearing problems:

- _____ 0 – mentions problems but nothing specific
 _____ 1 – mild (e.g., sibling rivalry, difficulty going to bed; “picky” or other fussy behaviors; children don’t listen)
 _____ 2 – moderate (e.g., inadequate child care, parent feeling overwhelmed)
 _____ 3 – severe (e.g., unmanageable child such as those with a clinical behavior problem like hyperactivity, enuresis)

44. Divorce _____

- _____ 1 – divorce, mutual agreement, no complication
 _____ 2 – husband fights for custody of child
 _____ 2 – contested divorce
 _____ 2 – desertion

45. Marital separation or break-up (includes on-going relationship with boyfriend or girlfriend if not married) _____

- _____ 1 – desired, acceptable break-up; agreed upon separation
 _____ 1 – check with no elaboration (no indication or problems created by break-up)
 _____ 2 – desired break up by mother; husband/boyfriend doesn’t want to
 _____ 3 – flee for life, threat from husband or boyfriend

46. Marital reconciliation _____

- _____ 0 – comfortable, stable, accepted reconciliation which involves relief of stress
 _____ 1 – reconciliation (uncertain outcome)
 _____ 2 – repeated reconciliation and separations (more than 2)

47. Wife or girlfriend begins or stops work (transfer information to item #1 – 5 and score accordingly. Do not score twice) _____

48. Husband or boyfriend begins or stops work (treat identically to #45) _____

49. Other (provided by mother in response to question “Are there any other stressful events that I haven’t mentioned that you feel have had an impact on you or your family?”). (Rate as to amount of disruption – 0, 1, 2, 3)

+Rate only if mother sees as stressful to herself or the family

Academic Vita

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EDUCATION

The Pennsylvania State University, University Park, College of the Liberal Arts, Schreyer Honors College
B.A Honors in Psychology **May, 2012**
Phi Beta Kappa

National University of Ireland: Galway
Study Abroad

Spring 2010

RESEARCH EXPERIENCE

Research Assistant, Dr. Azar Research Lab

August 2010 – Present

- Assisted Dr. Azar in research and work with A Study of Parenting (ASOP).
- Coded response to General Problem Solving Inventory
- Coded responses to Alternative Uses Measure.
- Member of data entry team.
- Acquired knowledge about the research process and publishing in APA style and format.
- Worked extensively with SPSS software.

Research Assistant, Child Studies Center: Penn State

November 2011 – Present

- Collected data for Focus on Learning and REDI School readiness projects in the counties surrounding State College, Pennsylvania.
- Conducted home visits with both parents and children.
- Administered interview materials to parents and conducted reading and cognitive tasks with children.
- Used communication skills to interact with parents, children, and other members of the data collection team.

RESEARCH

College of the Liberal Arts: Undergraduate Summer Discovery Grant

2011

Analyzed data from ASOP to examine the relationships between disadvantaged neighborhoods and substance use, and if neurocognitive factors moderate this relationship. Poster from summer research will be presented at undergraduate research conference.

Attitudes Toward Energy Conservation

2011

Developed survey, collected data, analyzed data and presented poster at Psi Chi research conference.

HONORS THESIS

Neighborhood Stress and Substance Use in Disadvantaged Inner City Mothers: An Examination of Executive Functioning as a Moderator

2012

LANGUAGES

Spanish: Read and write with basic competency

MEMBERSHIPS

Psi Chi International Honor Society in Psychology
Golden Key International Honour Society

OTHER EXPERIENCE

Utz Quality Foods, Inc.: **Processing Associate**

May 2008 – August 2008

May 2009 – August 2009

June 2010 – August 2010