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Young Adult Unemployment and Later Depression and Anxiety: Does Childhood Neighborhood Matter?

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Abstract

Young adulthood represents a developmental period with disproportionately heightened risk of losing a job. Young adult unemployment has been linked to increased mental health problems, at

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Authors' Contributions

JOL originated the study, performed the statistical analyses, guided additional data analyses, led the writing of the article, and coordinated drafting of the manuscript among co-authors; TMJ contributed to data preparation for analyses, drafted the method and result sections, and created tables; YY contributed to literature search; DAH provided expertise in the conceptualization of neighborhood impacts; JPY contextualized findings in different cultural contexts; RK contributed to the conceptualization of the study, the data collection, and the interpretation of findings. In addition, all authors have been involved in drafting the manuscript and revising it critically for important intellectual content. All authors read and approved the final manuscript.

Data Sharing Declaration

This manuscript's data will not be deposited.

Conflicts of Interest

No conflict declared.

Compliance with Ethical Standards

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All study procedures were approved by the Human Subjects Review Committee of the University of Washington.

Informed consent

Informed consent was obtained from all participants included in the study.

least in the short term. However, their possible long-term impacts, often referred as “scarring effects,” have been understudied, possibly underestimating the magnitude of mental health burden that young adult unemployment generates. This longitudinal study examined whether duration of unemployment during young adulthood is associated with later mental health disorders, after accounting for mental and behavioral health problems in childhood. Furthermore, the current study investigated whether childhood neighborhood characteristics affect this association and if so, in what specific functional ways. Data were drawn from a longitudinal study of developmental outcomes in a community sample in Seattle. Data collection began in 1985 when study participants were elementary students and involved yearly assessments in childhood and adolescence (ages 10–16) and then biennial or triennial assessments (ages 18–39; $N = 677$ at age 39; 47% European American, 26% African American, 22% Asian American, and 5% Native American; 49% female). The current study findings suggest that duration of unemployment across young adulthood increased mental health problems at age 39, regardless of gender. Childhood neighborhood characteristics, particularly their positive aspect, exerted independent impacts on adult mental health problems beyond unemployment experiences across young adulthood. The current findings indicate a needed shift in service profiles for unemployed young adults—a comprehensive approach that not only facilitates reemployment but also addresses mental health needs to help them to cope with job loss. Further, the present study findings suggest that childhood neighborhoods, particularly positive features such as positive neighborhood involvement, may represent concrete and malleable prevention targets that can curb mental health problems early in life.

Keywords

Mental health; Unemployment; Scarring effects; Life course; Young adulthood; Perceived neighborhood characteristics in childhood

Introduction

Unemployment can influence mental health problems (McGee and Thompson 2015). Such adverse mental health impacts can be more concentrated among young adults. First, young adults, also referred to as transitional age youth (Burt and Paysnick 2012), are more likely to lose their jobs compared to older adults (McGee and Thompson 2015; Reneflot and Evensen 2014). In January 2017, for example, the unemployment rate among young adults was almost double the national average (8.0% vs. 4.3%). Young adults’ elevated exposure to unemployment has been consistently observed since 1971 (Edwards and Hertel-Fernandez 2010; P. Taylor et al. 2012), highlighting that this differential exposure to unemployment is not transient, and thus understanding its mental health impact is urgently needed. Further, when exposed to unemployment, young adults may be more vulnerable to negative mental health consequences because of their unique developmental challenges (Hultman and Hemlin 2008). These challenges include additional developmental stressors of transitioning to young adulthood (Bradshaw et al. 2012) and still-developing coping strategies (Monteiro et al. 2014). Because young adults are already dealing with developmental stressors with limited adaptive coping strategies, job loss is likely to result in deterioration in mental health.

Consistently, unemployment has been associated with increased depression among young adults in general (Janlert et al. 2014; McGee and Thompson 2015). Furthermore, young adults may be more likely to experience deterioration in health subsequent to losing a job compared to their older counterparts (Hultman and Hemlin 2008). These prior studies confirmed the importance of young adult unemployment as a mental health concern. However, most relevant studies have heavily focused on one specific type of mental health problems: depression. As such, possible influences of unemployment on other highly prevalent and equally impairing mental health problems are mostly unknown, such as anxiety—the most common mental health problem (Center for Behavioral Health Statistics and Quality 2015; Stein and Stein 2008). This gap in the literature can contribute to underestimating the adverse impacts of young adult unemployment on mental health problems, preventing a more precise understanding of the magnitude of this mental health burden.

Importantly, possible long-term impacts of young adult unemployment on mental health (Clark et al. 2001), often referred to as “scarring effects” (Daly and Delaney 2013; Strandh et al. 2014), have been understudied (Strandh et al. 2014), with very few exceptions (e.g., Hammarström and Janlert 2002; Mossakowski 2009; Strandh et al. 2014). A recent Swedish cohort study (Strandh et al. 2014), for example, found that unemployment duration across young adulthood was associated with increased depressive symptoms, nervous symptoms, and sleeping problems at age 42. Similarly, a U.S. national study (Mossakowski 2009) using data from the National Longitudinal Study of Youth revealed that unemployment duration across young adulthood was predictive of higher levels of depressive symptoms later in life.

Although these few available studies (i.e., Hammarström and Janlert 2002; Mossakowski 2009; Strandh et al. 2014) shed light on scarring effects, they were limited in one important way—they did not account for childhood and adolescence behavioral and mental health problems. Despite empirical evidence corroborating the association of unemployment with mental health (for reviews, see McKee-Ryan et al. 2005; Paul and Moser 2009), the nature of this association remains the subject of a decades-long and unresolved debate (McGee and Thompson 2015; Sareen et al. 2011). Two opposing arguments have stood at the heart of the debate: social causation and social selection (Catalano et al. 2011; Sareen et al. 2011). Proponents of social causation posit that unemployment might lead to compromised mental health; i.e., an unemployed person experiences distress related to income loss (Wanberg 2012), which in turn leads to compromised mental health. In contrast, supporters of social selection argues for a reverse causality—that preexisting mental health problems increase the probability of losing a job, not the other way around (Catalano et al. 2011; Sareen et al. 2011). Because empirical evidence is mixed and the debate has yet to be settled, it is critical to investigate whether the scarring effects of young adults’ unemployment are present beyond the possible influences of preexisting mental health problems, as suggested by the social selection hypothesis. Childhood and adolescence behavioral and mental health problems may represent the most convincing social selection factors (Daly and Delaney 2013), because they clearly precede both unemployment and adult mental health problems. Specifically, childhood behavioral and mental health problems affect human capital accumulation, a potent predictor of employment (Currie 2009). In addition, childhood mental health problems are strong predictors of later mental health and psychiatric problems

(Caspi et al. 1996). Such consideration motivates a longitudinal investigation of the scarring effects of young adults' unemployment after accounting for childhood behavioral and mental health problems. Such inquiry could further elucidate the breadth of mental health burden triggered by young adult unemployment, while diminishing the potential for social selection and thus contributing to the unsettled debate regarding social causation versus social selection in this topic area.

Child Neighborhood Characteristics: Common Determinant, Additive, or Interactive Effect

The life course perspective posits that adult mental health problems should be understood in conjunction with circumstances of earlier developmental periods, such as childhood and adolescence (Elder 1994; McLeod and Almazan 2003). In parallel, socioecological perspectives (Bronfenbrenner 2005; Bronfenbrenner and Morris 1998) suggest that more distal levels of context, such as neighborhood context, may affect mental health outcomes either indirectly by influencing more proximal contexts, such as family and school (Bronfenbrenner 2005; Bronfenbrenner and Morris 1998), or directly (Ludwig et al. 2012, 2013). Taken together, these perspectives suggest it is feasible that childhood neighborhood context plays a role in the link between unemployment and mental health problems. The question is how this risk factor, which is distal in time and ecological level, can affect the association of unemployment, a risk factor that is proximal in both dimensions, with adult mental health.

The life course perspective (Braveman and Barclay 2009; Hertzman and Power 2003) and developmental psychopathology (Cicchetti and Toth 2009; Sroufe 2007) together provide three hypotheses framing this question—common determinant, additive effect, and interactive effect hypotheses. First, the common determinant hypothesis (Cicchetti and Toth 2009; Sroufe 2007) posits childhood neighborhood circumstances might function as a common source that influences both young adult employment status and mental health problems. Second, the additive effect hypothesis (Braveman and Barclay 2009; Hertzman and Power 2003) suggests that childhood neighborhood circumstances contribute to adult mental health beyond young adult unemployment. Finally, the interactive effect hypothesis (Braveman and Barclay 2009; Hertzman and Power 2003) suggests that childhood neighborhood context may ameliorate or amplify the impact of unemployment on mental health. Specifically, unemployment might more strongly affect individuals who spent their childhood in adverse neighborhoods. Childhood neighborhood disadvantage, for example, may increase stress reactivity (Hackman et al. 2012), as shown in the association between varying neighborhood exposure during childhood and allostatic load and telomere length (Brody et al. 2014; Theall et al. 2017). Such compromised stress reactivity and cumulative "wear and tear" on physiological regulatory systems may influence how people perceive and cope with a stressor (Del Giudice et al. 2011; Ellis and Boyce 2008). Following this logic, people who spent their childhood in adverse neighborhoods may be more vulnerable to detrimental mental health consequences after losing a job. They may experience a higher level of distress following job loss due to their compromised stress reactivity or because they are less equipped to deal with such distress, partly due to their compromised stress regulation systems.

Suggestive evidence supports each of these three hypotheses. Childhood neighborhood characteristics, such as neighborhood-level poverty, have been negatively associated with developmental outcomes later in life, including educational attainment (Wodtke et al. 2011) and employment status (Galster et al. 2016). Similarly, childhood neighborhood circumstances predicted adult mental health problems, such as compromised subjective well-being (Ludwig et al. 2012) and heightened psychological distress (Ludwig et al. 2013), in the Moving to Opportunities experiment. Relatedly, although using cross-sectional designs (Ahern and Galea 2011) or not assessing childhood neighborhood circumstances (Echeverria et al. 2008; Galea et al. 2007), prior studies found individuals living in adverse neighborhoods were more likely to be depressed. Taken together, these findings suggest neighborhoods can influence employment status and adult mental health, supporting the common determinant and additive effect possibilities. In addition, emerging evidence hints at an interactive effect. For example, according to a recent cross-sectional study from the Netherlands (Erdem et al. 2016), the adverse mental health impact of unemployment was worse for people living in neighborhoods with lower social cohesion. No identified studies have evaluated these three feasible hypotheses in the context of the scarring effects of young adult unemployment and childhood neighborhood circumstances. This represents an important gap in the knowledge base for developing early prevention strategies to curb adult mental health problems.

Gender Differences

Proponents of gender socialization (Chodorow 1978) posit that gender differences exist in the manifestation of distress subsequent to significant stressors, such as losing a job. Specifically, women's distress associated with unemployment will manifest as internalized mental health problems, because women are socialized to bring their distress inward rather than express it through outward behavioral problems (Broidy and Agnew 1997; Nolen-Hoeksema 2004). In contrast, other scholars have argued that unemployment may generate lower levels of distress and thus fewer mental health problems for women compared to men, because women may experience unemployment as less seriously damaging to their status (Jukkala et al. 2008; B. Taylor et al. 2008). Yet gendered norms have changed, as evidenced by the increased rate of labor force participation by women (Fortin 2015) and much more modest gender differences in attachment to jobs than once presumed (Sweet et al. 2016). Relevant empirical findings are also mixed and inconclusive—the impacts of unemployment on mental health were stronger for men in some studies (Brydsten et al. 2015; Paul and Moser 2009) but for women in others (Hammarström et al. 2011; Reneflot and Evensen 2014). Other studies reported no gender differences (Frasquilho et al. 2016; Nieuwenhuis et al. 2017). In summary, differences are conceptually feasible, but related empirical evidence has not yet reached a consensus, suggesting the need to evaluate gender differences in the scarring effects of young adult unemployment on mental health problems later in life.

Current Study

The current longitudinal study examined the link between unemployment during young adulthood and depression, generalized anxiety, and social phobia (also known as social anxiety; Stein and Stein 2008) disorders later in life. Specifically, the current prospective

study addressed three central research questions. First, the scarring effects of young adults' unemployment was evaluated by testing whether duration of unemployment during young adulthood (ages 21–33) is associated with three mental health disorder measures at age 39, after accounting for behavioral and mental health problems during childhood. Second, analyses tested whether neighborhood circumstances in childhood contribute to the link between the duration of unemployment and mental health disorders, and if so, in what functional ways (i.e., common determinant, additive, or interactive effect). Third, considering conceptual arguments and empirical evidence suggesting such differences and a lack of consensus regarding for which gender the impact is worse, potential gender differences were evaluated in the association between unemployment in young adulthood and mental health disorders at age 39.

Methods

Participants and Procedures

Data are from the Seattle Social Development Project (SSDP), a longitudinal study of developmental outcomes across development. SSDP began in 1985 and invited all fifth-grade students (N = 1,053) from 18 elementary schools in Seattle to participate. From this recruitment base sample, 808 students and their parents (77%) consented to participate and enrolled in the longitudinal study. Data collection was conducted yearly in childhood and adolescence (ages 10–16) and then eight times thereafter (ages 18–39). Participants came from varying racial backgrounds (47% European American, 26% African American, 22% Asian American, and 5% Native American). The sample is gender balanced (49% female). Fifty-two percent of participants met criteria for free or reduced-price lunch at school for at least one year while in fifth to seventh grade. Panel retention has been consistently high over time—88% of the still-living sample was interviewed at age 39 (N = 677). Further details of study design and sampling procedures can be found elsewhere (Hawkins et al. 2003). All study procedures were approved by the institutional review board at the affiliated university.

Measures

Mental health disorders (age 39).—Major depressive symptoms, generalized anxiety symptoms, and social phobia symptoms were assessed using the Diagnostic Interview Schedule (Robins et al. 1981). The measure is based on the *Diagnostic and Statistical Manual of Mental Disorders* (4th edition; American Psychiatric Association 1994) and has been reported to be valid and reliable in studies of psychiatric disorders among adults (Newman et al. 1996; Reinherz et al. 2000). The total number of endorsed items for three mental health outcome measures was dichotomized into two categories using diagnosis thresholds relevant to each outcome measure (1 = *met threshold*, 0 = *did not meet threshold*). Of note, these measures are based on participants' self-report and not diagnoses by clinicians.

Duration of unemployment (ages 21–33).—A measure of unemployment duration relied on data from a life-history calendar (Axinn et al. 1999; Caspi et al. 1996). The life history calendar has been successfully used in studies on a wide range of topics (Freedman et al. 1988; Yoshihama et al. 2005) Specifically, 90% or higher agreement rate has been

reported between retrospective reports collected using the life calendar method and those collected prospectively over 3 years with respect to various life events including schooling and employment (Caspi et al. 1996). Life history calendars were administered at ages 24, 27, 30, and 33 and asked about participants' employment status during the 3 years prior to each wave of data collection. The duration of unemployment variable was created by adding the number of years of involuntary unemployment across ages 21 to 33, consistent with prior studies (Lee et al. 2017; Mossakowski 2009). Of note, if participants were unemployed for voluntary reasons (e.g., being a full-time student or homemaker) in a given year, they were not considered to be unemployed for that year.

Perceived neighborhood disorganization (ages 10–18).—Participants' perception of neighborhood disorganization was prospectively assessed with self-reports of neighborhood characteristics when participants were between ages 10 and 18. Participants were asked whether the following features characterized their neighborhood: crime, fights, shootings or knifings, gangs, poor people, run-down housing, or youth often in trouble, for a total of 26 items over seven time points (response options: 0 = *NO!*, 1 = *no*, 2 = *yes*, 4 = *YES!*). Higher scores represented a higher level of neighborhood disorganization. Items were standardized and averaged at each wave to achieve a common metric and equal weight across items. Then the overall scale score was averaged across waves, resulting in a single composite score representing participants' perception of their child and adolescent neighborhood disorganization. Reliability (Cronbach's α) of the scale at each wave ranged from .81 to .88, suggesting high internal consistency. Reliability across ages was also high (Cronbach's α = .84), suggesting items remained internally consistent over time.

Perceived positive neighborhood (ages 10–18).—The perceived positive neighborhood measure included items capturing participants' appraisal of positive aspects of their neighborhoods during childhood and adolescence—availability of activities and facilities that provide opportunities for positive neighborhood involvement, neighbors who provide positive rewards, emotional bonding to the neighborhood, and involvement in neighborhood activities. Survey items included questions asking about availability of team sports, scouts programs, and parks; community spirit; neighborhood safety; neighbors who were proud of the participant, were encouraging, or said nice things about the participant; opportunities to volunteer for community organizations; and opportunities for activities with other families in their neighborhood. Response options ranged from 0 (*NO!*) to 4 (*YES!*), with higher scores representing a more positive neighborhood. Items were standardized and averaged into subscales of neighborhood bonding, prosocial opportunities, rewards, and involvement. Then the overall scale score, a total of 19 items, was averaged across waves, resulting in a single composite score representing participants' perception of positive aspect of their neighborhood during childhood and adolescence. Reliability (Cronbach's α) of each subscale each ranged from .52 to .83, suggesting sufficient internal consistency of the items within the scale. Reliability across ages was sufficient, with a Cronbach's α of .67.

Covariates.—Covariates included childhood behavioral and mental health problems that were assessed using teacher reports on the internalizing and externalizing scales of the Child Behavior Checklist (Achenbach 1991; Achenbach and Edelbrock 1983) when the

participants were aged 10–12; prospective self-reports of any alcohol, tobacco, or marijuana use during the previous month at age 13 or 14; and major depressive disorder, generalized anxiety disorder, and social phobia at age 21 using the Diagnostic Interview Schedule (Robins et al. 1981). Sociodemographic covariates included (a) prospectively measured low childhood socioeconomic status, indicated by parents with less than 12 years of education and in the lowest 25% of per capita household income (1 = *low socioeconomic status* [*n* = 153, 19%], 0 = *otherwise*); (b) educational attainment by age 21, coded as whether participants had obtained a high school diploma by age 21 (1 = *yes*, 0 = *no*); (c) race (1 = *White*, 0 = *racial or ethnic minority*); and (d) gender (1 = *male*, 0 = *female*).

Analytic Plan

Because the outcome variables were dichotomous, logistic regression was used as the main modeling strategy. Corresponding to the three research questions, the analysis strategy had three subparts. First, to examine whether unemployment during young adulthood is associated with mental health disorders at age 39, even after accounting for earlier behavioral and mental health problems, two logistic regressions were estimated for each mental health outcome measure, evaluating the association without any covariate and with all covariates. Covariates were included in all subsequent models. Second, to examine whether childhood neighborhood factors operate as common determinants, exert an additive effect, or function as an interactive effect factor in the association between unemployment and mental health disorders, three logistic regressions were estimated for each mental health measure— evaluating the effects of childhood neighborhood characteristics beyond the impact of unemployment on each of the mental health disorder measures (i.e., testing common determinant and additive effect hypotheses) and then evaluating the interaction of unemployment with two childhood neighborhood factors (i.e., testing an interactive effect hypothesis). Of note, if the coefficients representing associations between unemployment and mental health disorder measures substantially attenuated after childhood neighborhood characteristics were added, such findings would support the common determinant hypothesis. If the coefficient remained unchanged and childhood neighborhood characteristics were statistically significant beyond unemployment, then an additive effect hypothesis would be supported. Finally, possible gender differences were evaluated by testing interaction terms between gender and the duration of unemployment measure. All analyses were conducted in Mplus version 7.3. Missing data was handled using full information maximum likelihood estimation in Mplus (Muthén and Muthén 2015), and the final analysis sample sizes slightly varied depending on the specific model (see Table 2).

Results

Association of Unemployment with Mental Health Disorders

Descriptive statistics are presented in Table 1. Of these participants, 11%, 9.5%, and 10% met the diagnosis threshold of major depressive, generalized anxiety, and social phobia, respectively, at age 39. Results from logistic regressions without any covariate (Table 2, Model 1) show that for each year participants were unemployed, the odds of having a diagnosis of major depressive disorder significantly increased by 33% and the odds of generalized anxiety disorder increased by 19%. Duration of unemployment was not

significantly associated with social phobia. Model 2 added covariates to Model 1, including childhood internalizing and externalizing problems, earlier substance use, each mental health measure at age 21 (e.g., major depressive disorder measure at age 21 was controlled in the model for major depressive disorder at age 39), and other sociodemographic covariates. The association of unemployment with major depressive and generalized anxiety disorder remained statistically significant and coefficients for the role of unemployment remained largely unchanged, with the largest change in coefficients equaling 0.03 (Table 2, Model 2).

Childhood Neighborhood Factors: Common Determinant, Additive, and Interactive Effect Hypotheses

Next, Model 3 expanded Model 2 by including childhood neighborhood factors to investigate whether such an addition results in substantial changes in the link between unemployment and mental health disorders at age 39 (i.e., common determinant hypothesis; Table 2, Model 3) or these childhood factors simply predict mental health disorders beyond the duration of unemployment across young adulthood (i.e., additive effect hypothesis; Table 2, Model 3).

Positive childhood neighborhood was associated with a 57% reduction in the odds of meeting the diagnosis threshold of generalized anxiety disorder (*OR* = 0.43, CI = 0.19, 0.96; Table 2, Model 3). Results also revealed that positive childhood neighborhood significantly reduced the odds of having social phobia by 70% (*OR* = 0.30, CI = 0.13, 0.69; Table 2, Model 3). For major depressive disorder, the positive neighborhood factor was marginally associated with reduced odds of meeting the diagnosis threshold (*OR* = 0.51, CI = 0.23, 1.13; Table 2, Model 3). The duration of unemployment measure remained significantly associated with both major depressive and generalized anxiety disorder in all models, after accounting for the childhood neighborhood factors. The neighborhood disorganization measure did not predict any mental health measures at age 39 examined in the present study.

Model 4 and Model 5 tested an interactive effect of childhood neighborhood characteristics. None of the interaction terms between the neighborhood characteristics and unemployment was statistically significant, suggesting that neither of the neighborhood factors moderated the relationship between duration of unemployment for any of the three mental health disorders (Table 2, Model 4 and Model 5).

Gender Differences

Gender interaction terms were evaluated by multiplying gender by duration of unemployment (Table 2, Model 6). No supporting evidence was found for gender differences.

Sensitivity Analysis

First, to test whether concurrent unemployment influenced the study results, all models in Table 2 were retested with employment status at age 39 as an additional covariate. All substantive conclusions remained the same in this sensitivity analysis.

Second, to test whether participants' marital status influenced the study results, all models in Table 2 were retested with marital status at age 21 as an additional covariate. All substantive findings remained the same in this sensitivity analysis.

Third, to address questions concerning whether dichotomizing mental health measures influenced the study findings, all the models were re-estimated using symptom count measures. Considering the distributional nature of mental health symptom count measures, negative binomial regression modeling was used in this sensitivity analysis. Regarding social phobia, the coefficients representing the impacts of unemployment were statistically significant ($p < .05$). All other substantive findings remained the same in this sensitivity analysis.

Discussion

Young adults' unemployment experiences might generate potent impacts on mental health (Hultman and Hemlin 2008) due to differential exposure to unemployment (McGee and Thompson 2015; Reneflot and Evensen 2014) and vulnerability (Hultman and Hemlin 2008) stemming from their unique developmental stressors (Bradshaw et al. 2012; Monteiro et al. 2014). Emerging empirical evidence supports this conceptual speculation. However, these prior studies were limited in four important ways: (a) the adverse impacts of unemployment on other highly prevalent and equally impairing mental health problems have been overlooked; (b) the long-term effects of young adult unemployment on mental health (Clark et al. 2001) have been understudied (Strandh et al. 2014); (c) the few available long-term studies (i.e., Hammarström and Janlert 2002; Mossakowski 2009; Strandh et al. 2014) did not account for childhood behavioral and mental health problems, arguably the most important and convincing social selection factors; and (d) the possible role of childhood neighborhood context in the link had not been investigated, despite its conceptual soundness and feasibility. These gaps in the current literature together have reduced the field's capacity to provide a more accurate picture of the mental health burden stemming from young adult unemployment and diminished our ability to locate concrete and malleable prevention targets early in life that could curb adult mental health problems. The present longitudinal study, the first inquiry of this kind, remedied these critical gaps.

Findings from the present study generally suggest that duration of unemployment across young adulthood had scarring effects on clinically significant mental health problems later in life for both genders. Neighborhood characteristics during childhood and adolescence, particularly their positive aspect, contributed to adult mental health beyond unemployment experiences across young adulthood—in other words, childhood neighborhood circumstances have an additive effect.

Unemployment across Young Adulthood and Scarring Effects on Later Mental Health

The current study findings provide empirical evidence supporting the scarring effects of young adults' unemployment experiences on later mental health problems, particularly major depressive and generalized anxiety disorders. The current findings are consistent with Swedish (Strandh et al. 2014) and U.S. (Mossakowski 2009) studies reporting that duration of unemployment across young adulthood predicts increased depression. This study featured

two key advancements beyond these two previous reports: examining scarring effects on generalized and social anxiety disorders and accounting for behavioral and mental health problems during childhood. Coefficients representing the influences of young adult unemployment on mental health problems did not attenuate after adding mental and behavioral health problems during childhood and adolescence, arguably the most important social selection factors, suggesting that the association between unemployment and mental health problems cannot be completely attributable to child and early adolescent mental health problems. Further, mental health problems at age 21 were also adjusted and the substantive findings remained the same, further indicating that the associations of young adults' unemployment experiences with later mental health problems cannot be solely attributable to preexisting mental health problems, as the social selection hypothesis would argue. In conjunction with emerging evidence (Paul and Moser 2009; Riumallo-Herl et al. 2014), the study findings suggest that a social causation process, rather than a social selection process, may shape the link between employment status and mental health. In other words, losing a job may lead to mental health problems, not the other way around.

Child Neighborhood Characteristics: Common Determinant, Additive Effect, or Interactive Effect

The current study findings support the additive effect hypothesis, suggesting that living in a positive neighborhood as a child lends independent protection against mental health problems 20 years later. The current study findings extend prior studies examining long-term childhood neighborhood effects (Ludwig et al. 2012, 2013) by revealing that positive childhood neighborhood can influence not only general distress or subjective well-being but also clinically significant mental health problems. Of note, the interactive effect hypothesis did not receive empirical support in the current study, because all relevant interaction terms were not statistically significant. Such absence of an interactive effect in the current study appears to contradict a prior study (Erdem et al. 2016) reporting a statistically significant moderation effect between unemployment and neighborhood characteristics. However, the prior study (a) relied on cross-sectional data and focused on the role of concurrent neighborhood; (b) used data from a sample with a wide age range; and (c) did not specifically focus on unemployment experiences during young adulthood. As such, discrepancies in findings may be due to the differences in the temporal nature of study designs and developmental periods, and thus do not necessarily mean contradictory findings. Negative childhood neighborhood was not associated with mental health problems examined in the current study. One possible explanation may be related to using a subjective assessment of neighborhood in the current study. Perhaps negative aspects of neighborhood influences might be more accurately captured using objective measures. A future study with both subjective and objective measures might address such speculation.

Gender Differences

No supporting evidence was found for gender differences in the link between unemployment and mental health problems, consistent with some prior studies (Frasquilho et al. 2016; Nieuwenhuis et al. 2017). Gender differences in behavioral norms, labor force participation, and career orientation are narrowing (Fortin 2015; Sweet et al. 2016), which may explain this finding. Securing and maintaining a job may be equally important to both genders, and

thus losing a job would generate a similar level of distress and result in comparable mental health problems for both genders.

Limitations

A few methodological limitations should be discussed. First, the study relied on selfreport data. Relatedly, the extensive assessment of childhood neighborhood characteristics in the present study also relied on participants' self-report, rather than objective data sources, possibly raising questions related to reporting biases and other issues. However, prior studies have argued for the utility and advantage of subjective measures, because they directly assess people's perceived reality rather than their projected reality from objective measures (Farver et al. 2000; Tucker et al. 2013). Second, effects of fluctuating macroeconomic conditions have not been specifically considered. For example, the most recent recession in 2008, which overlaps with the assessment period for unemployment in the present study, might have strengthened or weakened the adverse impact of young adults' unemployment on mental health problems. A future study that accounts for economic conditions at the macro level might represent a fruitful avenue to further clarify the scarring effects of unemployment on mental health. Third, the current study made a simple distinction between employment and unemployment. By extension, underemployment—having a lower-quality job relative to some standard comparison (e.g., involuntary part-time work, poverty-level wages; Dooley and Prause 2004; Friedland and Price 2003)—has been lumped together with adequate and secure employment. Although this operational definition is in line with prior studies in this topic area (Lee et al. 2017; Mossakowski 2009) and in accordance with a reasonable assumption that having any job is better than having no job, an emerging body of literature has challenged this often unexamined presumption—the health status of people with an inadequate job tends to mirror that of unemployed people rather than those with a secure job (Cassidy and Wright 2008; Dooley and Prause 2004; Wilkins 2007). Taking this more nuanced approach to operationalizing employment status and then examining gradient impacts of varying employment status on mental health may be a productive future research direction, particularly considering that underemployment rates are rapidly rising and are expected to continue due to the current postindustrial and globalized economic structure (Dooley and Prause 2004; McKee-Ryan and Harvey 2011). Fourth, the mental health outcome measures in the current study focused on disorders rather than symptoms. The current study intentionally leveraged their advantage of having clear implications for clinically significant mental health problems, but this approach has a weakness. The current study could not evaluate the impact of unemployment on subclinical mental health problems. As noted in the third sensitivity analysis, results from models using mental health symptom count measures revealed that the coefficients representing the impacts of unemployment on social phobia symptoms were statistically significant ($p < .05$), suggesting that unemployment may be associated with an increased number of symptoms but not necessarily increased odds of meeting the diagnosis threshold for social phobia. All other substantive findings remained the same in this sensitivity analysis. Fifth, the current study similarly focused on three specific mental health outcome measures, because they represent the most prevalent internalized mental health issues. It might be a fruitful future direction to examine the influences of unemployment on other mental health measures, particularly in a clinical sample of young adults with other serious mental health problems, such as

schizophrenia. Sixth, although the current study advanced this topic area by adjusting for behavioral and mental health problems in childhood and at age 21, it is not intended to claim that all possible factors contributing to reverse causality have been ruled out. A future study that explicitly focuses on and tests the social selection possibility will have high utility in this topic area of inquiry. Seventh, the SSDP sample is a regional community sample, and thus generalization of findings requires caution. Finally, although the data represented a diverse sample, all study participants were embedded in an individualistic Western culture. As such, the current study could not fully consider cultural contexts with varying behavioral norms, gender expectations, and base rates of mental health problems. Study findings regarding the association between unemployment and social phobia, for example, may be different in regional areas with collectivist cultures (Hofstede 2001), where social comparisons are stronger (Schreier et al. 2010) and base rates of social anxiety are higher (Heinrichs et al. 2006), particularly East Asia regional areas (Schreier et al. 2010). Similarly, different conclusions can be reached regarding gender differences in countries where the traditional division of gender roles is relatively more rigid. A comparative study including regional areas representing different cultural contexts would help further clarify the impacts of unemployment on mental health problems and their possible gender variations.

Implications

Intervention and prevention efforts are needed to provide mental health services to unemployed young adults. Such mental health services may reduce the probability that the scarring effects of unemployment will harm mental health, and thus reduce the mental health burden across the life course. It is important to emphasize that the possibility of such detrimental effects of young adult unemployment appears equal to both genders, because labor force participation has been often considered to be more important for men than women and internalized mental health problems have been often perceived to be more prevalent in women rather than men. Young adulthood represents a critical junction point when young people consolidate their strengths acquired from adolescence and establish a foundation for adulthood (Oesterle 2013). The current study findings suggest that losing a job as a young person may disrupt a smooth developmental transition for young people and thus can jeopardize their future healthy development regardless of gender. Taken together, the current study findings indicate a needed shift in service profiles for unemployed young people—a comprehensive approach, such as “job–club” type interventions (Moore et al. 2017) that not only facilitate reemployment but also address mental health needs to help them to cope with job loss. Further, the current study findings suggest that neighborhoods during childhood and adolescence, particularly their positive features, may represent concrete and malleable prevention targets that can curb mental health problems early in life. Universal community-based preventive efforts, such as those identified through the Communities That Care program (Hawkins et al. 2014), might be promising in fostering positive childhood neighborhood environments wherein opportunities for positive neighborhood involvement are abundant, levels of social cohesion and social reward are high, and bonding among neighbors is strong.

Conclusion

Young adults' unemployment experiences can have scarring effects on mental health later in life for both men and women. In addition, childhood neighborhoods, particularly their positive features, contribute to adult mental health beyond the duration of unemployment across young adulthood. Despite its limitations, the present study broadened the relevant literature regarding damaging mental health impacts of young adult unemployment in at least five important ways. First, it added to the growing body of literature on the scarring effects of unemployment by explicitly focusing on long-term effects of unemployment during young adulthood, when the unemployment rate and vulnerability to mental health problems are particularly high. Second, by drawing from rich longitudinal data from a 29-year period, the present study adjusted for childhood and early adolescence behavioral and mental health problems along with mental health problems during emerging adulthood, minimizing the possibility of social selection process and thus contributing to a decades-long but unsettled debate on the nature of the association between unemployment and mental health problems. Third, by focusing on mental health disorders, the present study showed that young people's unemployment experiences have ramifications for clinically significant mental health outcomes. Fourth, the current study tested three specific competing hypotheses regarding the role of childhood and adolescence neighborhood characteristics in the association of unemployment with mental health disorder. Last, the current study evaluated potential gender differences. No other existing studies appear to have incorporated these unique strengths. In conclusion, prevention efforts aiming to promote adults' mental health can and should start at a universal level early in life by improving the quality of neighborhoods where children and adolescents live and grow, and then be strengthened at a selective level later in life during critical developmental points, such as young adulthood, particularly when people experience substantial life stressors such as unemployment.

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References

Ahern J, & Galea S (2011). Collective efficacy and major depression in urban neighborhoods. American Journal of Epidemiology, 173, 1453–1462. doi:10.1093/aje/kwr030 [PubMed: 21527512]

American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington DC: Author.

Axinn WG, Pearce LD, & Ghimire D (1999). Innovations in life history calendar applications. Social Science Research, 28, 243–264. doi:10.1006/ssre.1998.0641

Bradshaw C, Rebok G, Zablotsky B, Laflair L, Mendelson T, & Eaton W (2012). Models of stress and adapting to risk: A life course, developmental perspective. In Eaton W (Ed.), Public mental health (pp. 269–302). New York, NY: Oxford University Press.

Braveman PA, & Barclay C (2009). Health disparities beginning in childhood: A life-course perspective. Pediatrics, 124, S163–S175. doi:10.1542/peds.2009-1100D [PubMed: 19861467]

Brody GH, Lei MK, Chen E, & Miller GE (2014). Neighborhood poverty and allostatic load in African American youth. Pediatrics, 134, E1362–E1368. doi:10.1542/peds.2014-1395 [PubMed: 25311604]

Broidy L, & Agnew R (1997). Gender and crime: A general strain theory perspective. Journal of Research in Crime and Delinquency, 34, 275–306. doi:10.1177/0022427897034003001

Bronfenbrenner U (2005). Making human beings human: Bioecological perspectives on human development Thousand Oaks, CA: Sage.

Bronfenbrenner U, & Morris PA (1998). The ecology of developmental processes. In Lerner R (Ed.), Handbook of child psychology: 1. Theoretical models of human development (5th ed., pp. 992–1028). New York, NY: Wiley.

Brydsten A, Hammarström A, Strandh M, & Johansson K (2015). Youth unemployment and functional somatic symptoms in adulthood: Results from the Northern Swedish cohort. European Journal of Public Health, 25, 796–800. doi:10.1093/eurpub/ckv038 [PubMed: 25772751]

Burt KB, & Paysnick AA (2012). Resilience in the transition to adulthood. Development and Psychopathology, 24, 493–505. doi:10.1017/S0954579412000119 [PubMed: 22559126]

Caspi A, Moffitt TE, Newman DL, & Silva PA (1996). Behavioral observations at age 3 years predict adult psychiatric disorders: Longitudinal evidence from a birth cohort. Archives of General Psychiatry, 53, 1033–1039. doi:10.1001/archpsyc.1996.01830110071009 [PubMed: 8911226]

Caspi A, Moffitt TE, Thornton A, Freedman D, Amell JW, Harrington H, … Silva PA (1996). The life history calendar: A research and clinical assessment method for collecting retrospective event-history data. International Journal of Methods in Psychiatric Research, 6, 101–114. doi:10.1002/(sici)1234-988x(199607)6:2<101:aidmpr156>3.3.co;2-e

Cassidy T, & Wright L (2008). Graduate employment status and health: A longitudinal analysis of the transition from student. Social Psychology of Education, 11, 181–191. doi:10.1007/s11218-007-9043-x

Catalano R, Goldman-Mellor S, Saxton K, Margerison-Zilko C, Subbaraman M, LeWinn K, & Anderson E (2011). The health effects of economic decline. Annual Review of Public Health, 32, 431–450. doi:10.1146/annurev-publhealth-031210-101146

Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health (HHS Publication No. SMA 15–4927, NSDUH Series H-50). Retrieved from https://www.samhsa.gov/data/sites/default/files/NSDUH-FRR1-2014/NSDUH-FRR1-2014.pdf

Chodorow N (1978). Mothering, object-relations, and the female Oedipal configuration. Feminist Studies, 4, 137–158. doi:10.2307/3177630

Cicchetti D, & Toth SL (2009). The past achievements and future promises of developmental psychopathology: The coming of age of a discipline. Journal of Child Psychology and Psychiatry, 50, 16–25. doi:10.1111/j.1469-7610.2008.01979.x [PubMed: 19175810]

Clark AE, Georgellis Y, & Sanfey P (2001). Scarring: The psychological impact of past unemployment. Economica, 68, 221–241. doi:10.1111/1468-0335.00243

Currie J (2009). Healthy, wealthy, and wise: Socioeconomic status, poor health in childhood, and human capital development. Journal of Economic Literature, 47, 87–122.

Daly M, & Delaney L (2013). The scarring effect of unemployment throughout adulthood on psychological distress at age 50: Estimates controlling for early adulthood distress and childhood psychological factors. Social Science & Medicine, 80, 19–23. doi:10.1016/j.socscimed.2012.12.008 [PubMed: 23415587]

Del Giudice M, Ellis BJ, & Shirtcliff EA (2011). The adaptive calibration model of stress responsivity. Neuroscience and Biobehavioral Reviews, 35, 1562–1592. doi:10.1016/j.neubiorev.2010.11.007 [PubMed: 21145350]

Dooley D, & Prause J (2004). The social costs of underemployment New York, NY: Cambridge University Press.

Echeverria S, Diez-Roux AV, Shea S, Borrell LN, & Jackson S (2008). Associations of neighborhood problems and neighborhood social cohesion with mental health and health behaviors: The Multi-

Ethnic Study of Atherosclerosis. Health & Place, 14, 853–865. doi:10.1016/j.healthplace.2008.01.004 [PubMed: 18328772]

Edwards KA, & Hertel-Fernandez A (2010). The kids aren't alright: A labor market analysis of young workers Washington, DC: Economic Policy Institute.

Elder GH, Jr. (1994). Time, human agency, and social change: Perspectives on the life course. Social Psychology Quarterly, 57, 4–15.

Ellis BJ, & Boyce WT (2008). Biological sensitivity to context. Current Directions in Psychological Science, 17, 183–187. doi:10.1111/j.1467-8721.2008.00571.x

Erdem Ö, Van Lenthe FJ, Prins RG, Voorham TA, & Burdorf A (2016). Socioeconomic inequalities in psychological distress among urban adults: The moderating role of neighborhood social cohesion. PLOS One, 11, e0157119. doi:10.1371/journal.pone.0157119 [PubMed: 27280601]

Farver J, Ghosh C, & Garcia C (2000). Children's perceptions of their neighborhoods. Journal of Applied Developmental Psychology, 21, 139–163. doi:10.1016/S0193-3973(99)00032-5

Fortin NM (2015). Gender role attitudes and women's labor market participation: Opting-out, AIDS, and the persistent appeal of housewifery. Annals of Economics and Statistics, 117/118, 379–401. doi:10.15609/annaeconstat2009.117-118.379

Frasquilho D, de Matos MG, Marques A, Gaspar T, & Caldas-de-Almeida JM (2016). Distress and unemployment: The related economic and noneconomic factors in a sample of unemployed adults. International Journal of Public Health, 61, 821–828. doi:10.1007/s00038-016-0806-z [PubMed: 26971795]

Freedman D, Thornton A, Camburn D, Alwin D, & Young-DeMarco L (1988). The life history calendar: A technique for collecting retrospective data. Sociological Methodology, 18, 37–68. doi:10.2307/271044 [PubMed: 12282712]

Friedland DS, & Price RH (2003). Underemployment: Consequences for the health and well-being of workers. American Journal of Community Psychology, 32, 33–45. doi:10.1023/a:1025638705649 [PubMed: 14570433]

Galea S, Ahern J, Nandi A, Tracy M, Beard J, & Vlahov D (2007). Urban neighborhood poverty and the incidence of depression in a population-based cohort study. Annals of Epidemiology, 17, 171–179. doi:10.1016/j.annepidem.2006.07.008 [PubMed: 17320784]

Galster G, Santiago A, Lucero J, & Cutsinger J (2016). Adolescent neighborhood context and young adult economic outcomes for low-income African Americans and Latinos. Journal of Economic Geography, 16, 471–503. doi:10.1093/jeg/lbv004

Hackman DA, Betancourt LM, Brodsky NL, Hurt H, & Farah MJ (2012). Neighborhood disadvantage and adolescent stress reactivity. Frontiers in Human Neuroscience, 6, 277. doi:10.3389/fnhum.2012.00277 [PubMed: 23091454]

Hammarström A, Gustafsson PE, Strandh M, Virtanen P, & Janlert U (2011). It's no surprise! Men are not hit more than women by the health consequences of unemployment in the Northern Swedish Cohort. Scandinavian Journal of Public Health, 39, 187–193. doi:10.1177/1403494810394906 [PubMed: 21382857]

Hammarström A, & Janlert U (2002). Early unemployment can contribute to adult health problems: Results from a longitudinal study of school leavers. Journal of Epidemiology and Community Health, 56, 624–630. doi:10.1136/jech.56.8.624 [PubMed: 12118056]

Hawkins JD, Oesterle S, Brown EC, Abbott RD, & Catalano RF (2014). Youth problem behaviors 8 years after implementing the Communities That Care prevention system: A community-randomized trial. JAMA Pediatrics, 168, 122–129. doi:10.1001/jamapediatrics.2013.4009 [PubMed: 24322060]

Hawkins JD, Smith BH, Hill KG, Kosterman R, Catalano RF, & Abbott RD (2003). Understanding and preventing crime and violence: Findings from the Seattle Social Development Project. In Thornberry TP & Krohn MD (Eds.), Taking stock of delinquency: An overview of findings from contemporary longitudinal studies (pp. 255–312). New York, NY: Kluwer Academic/Plenum.

Heinrichs N, Rapee RM, Alden LA, Bögels S, Hofmann SG, Ja Oh K, & Sakano Y (2006). Cultural differences in perceived social norms and social anxiety. Behaviour Research and Therapy, 44, 1187–1197. doi:10.1016/j.brat.2005.09.006 [PubMed: 16325145]

Hertzman C, & Power C (2003). Health and human development: Understandings from lifecourse research. Developmental Neuropsychology, 24, 719–744. doi:10.1207/s15326942dn242&3_10 [PubMed: 14561568]

Hofstede G (2001). Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations Thousand Oaks, CA: Sage.

Hultman B, & Hemlin S (2008). Self-rated quality of life among the young unemployed and the young in work in northern Sweden. Work, 30, 461–472. [PubMed: 18725709]

Janlert U, Winefield AH, & Hammarström A (2014). Length of unemployment and health-related outcomes: A life-course analysis. European Journal of Public Health, 25, 662–667. doi:10.1093/eurpub/cku186 [PubMed: 25417939]

Jukkala T, Makinen IH, Kislitsyna O, Ferlander S, & Vagero D (2008). Economic strain, social relations, gender, and binge drinking in Moscow. Social Science & Medicine, 66, 663–674. doi:10.1016/j.socscimed.2007.10.017 [PubMed: 18023952]

Lee JO, Jones TM, Kosterman R, Rhew IC, Lovasi GS, Hill KG, … Hawkins JD (2017). The association of unemployment from age 21 to 33 with substance use disorder symptoms at age 39: The role of childhood neighborhood characteristics. Drug and Alcohol Dependence, 174, 1–8. doi:10.1016/j.drugalcdep.2017.01.005 [PubMed: 28273647]

Ludwig J, Duncan GJ, Gennetian LA, Katz LF, Kessler RC, Kling JR, & Sanbonmatsu L (2012). Neighborhood effects on the long-term well-being of lowincome adults. Science, 337, 1505–1510. doi:10.1126/science.1224648 [PubMed: 22997331]

Ludwig J, Duncan GJ, Gennetian LA, Katz LF, Kessler RC, Kling JR, & Sanbonmatsu L (2013). Long-term neighborhood effects on low-income families: Evidence from moving to opportunity. American Economic Review, 103, 226–231. doi:10.1257/aer.103.3.226

McGee RE, & Thompson NJ (2015). Unemployment and depression among emerging adults in 12 states, Behavioral Risk Factor Surveillance System, 2010. Preventing Chronic Disease, 12, 140451. doi:10.5888/pcd12.140451

McKee-Ryan FM, & Harvey J (2011). "I have a job, but…": A review of underemployment. Journal of Management, 37, 962–996. doi:10.1177/0149206311398134

McKee-Ryan F, Song Z, Wanberg CR, & Kinicki AJ (2005). Psychological and physical well-being during unemployment: A meta-analytic study. Journal of Applied Psychology, 90, 53–76. doi:10.1037/0021-9010.90.1.53 [PubMed: 15641890]

McLeod JD, & Almazan EP (2003). Connections between childhood and adulthood. In Mortimer J & Shanahan MJ (Eds.), Handbook of the life course (pp. 391–411). New York, NY: Kluwer Academic/Plenum.

Monteiro NM, Balogun SK, & Oratile KN (2014). Managing stress: The influence of gender, age and emotion regulation on coping among university students in Botswana. International Journal of Adolescence and Youth, 19, 153–173. doi:10.1080/02673843.2014.908784 [PubMed: 24910491]

Moore THM, Kapur N, Hawton K, Richards A, Metcalfe C, & Gunnell D (2017). Interventions to reduce the impact of unemployment and economic hardship on mental health in the general population: A systematic review. Psychological Medicine, 47, 1062–1084. doi:10.1017/s0033291716002944 [PubMed: 27974062]

Mossakowski KN (2009). The influence of past unemployment duration on symptoms of depression among young women and men in the United States. American Journal of Public Health, 99, 1826–1832. doi:10.2105/ajph.2008.152561 [PubMed: 19696382]

Newman DL, Moffitt TE, Caspi A, Magdol L, Silva PA, & Stanton WR (1996). Psychiatric disorder in a birth cohort of young adults: Prevalence, comorbidity, clinical significance, and new case incidence from ages 11 to 21. Journal of Consulting and Clinical Psychology, 64, 552–562. doi:10.1037//0022-006x.64.3.552 [PubMed: 8698949]

Nieuwenhuis J, van Ham M, Yu RQ, Branje S, Meeus W, & Hooimeijer P (2017). Being poorer than the rest of the neighborhood: Relative deprivation and problem behavior of youth. Journal of Youth and Adolescence, 46, 1891–1904. doi:10.1007/s10964-017-0668-6 [PubMed: 28364210]

Nolen-Hoeksema S (2004). Gender differences in risk factors and consequences for alcohol use and problems. Clinical Psychology Review, 24, 981–1010. doi:10.1016/j.cpr.2004.08.003 [PubMed: 15533281]

Oesterle S (2013). Pathways to young adulthood and preventive interventions targeting young adults Washington, DC: National Academies Press.

Paul KI, & Moser K (2009). Unemployment impairs mental health: Meta-analyses. Journal of Vocational Behavior, 74, 264–282. doi:10.1016/j.jvb.2009.01.001

Reinherz HZ, Giaconia RM, Hauf AMC, Wasserman MS, & Paradis AD (2000). General and specific childhood risk factors for depression and drug disorders by early adulthood. Journal of the American Academy of Child & Adolescent Psychiatry, 39, 223–231. doi: 10.1097/00004583-200002000-00023 [PubMed: 10673834]

Reneflot A, & Evensen M (2014). Unemployment and psychological distress among young adults in the Nordic countries: A review of the literature. International Journal of Social Welfare, 23, 3–15. doi:10.1111/ijsw.12000

Riumallo-Herl C, Basu S, Stuckler D, Courtin E, & Avendano M (2014). Job loss, wealth and depression during the Great Recession in the USA and Europe. International Journal of Epidemiology, 43, 1508–1517. doi:10.1093/ije/dyu048 [PubMed: 24942142]

Robins L, Helzer JE, Croghan J, Williams JBW, & Spitzer RL (1981). NIMH Diagnostic Interview Schedule (Version III) Rockville, MD: National Institute of Mental Health.

Sareen J, Afifi TO, McMillan KA, & Asmundson GJG (2011). Relationship between household income and mental disorders: Findings from a population-based longitudinal study. Archives of General Psychiatry, 68, 419–427. doi:10.1001/archgenpsychiatry.2011.15 [PubMed: 21464366]

Schreier SS, Heinrichs N, Alden L, Rapee RM, Hofmann SG, Chen JW, … Bogels S (2010). Social anxiety and social norms in individualistic and collectivistic countries. Depression and Anxiety, 27, 1128–1134. doi:10.1002/da.20746 [PubMed: 21049538]

Sroufe LA (2007). The place of development in developmental psychopathology. In M. A. S. (Ed.), Multilevel dynamics in developmental psychopathology: The Minnesota Symposia on Child Psychology (Vol. 34, pp. 285–299). Mahwah, NJ: Lawrence Erlbaum.

Stein MB, & Stein DJ (2008). Social anxiety disorder. Lancet, 371, 115–1125. doi:10.1016/ S0140-6736(08)60488-2

Strandh M, Winefield A, Nilsson K, & Hammarström A (2014). Unemployment and mental health scarring during the life course. European Journal of Public Health, 24, 440–445. doi:10.1093/ eurpub/cku005 [PubMed: 24567295]

Sweet S, Sarkisian N, Matz-Costa C, & Pitt-Catsouphes M (2016). Are women less career centric than men? Structure, culture, and identity investments. Community, Work & Family, 19, 481–500. doi: 10.1080/13668803.2015.1078287

Taylor B, Rehm J, Room R, Patra J, & Bondy S (2008). Determination of lifetime injury mortality risk in Canada in 2002 by drinking amount per occasion and number of occasions. American Journal of Epidemiology, 168, 1119–1125. doi:10.1093/aje/kwn215 [PubMed: 18718895]

Taylor P, Parker K, Kochhar R, Fry R, Funk C, Patten E, & Motel S (2012). Young, underemployed and optimistic: Coming of age, slowly, in a tough economy Washington, DC: Pew Research Center.

Theall KP, Shirtcliff EA, Dismukes AR, Wallace M, & Drury SS (2017). Association between neighborhood violence and biological stress in children. JAMA Pediatrics, 171, 53–60. doi: 10.1001/jamapediatrics.2016.2321 [PubMed: 27842189]

Tucker JS, Pollard MS, De La Haye K, Kennedy DP, & Green HD (2013). Neighborhood characteristics and the initiation of marijuana use and binge drinking. Drug and Alcohol Dependence, 128, 83–89. doi:10.1016/j.drugalcdep.2012.08.006 [PubMed: 22938829]

Wanberg CR (2012). The individual experience of unemployment. Annual Review of Psychology, 63, 369–396. doi:10.1146/annurev-psych-120710-100500

Wilkins R (2007). The consequences of underemployment for the underemployed. Journal of Industrial Relations, 49, 247–275. doi:10.1177/0022185607074921

Wodtke GT, Harding DJ, & Elwert F (2011). Neighborhood effects in temporal perspective: The impact of long-term exposure to concentrated disadvantage on high school graduation. American Sociological Review, 76, 713–736. doi:10.1177/0003122411420816 [PubMed: 22879678]

Yoshihama M, Gillespie B, Hammock AC, Belli RF, & Tolman RM (2005). Does the life history calendar method facilitate the recall of intimate partner violence? Comparison of two methods of data collection. Social Work Research, 29, 151–163. doi:10.1093/swr/29.3.151

Table 1.

Descriptive Statistics

Variable	*n*	*M* or %	*SD*
Major depressive disorder diagnosis (age 39)	675	11	
Generalized anxiety disorder diagnosis (age 39)	677	9.5	
Social phobia diagnosis (age 39)	675	10	
Duration of unemployment (age 21–33, range: 0–12)	776	1.80	0.90
Perceived neighborhood disorganization (age 10–18)	784	0.00	0.17
Perceived positive neighborhood (age 10–18)	790	−0.01	0.07
Major depressive disorder diagnosis (age 21)	762	19.5	
Generalized anxiety disorder diagnosis (age 21)	765	6.41	
Social phobia diagnosis (age 21)	765	19.5	
Drug use (age 10–12)	787	0.00	0.31
Internalizing (age 10–12)	759	0.01	0.12
Externalizing (age 10–12)	760	0.01	0.20
Gender (1 = *male*)	808	51	
Low income (age 10–16)	804	19	
Race (1 = *White*)	808	47	
Educational attainment (age 21; 1 = *high school diploma*)	765	81	

Table 2.

Logistic Regressions of Unemployment and Childhood Neighborhood Contexts Predicting Major Depressive Disorder, Generalized Anxiety Disorder, and Social Phobia Disorder

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	OR	**CI**	***OR***	**CI**	***OR***	**CI**	***OR***	**CI**	***OR***	**CI**	***OR***	**CI**
Major depressive disorder												
Unemployment (21–33)	1.33**	1.22, 1.46	1.30**	1.17, 1.44	1.30**	1.17, 1.45	1.29**	1.15, 1.44	1.31**	1.17, 1.46	1.35**	1.17, 1.55
Disorganization					0.99	0.57, 1.73	1.03	0.53, 1.98			0.97	0.56, 1.70
Positive					0.51*	0.23, 1.13			0.57	0.21, 1.57	0.50*	0.23, 1.12
Disorganization × unemployment							1.08	0.90, 1.29				
Positive × unemployment									0.97	0.73, 1.29		
Gender × unemployment											0.94	0.76, 1.16
Analysis sample size	776		758		758		730		736		744	
Generalized anxiety disorder												
Unemployment (21–33)	1.19**	1.08, 1.31	1.20**	1.08, 1.33	1.21**	1.10, 1.34	1.17**	1.04, 1.32	1.20**	1.07, 1.34	1.22**	1.05, 1.40
Disorganization					1.21	0.70, 2.11	1.44	0.77, 2.70			1.25	0.71, 2.18
Positive					0.43**	0.19, 0.96			0.40*	0.15, 1.06	0.43**	0.19, 0.97
Disorganization × unemployment							1.06	0.90, 1.28				
Positive × unemployment									0.99	0.74, 1.32		
Gender × unemployment											0.96	0.77, 1.16
Analysis sample size	776		761		761		733		739		733	
Social phobia												
Unemployment (21–33)	1.09	0.98, 1.20	1.05	0.94, 1.18	1.06	0.94, 1.19	1.04	0.92, 1.18	1.04	0.92, 1.17	1.10	0.94, 1.29
Disorganization					0.81	0.46, 1.44	0.97	0.52, 1.80			0.81	0.45, 1.42
Positive					0.30**	0.13, 0.69			0.58	0.22, 1.32	0.30**	0.13, 0.69
Disorganization × unemployment							1.11	0.93, 1.32				
Positive × unemployment									0.79	0.56, 1.04		

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	OR	**CI**	***OR***	**CI**	***OR***	**CI**	***OR***	**CI**	***OR***	**CI**	***OR***	**CI**
Gender × unemployment											0.94	0.74, 1.20
Analysis sample size	776		761		761		733		739		733	

Note. Disorganization = perceived neighborhood disorganization; positive = perceived positive neighborhood; Models 2–6 include covariates of childhood drug use, childhood internalizing measure, childhood externalizing measure, corresponding mental health diagnoses at age 21 (e.g., for the model predicting major depressive disorder at age 39, major depressive disorder at age 21 was added a covariate), gender, low income, race, and educational attainment by age 21.

*$p < .10$.

**$p < .05$.