

UCSF

UC San Francisco Electronic Theses and Dissertations

Title

Occupational Injury, Employment Experiences and Inner City Emerging Adults

Permalink

<https://escholarship.org/uc/item/3cm308nt>

Author

Hill, Karen Louise

Publication Date

2014

Peer reviewed|Thesis/dissertation

Occupational Injury, Employment Experience and Inner City
Emerging Adults

by

KAREN LOUISE HILL

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Nursing

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Copyright 2014

by

Karen Louise Hill

DEDICATION

For my parents

Virgil Hill and Martha Robena Betty Watkins Hill

And my loving husband Willie Louis White

ACKNOWLEDGEMENTS

I could not anticipate the highs or lows on this journey. It has not been easy and but for my mentors I would not have survived. I would like to express my deep appreciation and gratitude to Dr. Susan Kools, my dissertation committee chair and my other committee members, Dr. Catherine Waters, qualifying examination chair, and Dr. Marion Gillen. I will never be able to repay the debt that I owe you. You have assisted me in changing the course of my entire life. Each of you are special, precious mentors, and golden in my eyes. The many hours each of you have spent to guide, counsel, support, instruct, and encourage me has allowed me to continue on this path, and will never be forgotten.

My decision to pursue doctoral education was borne out a deep desire to establish a meaningful blueprint for change. My studies have deepened my commitment to student mentoring, developing programs, and interventions for safety-net communities, advocating for underserved workers as the health disparity gap continues to be widened (particularly for emerging adults 18–25 years), and advocating for occupational health-related issues.

My goal is to become a leader in the safety-net community and to assist in the development of robust policy and programs that address the needs of transitional adolescents and young adult workers through community-based partnerships and activated communities. It is my goal to educate policy-makers, providers, patients, families, employers, individuals and the community about the developmental needs of emerging adult workers, and thus, we will be able to improve workplace health and safety.

There are no easy solutions to solve these complex and multi-factorial issues. Additionally, the protracted economic downturn has made the transition for poor emerging adult workers even more challenging. Yet, I am convinced that improvement is *possible* and

occupational and primary health disparities can be *reduced*. My studies, work, and service are all embedded in a commitment to working toward a more impartial, culturally sensitive, and comprehensive system of healthcare and social justice.

OCCUPATIONAL INJURY, EMPLOYMENT EXPERIENCE AND INNER CITY
EMERGING ADULTS

Karen Louise Hill, RN, ANP, PHD

University of California, San Francisco 2014

Abstract

BACKGROUND: Work-related injury is a substantial public health problem among emerging adult workers (EAWs) with inordinate physical, emotional, economic, and social costs. Little is known about the relationships between work-injury, employment experience, life health risks (LHRs) or the developmental and social context of EAWs. Even less is known about the employment needs for low socioeconomic status (LSES) EAWs with heightened vulnerabilities due to the multidimensional disadvantages of adverse childhood experiences (ACEs).

OBJECTIVES: The purposes of this study were to describe LSES EAWs in an urban area and to explore factors associated with work-related injury. Factors included sociodemographic characteristics, ACEs, positive youth developmental (PYD) assets, LHRs, and employment experience.

METHODS: A cross-sectional study, using a convenience sample ($n = 134$, 88% response rate) was conducted using primary data collection (interviews) and secondary data from electronic health records. A pilot study ($n = 7$) was used to test instruments and questionnaire wording.

FINDINGS: Fifty-one percent reported work-related injuries, and 43% reported health problems made worse by work. Multivariable, simultaneous, logistic regression revealed the following predictors of work injury: having higher ACE scores ($OR = 1.19$, $p = .037$), being non-Latino White ($OR = 4.09$, $p = .004$), and being a past smoker ($OR = 4.26$, $p = .037$), when

controlling for all other variables including age, smoking status, employment experience, and drug and alcohol use. EAWs were satisfied with workplace training, but seemed unaware of what constituted a workplace injury or to whom these incidents should be reported.

CONCLUSION: Greater childhood adversity is associated with work-related injury. Further research is needed to better understand EAWs with ACEs and to identify appropriate support for them. Education for employers and healthcare providers about the special needs of EAWs, particularly those with greater ACEs, is needed, and interventions targeting LSES EAWs during their transition to adulthood are crucial to assure healthy and safe work environments for them. And overarching goals for this group are to reduce occupational health disparities, promote occupational wellness, develop a healthy emerging workforce, and improve surveillance of occupational health issues in primary care settings especially among underserved populations.

Table of Contents

Abstract.....	iv
CHAPTER 1 – INTRODUCTION.....	1–17
Introduction.....	2–4
Statement of the Problem.....	4–5
Purpose of the Study.....	5
Research Questions.....	6
Background and Significance.....	6
Costs of Occupational Injury.....	7–8
Context of Emerging Adult Workers.....	8–9
Adverse Childhood Experiences and Life Health Risks.....	9–10
Positive Youth Development Assets.....	10–11
Employment Experiences.....	11–13
Occupational Injury Surveillance.....	13–17
Current state of the Surveillance.....	13–14
Caused of surveillance inaccuracy.....	14–15
Use of EHR Systems in EAW Occupational Health Surveillance.....	15–17
Summary.....	17
CHAPTER 2 – LITERATURE REVIEW – CONCEPTUAL FRAMEWORK.....	18–24
Literature Review.....	19
Search Strategy.....	19–20
`Nature of Emerging Adults’ Employment.....	21–24
Emerging adult workers.....	21
Precarious employment.....	22–23
Work and development.....	23–24
Young Worker Racial–Ethnic Occupational Injury Disparities.....	24–27
Low-wage occupations.....	27–28

Determinants of Occupational Injury.....	28–39
Developmental determinants.....	28–29
Social context determinants	30
Adverse childhood experiences.....	30
ACEs: definition and types.....	30
Consequences of ACEs.....	31
Neurological effects of ACEs.....	31
Specific consequences of ACEs.....	31
Lifelong consequences of ACEs.....	32
Incidence of ACEs in an adult sample.....	32–33
Incidence of ACEs in inner-city EA population.....	33–34
Family and significant others.....	34–35
Organizational and individual determinates.....	35
Need for health, work, and safety training and for supervision.....	35
Distinguishing hazardous tasks from safe tasks; safety training.....	36
Inadequacy of small business safety training.....	36
Employment characteristics for EAWs.....	37
Worker perceptions and social influences.....	37
Perceptions regarding occupational health risks.....	38
Leadership organizational culture and safety climate.....	38
Summary and Gaps in Occupational Health.....	39–41
Conceptual Framework.....	41–54
Developmental Contextualism Theory.....	42–46
Positive Youth Development Perspective.....	46–50
Positive youth development research.....	50–52
Integrated Framework: Understanding the Transition to EA Employment.....	52–54
Study Assumptions.....	54

Definition of Terms.....	54–55
Occupational injury.....	54
Adverse childhood experiences.....	55
Employment experience.....	55
Life health risks.....	55
Positive youth development assets.....	55
CHAPTER 3 – METHODS.....	57–73
Research Design.....	57
Setting.....	57
Sampling and Sample Size.....	58
Eligibility Criteria.....	59
Recruitment, Consent, and Enrollment.....	59
Data Collection, Variables and Measures.....	60
Primary Data Collection.....	60–61
ACEs.....	61–62
Employment experiences, PYD assets, and occupational injuries.....	62–64
Pilot study.....	64
Secondary data collection.....	65–66
Sociodemographics.....	66
Life health risks.....	66–68
Drugs and alcohol use.....	67
Marijuana use.....	67
Tobacco use.....	67
Depression symptoms.....	67
Violence.....	68
Safety.....	68
Sexual health risks.....	68

Medical health risks.....	68
Data Collection Procedures.....	68–70
In-person interviews.....	69
Telephone interviews.....	69
Human Subjects Assurance.....	70
Data Analysis	70–73
CHAPTER 4 – RESULTS	74–84
Sociodemographic Profile of Injured and Non-Injured Emerging Adult Workers.....	75–76
LHRs, ACEs, PYD Assets, Employment Experience, and Occupational Injury in EAWs	
LHRs.....	76–79
Medical health risks.....	76
Sexual health risks.....	77–78
General safety.....	77
Substance Use.....	78
Depressive symptoms.....	78–79
Adverse childhood experiences.....	79
PYD assets.....	79–80
Employment experience.....	80
Occupational injury.....	81
Association between Employment Experience and LHRs.....	81–82
Individual Factors Predicting Occupational Injury in EAWs.....	82–83
Multiple Factors Predicting Occupational Injury in Emerging Adult Workers.....	83–84
CHAPTER 5 – DISCUSSION	85–113
Summary.....	86–88
Discussion of Findings.....	88–89
Sociodemographic Profile.....	89–90
Occupational Injury.....	90

Life Health Risk.....	91–107
Strengths and Limitations.....	107–109
Implications for Practice.....	109–110
Conclusions.....	110–111
Research Recommendations.....	111–113
References.....	114–145
Appendices.....	146–153
Appendix A. Adverse Childhood Experiences Survey.....	147–148
Appendix B. Primary Care Occupational Injury Employment Survey.....	149–153
List of Tables.....	154–172
Table 1 Comparison of Reliability Assessment for Study Instruments.....	73
Table 2 Sociodemographic Profile of Injured and Non-Injured Emerging Adult Workers.....	155–156
Table 3 Life Health Risk Profile of Emerging Adult Workers.....	157–158
Table 4 CAGE–AID Alcohol and Drug Profile for Emerging Adult Workers.....	159
Table 5 PHQ-9 Depression Symptoms Profile of Emerging Adult Workers	160–161
Table 6 Prevalence of Adverse Childhood Experiences (ACEs).....	162
Table 7 Positive Youth Developmental Assets (PYD).....	163
Table 8 Employment Experience Profile of Emerging Adult Workers.....	164–165
Table 9 Self-Reported Type of Work Injury in last 24 Months of Employment.....	166
Table 10 Self-Reported Health Problems made worse by employment	167
Table 11 Correlations between Survey Instruments.....	168
Table 12 Predictors of Occupational Injury in Emerging Adult Workers	169–170
Table 13 Multivariable Logistic Regression Analysis.....	171
List of Figures.....	172–175
Figure 1 Developmental Contextualism Model.....	173
Figure 2 Positive Youth Development Conceptual Framework.....	174

Figure 3 Integrated Framework: Understanding the Transition to Emerging Adulthood
Employment.....175

Chapter 1

Introduction

Despite seven decades of occupational health public policy, work-related injuries remain a significant public health problem nationally—with younger workers consistently at increased risk for injury. Occupational injury is a significant workforce and public health concern (Centers for Disease Control and Prevention [CDC], 2010a; 2010b; Davis, Castillo, & Wegman, 2000; Levy & Wegman, 2000). Each year, over 200,000 adolescents and young adults sustain injuries at work (Center for Disease Control and Prevention and National Institute for Occupational Safety and Health [NIOSH], 2013)—twice the rate of injuries sustained by adults over the age of 26 (Jackson, 2001; Miller & Salazar, 2004; Morbidity and Mortality Weekly Reports [MMWR], 2010; Wilkins & Mackenzie, 2007). Work accidents are the fourth leading cause of injury in the United States for younger workers (Bowman & Salazar, 2005; Davis et al., 2000). Each year, approximately 572 workers under the age of 25 years die as a result of work-related injury (MMWR, 2010). NIOSH reported that 5,719 younger workers died from 1998 to 2007 as a result of occupational injury (MMWR, 2010). During the same 10-year period, young adults who were 15 to 24 years old made 7.9 million emergency room visits for non-fatal work injury issues.

Any estimate of injury, illness, and death, however, must be considered a conservative estimate of actual work-related injuries. Surveillance systems do not always accurately document occupational health injuries and illnesses for all worker groups (Nicholson, Bunn, & Costich, 2008). In addition, such agency and statistical inaccuracies may be due to the fact that current tracking systems for injury and illness often rely on information submitted by employers and employees.

Among all worker age groups, emerging adults (EAs) are beginning to gain attention as a group that is distinct from adults and adolescent in terms of employment needs. Arnett (2000) refers to the sensitive developmental period from 18 and 30 years as *emerging adulthood*. In this regard, *emerging adulthood* has been defined by Arnett (2000) as the sensitive developmental period from 18 and 30 years. *Emerging adult workers* (EAWs) are defined as EAs who have paid employment. EAs' developmental characteristics uniquely shape their experience of work—cognitively and affectively—and provide a strong rationale for special recognition in occupational health policy and practice (Arnett, 2007). Breslin and Smith (2010) propose that the mere act of entering the workforce is a developmental, psychological, and social milestone for EAs.

Transition-to-work milestones are often characterized by feelings of intimidation and insecurity, increased desire for acceptance, and fear of job loss (Santrock, 2008). Eighty percent of EAs in the United States are employed before they graduate from high school, and many experience injury as a result of employment (Runyan & Zakocs, 2000). Emerging adults' need for social acceptance may help to explain why they hesitate to report or fail to report workplace injury. However, workplace injuries can often be life changing. Zierold and Anderson (2006) report that 15% to 45% of injured EAWs sustain a permanent disability after incurring a work-related injury.

Emerging adults just beginning their worklife trajectories are especially vulnerable to unsafe workplace conditions and their potential for work-related injury or illness is heightened (Davis et al., 2000). Nationwide, EAWs are most often employed in low-paying and hazardous jobs with low status in small businesses and service or retail industries—such as food service, healthcare, hospitality, landscaping and gardening, building maintenance, agriculture, and

construction.—Many EAs are employed by small businesses, whose owners are seldom knowledgeable about the workplace health and safety and who have limited resources for addressing employees' health and safety needs (Boehmer, Jones, Ghosh, McCammon, & Vogt, 2009). As novices, EAWs require ongoing health and safety training provided by supervisors who are knowledgeable and available (Emery & Cooper, 1998; Smith & Mustard, 2007), and these young workers need personal protective equipment (Hodgins, Battel-Kirk, & Asgeirsdottir, 2010). EAs are often employed part-time or seasonally in informal jobs (Santrock, 2008). In such employment, EAs may be assigned multiple tasks and duties throughout the day or may have several concurrent part-time jobs; in these jobs, most EAs receive less safety training than do full-time workers. EAWs may work longer hours, be subject to greater degrees of humiliation by managers of customers and may even work in illegal jobs (Davila et al., 2010). Given their heightened risk for injury, EAWs are an important population on which to focus occupational health research.

Statement of the Problem

Occupational injury, illness, and exposure to workplace hazards are serious health problems for the nation's EAs (CDC, 2010a; Department of Labor [DOL], 2010b). Many EAWs are employed in family businesses and not considered employees; as a result, estimates of morbidity and mortality are often underestimated (Miller, Handelman, & Lewis, 2007; Runyan & Zakocs, 2000). In 2008, the U.S. Bureau of Labor Statistics (BLS, 2008) noted that 71% of workers in service industries and 19% in manufacturing industries reported having a work-related injury. Hospital emergency departments' treatment of occupational injuries for young workers is approximately two times higher than treatment of occupational injuries for workers 26 years and older (CDC, 2010a). One young worker is injured every 40 seconds, and one dies

every five days (Zierold & Anderson, 2006). Although these statistics should be compelling for clinicians, primary care and occupational healthcare professionals may know little about this population; deficits in understanding include the numerous factors and characteristics associated with EAs high level of work-related injury.

Some EA inner-city workers may have unique challenges that contribute to vulnerability based on their social context. Many of these young adults may have faced *adverse childhood experiences* (ACEs)—defined as a constellation of interrelated experiences that can include child neglect; verbal, physical, or sexual abuse; and family dysfunction (Dong et al., 2004). According to Dong et al., ACEs also comprise negative events or stressors—such as poverty, violence (personal, environmental, or witnessed), and maltreatment that can be associated with community dysfunction.

Work-related morbidity and mortality continue to be substantial public health problems with disproportionately large physical, emotional, economic, and social costs. Little is known about the relationships between occupational injury, employment experience, life health risks, and social context. Work-related injury, risk factors, and employment needs for low socioeconomic status (LSES) EAs or those with heightened vulnerabilities due to the multidimensional disadvantages of ACEs and poverty are largely unexplored.

Purpose of the Study

The purpose of this descriptive, cross-sectional study was to describe factors that may predict occupational injury for inner-city EAWs receiving primary care in an inner-city community health clinic. These factors included sociodemographic characteristics, ACEs, positive youth developmental (PYD) assets, life health risks (LHRs), and employment experience.

Research Questions

The research questions investigated in this study were:

1. What are the occupational injury, ACEs, PYD assets, LHRs, and employment experiences of inner-city EAWs?
2. What are the sociodemographic differences for ACEs, PYD assets, LHRs, employment experience, and occupational injury among inner-city EAWs?
3. Is there an association between occupational injury and employment experience and LHRs (specifically, ACEs, depressive symptoms, and alcohol and drug use)?
4. What life health risks contribute the occurrence of occupational injury in inner-city EAWs?
5. Which employment experience indicators (job training, safety training, and quality of supervision) are significant determinants for the occurrence of occupational injury in inner-city EAWs?

The overarching goal of this study was to increase knowledge of the conditions and experiences that potentially contribute to EAWs' enhanced work-related injury risk—in order to provide evidence to underpin occupational safety and injury prevention interventions for this group.

Background and Significance

Young workers comprise 14% of the U.S. workforce (CDC & National Center for Injury Prevention and Control, 2010), yet they experience more injury and illness as a result of the workplace and work experience than do any worker age group. The BLS (2011) reported that in

2009, among non-rural workers 18 to 25 years of age, there were 1,220 occupational injuries, 842 work-related motor vehicle accidents (22%), and 353 deaths. In developed countries, workers 25 years and younger are injured on the job at a rate 1.2 to 2.0 times that of adult workers (Salminen, 2004). However, work-related injury data among younger workers must be considered a conservative underestimate because only one third of all injuries are thought to be reported or treated in emergency rooms (Zierold, Appana, & Anderson, 2011). EAs are at increased risk for work injury due to biological and social immaturity and to lack of work experience. Often, EAWs' parents are misinformed about work life or job characteristics and are unavailable or otherwise unable to offer guidance.

Costs of Occupational Injury

Workers' Compensation insurances paid U.S. employers between \$80 billion and \$140 billion annually—a significant economic burden for the employers and for the nation (Fan, Bonauto, Foley, & Silverstein, 2006; Schultz et al., 2005). Leigh (2012), a health economist, has estimated occupational injury and illness among U.S. low-wage earners. According to Leigh, in 2010, fatal and non-fatal injuries sustained by low-wage workers (excluding domestic workers, self-employed workers, and farm workers) resulted in employer costs exceeding \$441 million in death premiums and \$39.1 billion in medical and rehabilitation care. Workers' compensation premiums for young workers are estimated to be a staggering \$5 billion—3.9% of total premiums (Sudhinaraset & Blum, 2010; Zierold et al., 2011). According to Zierold and colleagues, these cost figures—similar to injury data—are likely to be underestimated because supporting data were based on national surveys that may have omitted certain age groups and worker populations. While this economic burden is significant for employers, the cost of work-

related injury is often incalculable for workers, their families, and society (Herbert & Landrigan, 2000; NIOSH, 2003)

Context of Emerging Adult Workers

There are 17.5 million young and EAWs (15 to 25 years old) in the United States (CDC, 2010a; DOL, 2000a). Employment provides EAWs with new experiences and opportunities to develop essential employment skills, enhance self-esteem, and provide needed income—all of which are essential practical needs for developing young adults (Linker, Miller, Freeman, & Burbacher, 2005; Mortimer, Finch, Ryu, Shanahan, & Call, 1996; Rubenstein, Stern, & Pollack, 1999; Santrock, 2008). In a subpopulation of EAWs living in the inner-city with lower SES, mortality risk from unintended accidents was reduced by employment (Davila et al., 2010).

The context of employment and occupational injury risk for EAWs is multidimensional and has positive and negative factors and influences. Factors that Davila and colleagues (2010) considered in their study were poverty, ACEs, and unexamined developmental assets or strengths (i.e., personal, social, and community). Poverty affects every aspect of an individual's development across the life course and may adversely affect long-term occupational health and safety outcomes (Gillen et al., 2007; Huston & Bentley, 2010). Emerging adults with histories of extreme poverty and multiple exposures to violence sometimes respond with rage, distrust, cynicism, and hopelessness (Greene, 1993).

Chronic exposure to poverty results in deleterious outcomes (Greene, 1993) that often include overcrowded social environments, dilapidated housing, inadequate health care, inaccessible job-training, thriving drug and sex-work economies and violence (Trzensniewski et al., 2006). Low SES EAWs in the inner city often contend with constant negative social and environmental stressors as a result of poverty. Growing up in poverty, EAs often have difficulty

completing their education and securing meaningful employment (Holness et al., 2004; Mercy, Mack, & Steenkamp, 2007; Redwood et al., 2010).

In the United States, poverty is avoided or escaped primarily through education and employment (Zimmer-Gembeck & Mortimer, 2006). Low SES EAs have restricted access to many higher-status occupations—especially when even entry-level positions may require a college degree. Accordingly, many LSES EAs are relegated to low-wage jobs and positions with limited potential for upward mobility or specialized skill development (Adler & Newman, 2002; DOL/BLS, 2008). Williams (2003) contends that academic and financial isolation results in a broad range of stigmatizing social conditions, such as incarceration, homelessness, unemployment, mental health disorders, and institutionalization. Not surprisingly, a pathogenic link exists between LSES and racial–ethnic minority status that negatively affects health, wellness, and employment.

Adverse Childhood Experiences and Life Health Risks

Mounting research evidence and a growing clinical consensus support the view that exposure to ACEs is associated with lifelong social, physical, and mental health problems that present significant challenges for EAs (Corso, Edwards, Fang, & Mercy, 2006; Dong et al., 2004). Changes in traditional cultural behaviors and social relationships—giving rise to divorce, single parenthood, out-of-wedlock births, poverty, drugs, and violence—have resulted in intensified early adversity for many EAs. Emerging adults who report experiencing household dysfunction, childhood abuse, and other ACEs have the greatest difficulty in securing and retaining employment (Dube, Cook, & Edwards, 2010). According to Dube and colleagues (2010), personal and social factors influencing EAs—including depressive symptoms and other psychological conditions, substance use, physical, psychological and sexual abuse, household

mental illness, domestic violence, incarceration of a parent, and antisocial behaviors—have direct ramifications for workplace health, safety, and employability.

Research indicates that exposure to multiple concomitant ACEs can be synergistically detrimental for an emerging adult's cognitive, social, and emotional competency development (Dong et al., 2004). Moreover, a negative neural pathway develops from exposure to recurrent negative stressors (Anda et al., 2004). Without intervention, these negative stressors can potentially lead to irreversible adverse changes in the interrelated circuitry and hormonal regulation systems that modulate the body's stress responses in the brain (Dahl, 2004) if there is not intervention. Research has reported that these adverse neurological changes are associated with diminished cognitive ability in functions such as individual learning, coping, and economic productivity (Anda et al., 2004; Anda et al., 2006; Corso et al., 2006), and in overall quality of life.

Schilling, Aseltine, and Gore (2007) reported that EAs from resource-poor communities typically experience serious adversity during childhood, and this adversity impairs their behavioral health and has serious implications for occupational health. EAs with high ACE score are affected in multiple ways. For example, ACEs are linked to delayed social development and behavioral health problems (Corso et al., 2006; Dong et al., 2004). Ultimately, EAs with high ACE score tend to experience poor employment outcomes and decreased life-long financial earning power.

Positive Youth Development Assets

Whereas it is important to understand the excessive burden of social contexts, ACEs, and life health risks that EAs face, it is equally important to understand the PYD assets or unexamined strengths that EAs possess. Unfortunately, the occupational health literature on

EAWs is skewed toward consideration of negative expressions of their individual assets, and as a consequence, PYD assets that may contribute to EAWs' workplace safety are largely unknown.

Despite adversity, some EAs manage to make healthy and normative transitions to adulthood (Masten, Obradovic, & Burt, 2006). Those who are more intelligent, possess positive attributes of autonomy and self-efficacy, receive higher quality parenting, receive pro-social support from adults, develop the ability to plan, and whose experience of poverty is less severe tend to transition into adulthood in a pro-social fashion (Dong et al., 2004; Schulenberg & Zarett, 2006).

Emerging adults from impoverished communities are also resilient and have strengths; their communities are often able to respond effectively to their developmental needs (Davis, Cook, & Cohen, 2005). Such communities are able to identify and strengthen EAs' assets (Sampson, 2004), collaborate with academic institutions, healthcare organizations, employers to develop programs that foster PYD and promote health and social well-being (Downey, Anyaegbunam, & Scutchfield, 2009). When such communities also have financial capacity, they can further promote well-being and strength-based PYD approaches for EAs by providing opportunities to develop self-efficacy (Delp et al., 2005), self-empowerment (Downey et al., 2009), positive social support networks (Porteous & Waghorn, 2009), age appropriate supervision, and advocacy to mitigate social adversities (Schwarz, Grisso, Miles, Holmes, & Sutton, 1993).

Employment Experiences

According to Occupation Employment Statistics data, in 2010, a total of 30,855,260 workers were employed in low-wage jobs (Leigh, 2012). In reporting on these data, Leigh generated a list of 65 occupations with wages of \$11.18 or less per hour. Low-wage occupations

comprise (a) jobs that generate annual earnings that are less than the federal poverty line for a family of four; and (b) jobs that provide wages that place earners in the lowest 10% to 20% of the median wage distribution (Bernstein & Hartman, 2000). Emerging adults constitute a significant portion of the low-wage-earning population. According to the 2008 *Kaiser Low-Income Coverage and Access Survey*, four in ten “low income EAWs” (defined in the survey as youth 19 to 29 years with incomes at or below the 200% federal poverty level) are uninsured. Approximately 35% work full time, 32% have less than a high school diploma, and 16% are students; many are African American or Latino, and nearly half support a family (Kenny & Pelletier, 2008; Miller et al., 2007; Schwartz & Schwartz, 2008).

Because EAWs typically earn less and work fewer hours than do older adult workers, EAWs are more susceptible to poverty than are adult workers (Paul-Mulye et al., 2009). Approximately 24% of all workers who are 14 to 25 years old live in poverty (BLS, 2010; DOL, 2010). For this study, the U.S. Department of Health and Human Service’s 2013 federal poverty guideline (published in the Federal Register) for a single adult individual was \$11,490 or less; for two-person household, the guideline is \$15,510; these guidelines were used by the community clinic where the present study was conducted (<https://www.federalregister.gov/articles/2013/01/24/2013-01422/annual-update-or-the-hhs-poverty-guidelines#t-1>).

Unlike older adult workers, EAWs commonly have “precarious employment” (i.e., predominately work in part-time or seasonal jobs Benavides et al., 2006; Runyan, Vladutiu, Rauscher, & Schulman, 2008). In addition, EAWs have transient employment patterns (Miller et al., 2007), poor job and safety training, and inadequate supervision—all of which are risks for

work injuries (Benavides et al., 2006; Breslin, Polzer, MacEachen, Morrongeillo, & Shannon, 2007).

For EAWs, part-time employment status often entails their receiving less supervision and less job and safety training than is given to full-time workers (Smith & Mustard, 2007). Part-time workers, who are often desperate to increase their incomes, work longer hours, are assigned many tasks or duties during the day, and commonly have several concurrent part-time jobs (Seidel, Ball, Dains, & Benedict, 1999).

Inexperienced EAs have occupational health knowledge deficits regarding workplace hazards, job training, and workers' rights (NIOSH, 2003). Some EAs have difficulty distinguishing between "how to do their jobs" and "how to do their jobs safely"—even after receiving job training (Runyan & Zakocs, 2000). Others have difficulty identifying and reporting workplace hazards. Often EAWs are employed in organizations without adequate work-injury surveillance systems programs. Consequently, surveillance data regarding EAWs at the national (Leigh, 2011), state, and local levels is inadequate (Runyan & Zakocs, 2000). All of these factors contribute to the emerging adult population's extreme vulnerability as these young workers undergo a critical transitional stage in their lives (Arnett, 2000).

However, though, fraught with challenge, EAWs' employment experience is not entirely adverse. For example, Breslin et al. (2007) report that young workers are capable of recognizing workplace hazards and are willing to offer remedies to enhance workplace safety. They tend to be eager to learn new skills and are interested in safe work (Miller, Handleman, & Lewis, 2007). When asked to provide recommendations for improving their work circumstances, young workers' suggestions include receiving adequate work and safety training, not working at unsafe

speed, and being superintended by supervisors who are trained to work with youth, who are supportive, and who are not demoralizing. (Breslin et al., 2007).

Occupational Injury Surveillance

Current state of surveillance. For the worker population as a whole, gauging, tracking, and documenting occupational health injuries and illnesses by current surveillance systems is relatively inaccurate (Nicholson et al., 2008). For example, surveillance systems may undercount or underreport the number of occupational health exposures (Jackson, 2001).

Causes of surveillance inaccuracy. Reasons for occupational health injury–illness data inaccuracies are multiple. First, data collection is often limited to information provided by employers and employees—both of whom may report only mandated “recordable” incidents required by the Occupational Safety and Health Administration (Fordyce, Morimoto, Coalson, Kelsh, & Mezei, 2010); both employers and employees may fail to report other work-related injury and illness events (i.e., events that require only first aid). In the case of vulnerable non-White EAWs or other low-wage earners, reticence to report work-related injuries and illness may be amplified by fear of being at higher risk for job loss. The result of these employer–employee reporting deficiencies is an underestimated work-related injury statistics (Herbert & Landrigan, 2000; Murray, 2003). Second, routine efforts to identify work injuries or risks for EAWs are constrained by lack of clarity and other limitations in state and government reporting guidelines. Third, the collection of occupational health injury–illness data is impeded by deficits in employers’ understanding of reporting requirements and by inadequate availability of health care professionals who screen for occupational injury or illness (CDC, 2010a). Finally, workplace injury surveillance is rarely conducted during routine primary or urgent care visits (Filius et al., 2008; Runyan, 2007) in which many low SES EAs often receive services. Moreover, most

existing surveillance systems are technologically outmoded (i.e., at present, most surveillance systems are paper-based; Jackson, 2001).

Current methods for routinely identifying work injuries or risks for EAWs are limited or are unclear due to vague state and government reporting guidelines, employer knowledge deficits, and lack of access to healthcare professionals who screen for occupational injury or illness (CDC, 2010a). For example, workplace injury surveillance is rarely conducted in routine primary or urgent care visits (Filius et al., 2008; Runyan, 2007) in which many LSES EAs often receive services. Moreover, most existing surveillance systems are technologically outmoded (i.e., at present, most surveillance systems are paper-based; Jackson, 2001).

Use of EHR systems in EAW occupational health surveillance. EHR systems can augment efficient delivery of enhanced-quality, integrated primary care services. For example, a study by Hirshon et al. (2009) to evaluate emergency room visit surveillance, screening, and intervention found that EHR systems improved healthcare professionals' documentation accuracy. With regard to occupational health, use of EHR systems can (a) improve injury recordkeeping, tracking, and treatment; (b) facilitate injury prevention and education efforts (Newman, 1995; Runyan, 2007; Taiwo, Mobo, & Cantley, 2010); and (c) more broadly, help to ameliorate disparities in occupational health and health care for this vulnerable population. To these ends, occupational health researchers and practitioners recommend that occupational health indicators be included in EHR systems as U.S. government meaningful-use criteria (Filius et al., 2008; IOM, 2010; NIOSH, 2008; T. W. Hudson, president of the American College of Occupational Environment Medicine, personal communication, August 4, 2011). In the future, EHR systems might be linked to state and federal occupational injury surveillance systems for reporting of injuries and illnesses. At present, the use of EHR systems for surveillance of EAW

primary care is an important step forward in mitigating the critical problem of workplace injury, illness, and risks.

A growing body of literature now supports (a) adoption of routine screening for occupational health injuries and exposures in routine primary care (Filius et al., 2008; Institute of Medicine [IOM], 2011) and (b) use of electronic health record (EHR) system—computerized repositories of patient data—to improve reporting of occupational injuries (Filius et al., 2008).

Today's surveillance systems may undercount or underreport the number of occupational health exposures (Jackson, 2001). Low SES EAWs often are employed in industries that have limited healthcare benefits, work part-time, or have sporadic employment. The use of EHR may improve occupational injury recordkeeping, tracking, and treatment, present opportunities to improve occupational injury prevention and education. The use of EHR systems—computerized repositories of patient data—may present opportunities to improve injury prevention education, record, track, and treat occupational injuries (Newman, 1995; Runyan, 2007; Taiwo, Mobo, & Cantley, 2010), and decrease disparities in health and health care for this vulnerable population. In the future, an efficient and efficacious data source, EHR systems, might be linked electronically to state and federal occupational injury surveillance systems for reporting of injuries and illnesses.

Electronic records assist primary care providers in delivering efficient, quality and integrated health services. Hirshon and colleagues (2009) examined the use of EHRs to evaluate the efficacy of emergency room visit surveillance, screening, and intervention; they found that electronic documentation systems improved healthcare professionals' documentation accuracy. This type of electronic surveillance system of workers seeking primary care is a beginning step in addressing the critical problem of workplace injury, illness, and risks. Adolescent health

specialists recommend routine occupational health screening and surveillance by primary care providers for young workers (Runyan, 2007). Because low-income EAWs also access services in the community health clinic system, there is an opportunity to screen for ACEs, occupational injuries, and employment experiences using the EHR.

Summary

Workplace injury sustained by emerging adults is a costly public health problem that is largely unexplored: workplace injury sustained by inner-city, low-income emerging adults is even less explored. The purpose of this descriptive, cross-sectional study was to determine factors (e.g., sociodemographics, ACEs, PYD assets, LHRs, and employment experience) that may predict occupational injury for EAWs receiving primary care in an inner-city community health clinic and to describe these factors.

Chapter 2 of this dissertation discusses existing research on factors of influencing EAWs occupational injury in the United States. The focus of this research is on low-income, racially and ethnically diverse EAWs living in urban settings. The literature review is followed by a discussion of the conceptual model that guided the study, assumptions of this study, and definition of terms. The model is based on existing relevant theoretical frameworks. Chapter 3 presents the study's research methodology, and Chapter 4 presents the study's results. Finally, Chapter 5 discusses the study's findings in the context of the current literature. This discussion highlights major points of significance, study limitations, and implications for nursing practice and research, and policy.

Chapter 2

Literature Review

The purpose of this chapter is threefold: first, to review key studies of occupational injury and employment experience of the inner-city EA population; second, to present a conceptual framework that is based on the theories of developmental contextualism and positive youth development that guided the study; and third, to outline the study's assumptions and define key terms used in discussion of the study.

This literature review focuses on research that illuminates the current understanding of occupational injury sustained by low-income youth and EAs. The review covers four subtopics: (a) the nature of youth and EA employment; (b) occupational injury disparities in young workers; (c) determinants of occupational injury; and (d) gaps in the understanding of EAW occupational health, safety education, and supervision and training needs.

Search Strategy

Given the nature and magnitude of the problem of occupational injury and the paucity of information about a LSES EAWs in urban settings, a broad, computerized search was conducted using the PubMed, Cochrane Library, SocAbstracts, PsycInfo, CINAHL, JSTOR, NIOSH, and CDC databases for articles published in English from 1996 to 2013. Search terms included *adolescent, emerging adult, emerging adult worker, teenage, young adult, transitional youth, young worker, urban young worker, work-related injury, minority, minorities, blue collar worker, low wage worker, poor, low socioeconomic status, health disparity, health and safety training, vocational school education, non-Latino-White, African American, Black and Blacks.*

The search yielded over 300 studies with various research designs and methodologies, including investigations that used epidemiological, retrospective, descriptive, cohort, and intervention study designs. The identified subtopics were selected because they were germane to

with the phenomena of occupational injury and employment experience of the inner-city EA population. For the first subtopic, the *nature of youth and emerging adulthood employment*, 20 articles were reviewed. For the second subtopic, *occupational injury disparities in young workers*, 30 articles were reviewed; only one article addressed the relationship between SES and race–ethnicity as a factor in adolescent workers’ work-related injuries; only five articles investigated relationships between race–ethnicity and injury in adolescent workers. Few studies evaluated (a) race–ethnicity injury rate differences among inner-city youth injured on the job, (b) race–ethnicity injury rates and social context, (c) measurement tools used in investigating race–ethnicity injury rates among inner-city youth injured on the job or (d) interventions for reducing injury rates among inner-city youth injured on the job. The subtopic, *determinants of occupational health risk*, yielded over 30 articles and finally, for the area, *gaps in the occupational health safety science as related to EAW occupational health, safety education, and training needs*, approximately 30 scientific articles were examined.

Participant samples in the majority of the articles consisted of adults who were 30 years of age or older or adolescents who were 18 years of age or younger. The studies’ sampling strategies often resulted either in (a) mixed young-adult/adult samples—that is, samples that comprised both young adults (18–29 years) and adults older than 29 years of age or (b) samples that used 21 years of age as the endpoint of adolescence; the use of this endpoint excluded a proportion of EAs (i.e., excluded adults 22–29 years). All of these limitations constrained the generalizability of the study findings to inner-city, low-wage EAWs—many of whom are members of minority racial–ethnic groups, have completed puberty, and are entering adulthood.

Because the samples of the studies identified by the search were not representative of the EA workforce as a whole, the review focuses on literature closely related to the population of

interest. That is, some study samples included both young adults and youth younger than 18 years of age, and other study samples included both young adults and adults older than 29 years. With regard to work-related developmental needs, EAWs are more similar to older adolescents than to adults, and this age-related developmental differential was taken into account when evaluating literature for this review.

Nature of Emerging Adults' Employment

Emerging adult workers. In the United States, paid employment for adolescent and EAs is the cultural norm. For example, in 2010, nearly 17.5 million children, adolescents, and EAs were legally in the workforce—representing 14% of the total workforce (CDC, 2010 & NCIPC, 2010). Currently, it is estimated 70% to 80% of youth work at some point during their high school or college years (Miller et al., 2007; NIOSH, 2003; Rubenstein et al., 1999; Santrock, 2008). During summer months, youth employment rates are even higher. For instance, the BLS reported that in 2010, the number of officially documented employed youth (i.e., youth 16–26 years of age) rose to 18 million—48.9% of America's young people. However, such reports often underestimate actual employment rates, because many youth are employed in family businesses and have unrecorded employment status (Miller et al., 2007; Runyan & Zakocs, 2000). Nationwide, EAWs are employed most commonly in low-wage service or retail industries, and these young workers typically enter the workplace via school-based work preparedness programs, community opportunities, family referrals, vocational schools, or simulated workplace environments (Schulte, Stephenson, Okum, Palassis, & Biddle, 2005; Sudhinaraset & Blum, 2010).

However, not all youth have the same opportunities. EAs from low-income earning families and resource-poor communities often receive low-quality educations and may not have

access to quality job training programs (Adler & Newman, 2002). These EAs are often destined for low-wage jobs that lack potential for upward mobility or specialized skill development (DOL/BLS, 2008). Emerging adult workers with complex and troubled social histories commonly pursue advancement through alternative vocational school-to-work preparedness programs. Many of these youth have histories of early adversity and need remedial education, extensive medical services, and support (A. Cochrane, Executive Director of San Francisco Conservation Corps, personal communication, March 10, 2013). Inner-city community-based vocational and technical schools are designed as catchment programs for low-income EAW populations; the programs are disproportionately populated with minority youth from in resource-deprived communities (Verum, 1993).

Precarious employment. Unlike older adult workers, EAWs move in and out of what is commonly termed *precarious employment*, working predominately in part-time or seasonal jobs (Benavides et al., 2006). Precarious employment is defined as employment that is unstable, insecure, and has low wages; the worker is further unprotected and cannot support a household—all of these employment factors lead to social and economic vulnerability (Kalleburg, 2012). Moreover, unlike younger workers, EAWs often live apart from their families. Because many EAWs live independent of and unsupported by family, earn less, and work fewer hours than do their older adult counterparts, EAWs are more susceptible to adverse vicissitudes of the economy and to poverty than are adult workers (Paul-Mulye et al., 2009). Indeed, approximately 24% of all working EAs 14–25 years of age live in poverty (BLS, 2010).

According to the 2008 *Kaiser Low-Income Coverage and Access Survey*, 40% of low-income EAWs were uninsured, 35% worked full time, 32% lacked a high school diploma, and 16% were students. Of these low-income EAWs, 55% were African Americans or Latino, and

nearly half support a family (Kenny & Pelletier, 2008; Miller et al., 2007; Schwartz & Schwartz, 2008). In the Kaiser Survey, “low-income EAWs” were defined as youth 19 to 29 years with incomes at or below 200% of the federal poverty level (Kenny & Pelletier, 2008; Miller et al., 2007; Schwartz & Schwartz, 2008). A fortunate result of the passage of the American Affordable Care Act (ACA) in 2012 is that young adults now have access to insurance. This public and private insurance legislation has increased coverage among EAs 19 to 25 years old by approximately 6.7% as compared to a control group of 26 to 34 year olds (Sommers, Buchmueller, Decker, Carey, & Kronick, 2012). Still, EAs remain the largest uninsured age group in both the United States and in California at 31% with only a 4% decrease since the passage of ACA in 2012 (Mendes, 2012). Moreover, Henry J. Kaiser Family Foundation (2013) reports in that of the 30 million emerging adults 19–25 years of age in United States, only 8.2 million or 27% are insured.

Work and development. Employment can provide EAWs with opportunities to develop essential employment skills, enhance self-esteem, earn needed income, and access new experiences and opportunities (Linker et al., 2005; Mortimer et al., 1996; Rubenstein et al., 1999; Santrock, 2008). Employment for EAWs is not an unalloyed boon, however. As noted in Chapter 1, work for this age group can also have risks and dangers. Indeed, the entrance of a young worker into the workforce poses numerous concerns regarding her or his morbidity and mortality. For example, Davila et al., (2010) have reported that in a sample EAWs from LSES families, youth who were employed had lower mortality risk from unintended accidents than did youth who were not employed (after controlling for gender, race, and education). In the study, the researchers reported that African American males were at a significantly increased risk for mortality from all causes except suicide, motor vehicle crashes, and work compared to non-

Latino Whites and other racial–ethnic minority males. These findings are in contrast with others that report contrary results; therefore, additional research with EAWs from diverse backgrounds is needed.

Emerging adults themselves perceive that being younger and having lower income is associated with poorer health, injury, illness, and death from all causes—including from work (Cubbin & Smith, 2002; Karmaker & Breslin, 2008; Murray, 2003; Schultz et al., 2005). These findings, however, are not consistent for inner-city African American males with lower educational attainment.

Young Worker Racial–Ethnic Occupational Injury Disparities

Twelve epidemiological studies of EA–young adult occupational injuries have reported that the incidence and prevalence of work-related injury and death are not uniform throughout all sectors of the workforce (CDC, 2010 & NCIPC, 2010; Miller et al., 2007; Runyan & Zakocs, 2000). Occupational health injury risks vary according to age, race, ethnicity, language preference, financial compensation, and type and status of occupation. Each of these employment and worker variables has associated ramifications for work-related morbidity and mortality. For example, LSES non-Whites—and, in particular, non-White youth and non-White EAs—are beset by disproportionately higher rates of occupational illness, chronic disease, and impairment (Buchanan et al., 2010; Davis et al., 2000). The data are complex and produce an ambiguous picture regarding EAWs (Friedman & Forst, 2008).

Tak, Alterman, Baron, and Calvert (2010) investigated ethnic–racial differences in work-related injury rates among nursing assistants in nursing homes ($n = 3,017$). The study sample's ethnic and racial composition was non-Latino White (46.9%), African American (37%), Latino (9.4%), and other racial–ethnic groups (6.6%); 17% of the sample were 18 to 24 years old. In

this study, non-Latino Whites (44%) were most likely to report work-related injury, followed by Latinos (35%) and African Americans (25%). Twenty-five percent of the study's participants reported having less than 12th-grade education, and 29% reported that they lacked health insurance. One in three nursing assistants reported having an annual income of less than \$20,000. In comparison with non-Latino White workers, African American workers were 1.9 times more likely to report low incomes. Members of non-European/non-White ethnic-racial groups were less likely to receive a raise than were their non-Latino White counterparts (i.e., 58% vs. 64%, respectively) and were more likely to have a second job. Overall, a third of the sample reported having at least one work-related injury within the year preceding survey completion. Specific injuries included wounds (60%); black eyes and other bruises (27%); back injuries (19%); human bites (17%); and muscle strains (14%). Conceivably, these work-related injuries may have been underreported—as a result of worker' economic concerns and lack of health insurance. In addition, the sample did not include part-time or casual workers. Friedman and Forst (2008) conducted one of the first studies to evaluate racial-ethnic disparities in work-related injuries among workers 15–24 years of age. The researchers reported that racial and ethnic minority youth worked longer hours (African American youth, 25%; Latino youth, 21%) than did non-Latino White youth. Overall, young non-White workers were significantly more likely to report an injury. For example, African American youth reported a larger number of injuries ($AOR = 3.07$, 95% CI [1.86, 5.04]), and Latino youth reported more severe injuries ($AOR = 2.27$, 95% CI [1.27, 4.05]).

Zierold and Anderson (2006) investigated differences in work-related injuries and job characteristics among 6,810 non-Latino White, African American, and Latino high school students. The investigators collected data pertaining to SES, racial-ethnicity status, “near miss”

incidents, co-worker injury, and performance of hazardous tasks. Sixty-three percent of participants reported having safety training, and 72% reported having been informed of worker rights. Half of the sample was employed, and 15% of these employed study participants reported a work-related injury. Non-African American ($AOR = 1.88$) and Latino ($AOR = 1.81$) teenage workers were more likely to report an injury than were non-Latino Whites. In addition, African American ($AOR = 3.07$) and Latino ($AOR = 2.27$) teenage workers were more likely to report a serious injury requiring them to miss 3 or more days of work than were non-Latino Whites. Overall, 7% of workers reported being asked to perform a dangerous task at work, and 12% reported “near-miss” incidents.

Gradients in SES, whether assessed by income, education, or occupation, are correlated with adverse injury and illness outcomes (Adler et al., 1994). Low-wage earners consistently have the highest on-the-job morbidity and mortality rates from all causes (Adler & Newman, 2002; Benavides et al., 2006; Brindis, Morreale, & English, 2003; Cubbin & Smith, 2002; Flakerud & Wehtje-Winslow, 2010; Herbert & Landrigan, 2000; Rosner, 2000). Elevated occupational injury and health risk vulnerability is linked to being lower on the SES ladder, having employment with little prestige or fewer rewards, and working in jobs that present increased occupational risk (Adler & Newman, 2002; Gregorio, Walsh, & Paturzo, 1997; Krause, Scherzer, & Rugulies, 2005).

Young workers are less likely to receive appropriate medical care for injuries or to report an injury (Dembe, Savageau, Amick, & Banks, 2005). These findings are a matter of concern because many of these workers live with incomplete social and health safety nets and, as a consequence, are at increased risk for failure to thrive. Frumkin, Williamson, Magid, Holmes, and Grisso (1999) characterized occupational injuries in a sample from a poor inner-city

population ($n = 335$) using demographics, type of injury, medical consequences, and financial consequences. The researchers reported on 107 participants, 49 of whom were 18–30 years old. In comparison with non-injured respondents, injured respondents were more likely to hold relatively unskilled jobs in service and construction. Eighty-two percent of the young workers had been injured during a regular work shift. Seventeen percent reported having a work injury the previous year, 15% missed more than a month of work, and 39% reported persistent health problems as a result of injuries sustained on the job. In this study, only one in three workers applied for workers' compensation.

Low-wage occupations. Research indicates that employment in work settings classified as *hazardous, inadequate compensation, and working too frequently or not frequently enough* may all potentially cause devastating effects on EAW health (Breslin et al., 2007; Cubbin, LeClere, & Smith, 2000; Gregorio et al., 1997; Herbert & Landrigan, 2000; International Labor Union, 1999; NIOSH, 2003). Many jobs with low financial compensation and/or benefits expose workers to increased physical and psychosocial occupational hazards (Rosner, 2000; Wilkins & Mackenzie, 2007). Low-wage workers (a) are at risk for decreased access and consistently underutilize high-quality medical services, (b) are frequently afraid to report illnesses and injuries, (c) are often employed in unsafe workplaces and (d) often experience frequent job loss (O'Connor, Loomis, Runyan, Abboud dal Santao, & Schulman, 2005).

Many of the jobs available in the service, retail, restaurant, and manufacturing industries are low-prestige/low-reward positions that are typically held by the working poor (Herbert & Landrigan, 2000; Mardis & Pratt, 2003; Murray, 2003) and are common employment entry points for EAWs. Such jobs also have elevated occupational risks. For example in 2008, 71% of

adults working in service industries and 19% of workers employed in manufacturing industries reported having a work-related injury (BLS, 2008).

Determinants of Occupational Injury

Developmental, social, and organizational determinants may exacerbate occupational health risks for EAWs, yet these factors have not been adequately investigated (Breslin & Smith, 2010). For EAWs, developmental and social maturation involves progressive interaction between biological processes and multiple contexts (e.g., environmental and ACE-related). The view that biological factors (the most proximal contributor) and context (the most distal contributor) interact with and contribute to work-related injury is a compelling framework for investigating occupational health risk.

Developmental determinants. Contemporary human developmentalists concur that the transition to adulthood has lengthened as a consequence of the fluidity of social and cultural environments (Arnett, 2000, 2006). Arnett originated the current view of *emerging adulthood* (18–30 years) as a transitional stage. According to Arnett, emerging adulthood is distinguished by five characteristics: (a) identity exploration in work and love, (b) instability, (c) self-focus, (d) a feeling of being “in between” childhood and adulthood, and (e) the age of possibilities and a time of life transformation. During this crucial developmental transition, EAs typically choose career paths, answer identity questions, select lifestyles, and learn new skills (Schulenberg & Zarett, 2006).

Unlike the myriad biological and developmental changes that characterize childhood and the pubertal years, emerging adulthood is better characterized by age-related changes in social, cultural, and experiential dimensions that are inherent in their social development (Arnett, 2000; Santrock, 2008). For EAs, social development occurs in multiple, dynamic, changing contexts

that influence EAs' developmental trajectory. Although complex cognitive functions such as critical thinking improve from earlier adolescent years, EAs remain vulnerable to their emotions and social contexts and are easily influenced by their peers as the brain continues to myelinate and mature (Dahl, 2004).

As EAWs mature, they enter a period of amplified developmental sensitivity (Casey, Jones, & Hare, 2008; Steinberg, 2010). This period of maturation entails important neurobiopsychosocial changes that contribute to the excessive injury rates sustained by this group (Goroll & Mulley, 2009; Santrock, 2008). The prefrontal cortex of the brain—the area that controls complex reasoning, decision-making, and self-control—is still biologically immature and does not complete development until the individual is approximately 25 years old (Goroll & Mulley, 2009). Prefrontal cortex immaturity may contribute to EAWs' having challenges with emotional regulation, impulse control, novelty and risk-seeking behaviors, and the propensity to seek peer-directed interactions and acceptance—factors that increase the potential for workplace injury (Doremus-Fitzwater, Varlinskaya, & Spear, 2010; Rowan, 2000; Shute, 2011). Although complex thinking and critical thinking improve during EA development, these young adults are easily influenced by activities—sometimes dangerous—that elicit excitement and thrill as their brains mature (Dahl, 2004).

For EAWs, the transition from complete dependence on family support (typically associated with childhood) to growing financial independence (typically associated with adulthood) is a developmental milestone. For many EAWs, this transition is characterized by feelings of intimidation and insecurity, increased desire for acceptance, and fear of job loss (Santrock, 2008). Emerging adult workers' intensified emotions help to explain their reluctance (and, sometimes, failure) to report or fail to report work-related injuries (Breslin et al., 2007).

Social context determinants. For EAs, the social context of their development includes the settings, circumstances, and timing of when and where development occurs. These contexts themselves are defined by the social and cultural domains, such as, race/ethnicity, language, religion, community, and family of EA's development (Arnett, 2000; Conger & Donnellan, 2007; Huston & Bentley, 2010; Lerner & Castellino, 2002; Muuss, 1996; Santrock, 2008; Smetena, Campione-Barr, & Metzger, 2006). EAWs' contextual domains are influenced by historical, economic, environmental contextual factors (Lerner, 2002; Santrock, 2008).

Social context factors for EAs include sociopolitical developments, work, parents, family, peers, as well as school and community (Huston & Bentley, 2010). All of these factors are key determinants in long-term biopsychosocial health outcomes. Social factors can have positive and/or negative outcomes for EAWs (Conger & Donnellan, 2007; Henrich, 2006; Huston & Bentley, 2010; Smetena et al., 2006).

Adverse childhood experiences. Researchers have established that the timing and duration of concurrent ACEs interact reciprocally between the individual and context.

ACEs: Definition and types. Adverse childhood experiences are broadly defined as negative events or stressors that are associated with family or community dysfunction (Dong et al., 2004). Examples of ACEs are poverty, violence (personal, environmental, or witnessed), and maltreatment. The types of ACEs are various: experience of LSES, poverty, (Shonkoff, Boyce, & McEwen, 2009), or material deprivation, violence and maltreatment (i.e., personal, vicarious, or witnessed trauma in the community or environment); membership in single-parent family structures (Dong et al., 2004); residence in resource-poor communities with low levels of self-efficacy; low educational achievement and negative school experiences (Geenen & Powers,

2007); lack of intellectual stimulation; and minority racial or ethnic group status, including immigrant status (Dong et al., 2004; Schulenberg & Zarett, 2006).

Consequences of ACEs. The consequence of living in the social context of poverty and adversity affects every aspect of an individual's development throughout the course of one's life, including long-term occupational health and safety outcomes (Gillen et al., 2007; Huston & Bentley, 2010). Mounting evidence indicates that having a history of ACEs is associated with greater susceptibility to lifelong social, physical and mental health problems and to their negative sequelae (Corso et al., 2006; Dong et al., 2004).

Neurological effects of ACEs. A growing body of evidence from neurodevelopment and genomic expression research also indicates that the effects of are cumulative (Dahl, 2004). In addition, these social stressors of this nature have a damaging impact on the organizational and functional capacities of the human brain (Anda et al., 2006; Brown et al., 2009); recurrent and chronic exposure to stressors eventuates in formation of maladaptive neural pathways that, when activated, generate dysfunctional perception and behavior (Anda et al., 2004). Indeed, some researchers hypothesize that these stress-related changes in the brain's circuitry (and in the hormonal regulation systems that modulate the body's stress responses) can be irreversible (Dahl, 2004).

Specific consequences of ACEs. From a psychological perspective, ACEs can profoundly impede development of cognitive, social, and emotional competencies (such as learning, coping, and stability—all of which are needed for transition to adulthood and successful employment experience (Anda et al., 2006; Corso et al., 2006; Dong et al., 2004; Nesman, 2007). Exposure to ACEs profoundly affects EAs' mental health (Mance, Mendelson, Bryd, Jones, & Tandom, 2010) and is associated with behavioral health problems and delayed

social development. Not surprisingly, EAWs with ACEs may have difficulty in completing their educations, securing and retaining employment (in particular, in higher-status occupations), and remaining safe in their workplace and communities (Holness et al., 2004; Mercy et al. 2007; Redwood et al., 2010). As a result, LSES EAWs may have increased likelihood of poor occupational health outcomes (i.e., injury, exposure to hazards, or death) and impaired overall quality of life (Adler et al., 1994).

Lifelong consequences of ACEs. Moreover, the adverse effects of ACEs can be long-term. Mounting evidence indicates that having a history of ACEs is associated with greater susceptibility to persistent social, physical, and mental health problems and to their negative sequelae (Dong et al., 2004; Anda et al., 2006; Corso et al., 2006). Indeed, living in poverty and adversity may affect every aspect of an individual's development throughout the course of one's life, including lifelong occupational health and safety outcomes (Gillen et al., 2007; Huston & Bentley, 2010).

Incidence of ACEs in an adult sample. Social stress research on adults indicates that individuals who have had adverse experience in childhood have often been exposed to multiple types of ACEs. In a multiracial sample of adults ($N = 6,107$) assessed by Dube et al. (2010), 46% had had at least one childhood adversity (e.g., psychological, physical, and sexual abuse; household mental illness; substance abuse; domestic violence, and incarceration of a parent). In this sample, individuals who were socioeconomically disadvantaged (i.e., whose incomes were less than \$25,000 annually) were more likely to have ACEs. Respondents with the highest ACE scores (i.e., individuals with multiple ACEs) were more likely to report household dysfunction and childhood abuse, to have lower levels of education, to have greater difficulty in securing and retaining employment, and to be socioeconomically disadvantaged. This concomitance of ACEs

is important for healthcare professionals and educators to know, because research has found that for individuals with multiple ACEs, the timing of the experiences; i.e. early childhood and duration of the ACEs interact reciprocally between the individual and context and need different types of intervention.

Incidence of ACEs in inner-city EA population. EAs living in inner-city urban environments are often exposed to more community and environmental adversity than EAs living in more affluent communities. According to Fitzpatrick and Boldizar (1993), 80% of EAs in urban inner cities report one or more of the following ACEs or experiences: (a) having witnessed a violent crime; (b) exposure to drugs, alcohol abuse, and tobacco use; (c) having a delinquent peer; (d) poor family functioning; (e) low academic success; and (f) poverty. Schilling and colleagues (2007) investigated the ACEs of a sample of racially and economically diverse students who were high school seniors. The researchers found that 27% of these students reported a parental separation; 14% of respondents reported (a) having an unemployed parent, (b) having a parent with drug or alcohol problem, or (c) witnessing an injury or murder. Twelve percent of females reported sexual abuse, and 10.8% of males reported physical abuse, with one in four of the males reporting that he had witnessed a violent crime. Fifteen percent of minority respondents reported being threatened, held captive, or kidnapped. Not surprisingly, in this study sample, the participants reported increases in symptoms of depression ($\beta = .158$), drug use ($\beta = .165$), and antisocial behaviors ($\beta = .168$). Finally, the consensus of researchers is that depressive symptoms, drug use, and antisocial behaviors—all of which may be the result of exposure to ACEs—have direct ramifications for workplace health, safety, and sustained employability (Schilling et al., 2007).

Fortunately, humans are diverse and forever changing. The plasticity of human development means that the lifetime outcomes for EAs are not universally bleak. Masten et al. (2006) have reported that LSES EAWs with ACEs who also have certain optimistic and resilient characteristics or developmental assets often have normal, healthy, pro-social transitions to adulthood. For example, these investigators found that the experience of poverty was less severe for LSES EAWs who were of above-average intelligence, more autonomous, received higher quality parenting, had support from adults, or developed competence in planning. Similarly, EAWs with ACEs who had social support were also more likely to have positive transitions to adulthood.

Family and significant others. Families, peers, and employers play a pivotal role in the lives of EAWs. The EAWs' social network and alliances contribute to their occupational health (Arnett, 2006). For some EAs, relationships with parents (Baumen et al., 2001; Youngblade et al., 2007), extended family, natural mentors (Kogan, Brody, & Chen, 2011), and peers (Westaby & Lowe, 2005) have strong influences on their work and risk-taking behaviors (Schuster et al., 2001). For many EAs, parental relationships strongly influence EAs' psychological and social adjustment (Weisz & Hawley, 2002), and manifestations of this adjustment appear in their work lives. The researchers Weisz and Hawley also report that when parents of EAs work in safe jobs and practice workplace safety, their offspring are more likely to practice workplace safety. Similarly, when EAs' parents take pride in and enjoy jobs that they see as rewarding, their EA offspring are more likely to hold these same attitudes about work (Neufeld, Wright, & Gaut, 2002; Zimmer-Gembeck & Mortimer, 2006).

Hindelang, Dwyer, and Leeming (2001) investigated the role of parental involvement, adolescent risk-taking behaviors and ACEs. The researchers reported that increased positive

general parental involvement resulted in a 20% reduction in youth substance abuse rates and 32% of youth charged with a violent offence also reported a history of ACEs—specifically, parental neglect. The researchers concluded that a reduction in adolescent engagement in risk-taking behaviors was directly related to the quality and amount of parental engagement and monitoring.

As EAs mature and become more independent, their parental relationships change. For example, EAs often make career and lifestyle decisions without guidance from parents. During this time, social relationships with peers and co-workers are paramount. These social relationships can exert important influences that can affect EA work injury risk factors in positive or negative ways (Arnett, 2007).

Organizational and individual determinants. The term *organizational factors* refer to employment concerns such as job training, safety training, and perceived quality of employee supervision. Notably, some researchers contend that organizational factors affect workplace health outcomes even more than do developmental and social factors (Breslin et al., 2007). Understanding the importance of these organizational factors is necessary for developing primary prevention strategies that reduce morbidity and mortality in the workplace (Fineran & Gruber, 2009; Flakerud & Wehtje-Winslow, 2010).

Need for health, work, and safety training and for supervision. Smith and Mustard (2007) have reported that inexperienced workers and EAWs require reiterative education pertaining to health, work, and safety; also, this education must be provided by knowledgeable supervisors who are available for continuing support when required. Inadequate supervision with poor safety surveillance and organizational enforcement (Breslin et al., 2007; Emery & Cooper, 1998) contributes substantially to young workers' risk for injury. EAWs can have

difficulty in understanding how to do their jobs (including how to do their jobs safely) and in identifying and reporting workplace hazards even after receiving job training (Benavides et al., 2006; Runyan & Zakocs, 2000). Accordingly, workplace supervision and a culture of safety are necessary for this worker population.

Distinguishing hazardous tasks from safe tasks; safety training. Vladutiu and colleagues (2010) explored (a) whether young workers 14 to 18 years old could distinguish hazardous tasks from safe tasks, and (b) whether safety training would improve young workers' ability to recognize that tasks were hazardous. Sixty-six percent of the retail and service industry workers who reported having safety training were also performing dangerous tasks at work, but only 13% reported that they considered at least one of their work duties to be hazardous. Young workers performing dangerous tasks were least likely to recognize that these tasks were hazardous. For example, youth listed the following potentially dangerous tasks as being non-hazardous: using machinery and power equipment (1.6%), using chemicals (13%), operating cutting tools (1.5%), and handling blood (12.3%). Those who receive safety training did not differ in ability to recognize work hazards from those who had no safety training.

Inadequacy of small business safety training. Many EAWs are employed by small businesses that have limited resources. Moreover, owners of these businesses may lack knowledge regarding workplace health and safety requirements (Boehmer et al., 2009) or EAWs' particular developmental needs. As a result of small businesses' lack of organizational resources and managerial knowledge, the safety training, personal protective equipment, and workplace support provided to young employees are in many cases inadequate (Hodgins et al., 2010; Runyan, Bowling, Schulman, & Scavo Gallagher, 2005; Runyan et al., 2008; Woolf & Flynn, 2000). De Witte, Verhofstadt, and Omeij (2007) reported that EAWs who were engaged in their

first job experience had increased job satisfaction if they participated in “active learning” (i.e., physically performing the task or role playing).

Employment characteristics for EAWs. The types of jobs that EAWs are hired for are precarious, low paying and often associated with on the job training. Many EAWs work concurrently for multiple employers. EAWs’ jobs tend to be part-time or seasonal informal positions and these workers could be assigned many different tasks during the workday. Part-time workers receive less job training and safety education than do full-time workers (Runyan et al., 2008; Smith & Mustard, 2007). Because EAWs are inexperienced, they have knowledge deficits pertaining to issues of workplace hazards, job training, and workers’ rights (Arnett, 2000; Seidel et al., 1999).

Worker perceptions and social influences. Over the past several years, occupational health researchers have studied worker perceptions (e.g., perceptions pertaining to safety, general and work-related beliefs, and self-efficacy) and social influences in order to assess the influences of these factors on safety behaviors (Cavazza & Serpe, 2009). Zakocs and colleagues (1998) investigated young retail workers’ perceptions of their work environment and found that many young workers considered their work environments unsafe, were fearful of assaults, felt rushed and powerless at work, and felt they were receiving inadequate training from managers. Furthermore, young workers whose peer co-workers were risk takers in the workplace were themselves more likely to take work safety risks ($p < .001$). In this study, young workers also viewed their managers as being insensitive to workplace safety issues. Ninety-five percent of the sample wanted safety training, yet only 55% of those working in retail stores reported that they received safety training.

Perceptions regarding occupational health risks. Breslin et al. (2007) conducted focus groups with 58 urban young workers (16–18 years old) to learn about their perceptions of occupational health risks in the workplace. The focus groups revealed that although EAWs were able to identify existing and potential hazards at work, the young workers' disclosures of safety concerns were “delegitimized” by supervisors who considered their EA employees' concerns to be trivial. Breslin and colleagues' findings contrast with those of Vladutiu and colleagues (2010), who reported that young workers employed in the retail and service industries were unable to identify existing and potential hazards at work.

Leadership organizational culture and safety climate. Employees' workplace behavior attitudes about workplace safety are to a substantial degree determined by their organization's leadership and by the organizational culture established by these leaders (Gillen et al., 2004). A study by Westaby and Lowe (2005) of young workers 12 to 21 years of age found that those whose supervisors were explicit about reducing unsafe risk-taking behaviors were more likely to reduce their risk-taking behaviors ($p < .001$). Similarly, a study by Barling, Loughlin, and Kelloway (2002) found that among young restaurant workers ($N=164$; 14–24 years of age), safety consciousness and perceptions of their organizations' culture regarding safety were strongly associated with safety-specific transformational leadership styles of management ($p < .01$) and were predicted by the number of safety trainings provided by company leadership ($p < .01$). In addition, these trainings were inversely correlated with injury rates ($p < .01$). The investigators found that young workers whose supervisors were explicit about reducing risk-taking behaviors were more likely to reduce their risk-taking behaviors.

In addition, findings from the aforementioned investigations of occupational health regulatory, developmental, and organizational determinants also substantiate the conclusion that

leadership and organizations can promote and induce safe behavior on the part of workers. All of these factors, organizational culture, leadership, employee beliefs and attitudes about work and safety affect workplace safety and health outcomes. Regardless of their age, workers appreciate safety reminders and having organizational leaders and managers reflect proactive safety practices (Barling et al., 2002). Although these occupational health determinant studies have the limitations of cross-sectional and descriptive research, the investigations' findings lay the foundation for understanding young workers' employment environments. It is possible that issues that are relevant for young workers (those 17 years or less) are also relevant for EAWs.

Finally, a number of questions are yet unanswered in the occupational health research literature pertaining to EAWs. Much of the occupational health research has focused on adults (Castillo & Malit, 1997; Davis et al., 2000) or on youth under 18 years. Adult worker research has examined sources, types, and mechanisms of injuries, specific work hazards, job tasks, injury prevention and the standards for treatment and reporting of injuries (Krause et al., 2005; Loomis & Richardson, 1998; Murray, 2003; Schultz et al., 2005)—factors that have not been fully examined with regard to the vulnerable subpopulations of youth and EAWs (Davila et al., 2010; Zierold et al., 2011)—especially inner-city LSES, non-White young people. In addition, to the investigator's knowledge, no investigations have examined EAW work-related injury or the employment experiences of EAs who access health services in an urban primary care setting.

Summary and Gaps in Occupational Health

EA workplace injury is a costly public health and social inequity problem that is largely unexplored. Millions of EAs who enter the workforce each year encounter the challenges that confront most novice learners independent of age; in addition, these young workers contend with adolescent biological and social transformation, and context and a risk of occupational injury that

is higher than that of other age groups. Too often, EAs are employed in hazardous job with safety training that is inconsistent—often due to part-time employment status. Moreover, much of the safety training does not appear to reduce injury in the workplace. As a result, each year, thousands of EAs incur work-related injuries.

Although for most EAs, the transition to adulthood is experienced as an exciting and unique period of positive growth, for the subpopulation of LSES EAs in city urban environments, this transition is often problematic. Unfortunately, even less is known about this group's transitions to adulthood and work experience than is known about the transitions for EAs as a whole. Certainly, the current albeit limited available literature indicates that poor youth of color typically and disproportionately work without adequate supervision and training, in precarious or illegal jobs, and for extended hours. As a result, these youth sustain significant injury and suffer humiliation at work (McLaughlin, Uggen, & Blackstone, 2008). On top of these basic issues, the current prolonged economic downturn may exacerbate employment-related risks for EAs as they struggle to transition to adulthood.

Adverse social context and suboptimal employment experience increase the likelihood that EAs will sustain occupational injury in the workplace. Social context can be an asset or an impediment to a healthy transition from adolescence to adulthood. School-based work programs, employers, peers, parents, families, health care providers, and the community all have important roles in protecting the nation's youth. Social factors can potentially influence worker occupational health, safety, and risk of long-term injury and disability. Parents and EAWs—who often are misinformed about occupational injury risks—require education. The pathway to risk of injury and protection in the workplace may be influenced by ACEs, social support, safety knowledge, self-efficacy, attitudes, behaviors, and perception of risk.

Occupational health risk factors vary greatly across the range of occupations. EAWs' work responsibilities, income level, living circumstance, and social contexts can potentially exert devastating effects on their occupational health. Absent from the extant literature on EAW work experience are investigations of occupational health and work-related injury prevention interventions aimed at reducing occupational morbidity and mortality among LSES EAs. In particular, few studies have investigated EAWs' developmental assets and individual life experiences in relation to occupational health. More research is needed to inform primary, secondary, and tertiary interventions that will promote actualization of EAW developmental assets and acknowledge life experience and ACEs while reducing injury rates. This research agenda can potentially engage researchers, healthcare providers, and employers in identifying and developing interventions that will protect LSES EAWs in the workplace and reduce occupational morbidity and mortality disparities.

Conceptual Framework

Theory is used to express unique and unifying ideas about phenomena for the purposes of describing, explaining, predicting, controlling, and guiding scientific inquiry (Meleis, 2007; Rodgers, 2005; Walker & Avant, 2005). To date, the use of theoretical frameworks in examining factors that influence occupational health and the morbidity and mortality of EAWs has been limited. Research has identified multiple factors that affect occupational injury: economic status, social environment, ACEs, developmental assets, culture, and race–ethnicity; but none of these factors have been adequately investigated (Adler et al., 1994; Adler & Newman, 2002; Anda et al., 2006; Arnett, 2003).

Low-income EAWs who (a) are members of racial and ethnic minorities (Delp, Brown, & Domenzain, 2005; Miller & Salazar, 2004; West, De Castro, & Fitzgerald, 2005), (b) have

histories of ACEs (Craig & Hodson, 2000; Dong et al., 2004; Schilling et al., 2007), and (c) live in inner-city environments comprise a unique subpopulation that is particularly vulnerable and that is at increased risk for workplace injury (Frumkin, Walker, & Friedman-Jimenez, 1999). Unfortunately, few studies have applied conceptual and theoretical models to better understand this subpopulation with regard to occupational health safety.

The study described in this paper integrates developmental contextualism and PYD in a conceptual framework that enhances understanding of urban LSES EAWs' occupational health and safety risks and their developmental needs. The following discussion introduces developmental contextualism theory, the PYD perspective, and an integrated framework for understanding the contexts that influence EAs as they transition to employment.

Developmental Contextualism Theory

Contemporary developmental contextualism (DC) is a macro-theory that belongs to a family of general meta-theoretical orientations known as *human developmental science* (Overton, 2007). Human developmental science is a multidisciplinary field that describes development throughout the human lifespan (Lerner, 2007). DC theory is complex. As a metatheoretical, multifaceted, layered construct (Muuss, 1996), DC integrated the diversity of human beings, the plasticity of development and social context (Featherman & Lerner, 1985; Overton, 2007; Super & Harkness, 2003).

Historically, psychological theory, research, and intervention strategies focused solely on the individual. DC theory is a major shift from the individualistic perspective of Western culture to one that is more collective (Peterson, 1995). In this perspective, an individual's biological characteristics are held to be dynamically embedded in their context; accordingly, biological

characteristics and context mutually influence each other. DC theory's reciprocal interaction view contrasts with the deterministic and reductionist nature-versus-nurture view (Lerner, 1992).

Pepper, a twentieth-century American philosopher, first conceptualized the term *contextualism* as one of the four root metaphors in his hypothesis of the nature of reality (Pepper & Harrell, 1998; Super & Harkness, 2003). During the 1970s, Lerner and others began applying Pepper's philosophical construct of contextualism to theories of human development (Muuss, 1996; Sorell, SoRelle-Minor, & Pausé, 2007). Lerner and colleagues subsequently modified the three paradigmatic worldviews of DC theory (Featherman & Lerner, 1985; Lerner, Hultsch, & Dixon, 1983). The first worldview modification evolved from organicistic and mechanistic paradigms. *Organicism* is associated with the cognitive developmental theories of Piaget, and *mechanism* is associated with the behavioral analytical theories of Bijou and Baer (Lerner, 1992). In both of these paradigms, behavior and behavior change are held to be predictable. These paradigms are rejected by developmentalists as the sole plausible explanations for human development. Most developmentalists consider organicistic and mechanistic paradigms as reductionist and decontextualized (Muuss, 1996). According to DC theory, individuals are embedded in their biopsychosocial and environmental context (Lerner, 1992).

The second worldview modification considers the lifespan and the multidisciplinary perspective of human development. This second worldview hypothesizes that development occurs over the entire life of an individual and, as such, change and development (i.e., or *experiential plasticity*) are always possible (Lerner & Castellino, 2002). The third worldview modification is the nature–nurture (i.e., organism–environment) construct. The synthesis of these three worldviews yields a conceptualization of human developmental organizational philosophy

that blends cognitive, social, and psychological sciences (Lerner et al., 1983); this concept is known as *contemporary DC*.

In addition, three important areas of developmentalist thought contributed to Lerner's continued expansion and re-conceptualization of DC. The first area, comparative psychology, hypothesizes that biological maturational changes occur with modifying influences in every psychosocial setting (Lerner et al., 1983). Furthermore, the relationships that exist among biological, psychological, and social processes are bidirectional, dynamic interactions and are responsible for human development (Lerner & Kauffman, 1985). The second area pertains to the life-span view of human development. The lifespan view stresses that range of potential human development is a continuum and that the process of development terminates only at death (Nesselroade, Schaie, & Baltes, 1972). The third area is Bronfenbrenner's ecological approach, a theoretical perspective that emphasizes the complex reciprocity and interdependence between developing individuals and their ecological systems or contextual matrices (Muuss, 1996).

Developmental contextualism theory does not prescribe specific developmental rules, stages, or milestones. Lerner presupposes no universal generalizations; instead, the focus of DC theory is on the continuously changing individual—that is, on the “plasticity” of human nature (Lerner & Kauffman, 1985; MacPhee, Kreutzer, & Fritz, 1994; Muuss, 1996). In Lerner's view of DC, *plasticity* refers to systematic changes in structure and/or function and is relative to the situation or context and is not “absolute.” Plasticity, individuality, and diversity account for the uniqueness and interconnections between individual and context.

Plasticity is an essential inherent attribute of humans. As a concept, plasticity is operationalized through a process of continuously changing and interacting biological, psychological, behavioral, ecological, and contextual factors that influence the process (Dahl,

2004; Lerner et al., 1983; Lerner & Kauffman, 1985). From Lerner and Castellino (2002) Contemporary Developmental Theory and Adolescence: Developmental Systems and Applied Developmental Science, p. 127; Figure 1 depicts the interconnectedness, bi-directionality, and multiple complexities of human development and context.

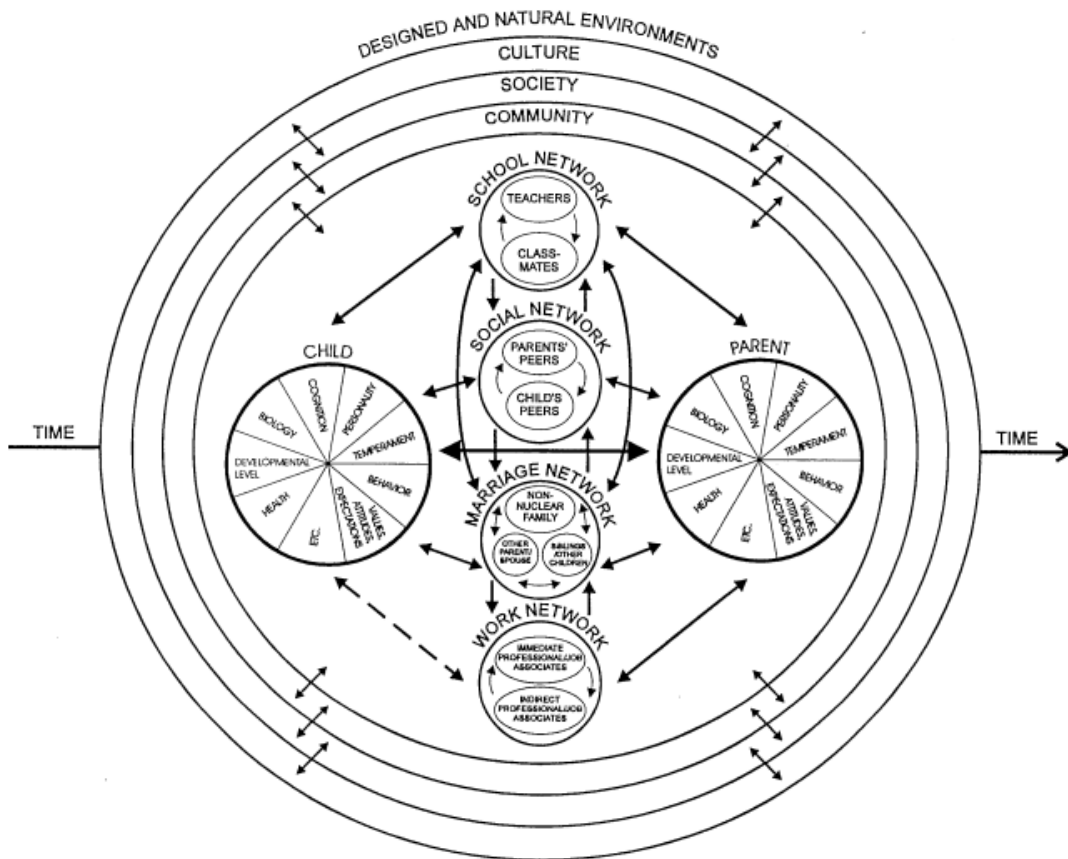


Figure 1. Lerner's Developmental Contextualism Model.

Human development and change are derived from the dynamic interaction between the influences of both nature and nurture (Lerner & Castellino, 2002). Theorists argue that human beings are active participants who interact with their active environments; in these interactions, the integration and fusion of person, context, and environment are fundamental aspects of the developmental processes (Lerner, 2002; Lerner, 2007; Muuss, 1996; Weisz & Hawley, 2002). These interactions that propel human development are precipitated by the integration of three

influences—genetic (nature), biological (organismic), and contextual (nurture). Moreover, because individuals are at the center of reciprocal dynamic interrelations and interactions, individuals are the architects and products of their own development (Lerner, 1995)—a perspective that renders DC theory an optimistic view of development.

Developmental contextualism is frequently used as a theoretical framework for investigating issues of adolescence largely because of the intuitive appeal of the theory. Youth and EAs are understood as rapidly developing, relatively malleable “products” of environment, heredity, and time. The DC framework subsumes the multiple factors that dynamically interact to influence youths’ lived experience and development; this existence and development are embedded within a given context through time.

Positive Youth Development Perspective

The PYD perspective stems from DC theory (Gore et al., 2003; Lerner, Almerigi, Theokas, & Lerner, 2005). Positive youth development’s origins are inductive and are rooted in the diverse multidisciplinary sciences of comparative psychology, sociology, evolutionary biology, bio-ecology, life span, community psychology, and contemporary developmental systems theory (Lerner et al., 2005; National Research Council–Institute of Medicine Board on Children, Youth and Families Workshop on the Science of Adolescence & Lerner, 2005; Santrock, 2008). No single individual can be credited with developing the PYD perspective. Many researchers from multiple disciplines have contributed to the development of the evolving model. This paper uses Lerner’s (2004) definition of PYD: “all youth experiencing an ideal and thriving adolescence as a result of intentional efforts that provide opportunities to enhance their skills and their abilities into adulthood” (2004, p. 4).

Adolescence is marked by integrated and mutually reinforcing contributions to self, family, community, and institutions of civil society. By fusing multiple ideologies, proponents of PYD focus on resolving the nature vs. nurture controversy in science. These proponents have applied an integrative and relational perspective to genetic and contextual influences on human development (Lerner, 1992; Overton, 2007).

As with DC theory, the PYD perspective adopts a unified view of environment–person as the unit of analysis for study. PYD holds that contextual relations are paramount and involve genetics, psychology, sociology, culture, and history. In addition, PYD proponents recognize that temporality and plasticity in human development result in systematic change. Assumptions of the framework are (a) youth are resources to be developed; (b) all youth have the potential for successful, healthy development; and (c) all youth possess the capacity for positive development (Lerner, Dowling, & Anderson, 2003). The PYD perspective is optimistic and proactive, using planned interventions that optimize youth strengths to optimize their developmental trajectories. See Figure 2 for a depiction of the PYD perspective (Benson, Scales, Hamilton, & Sesma, 2007, p. 910).

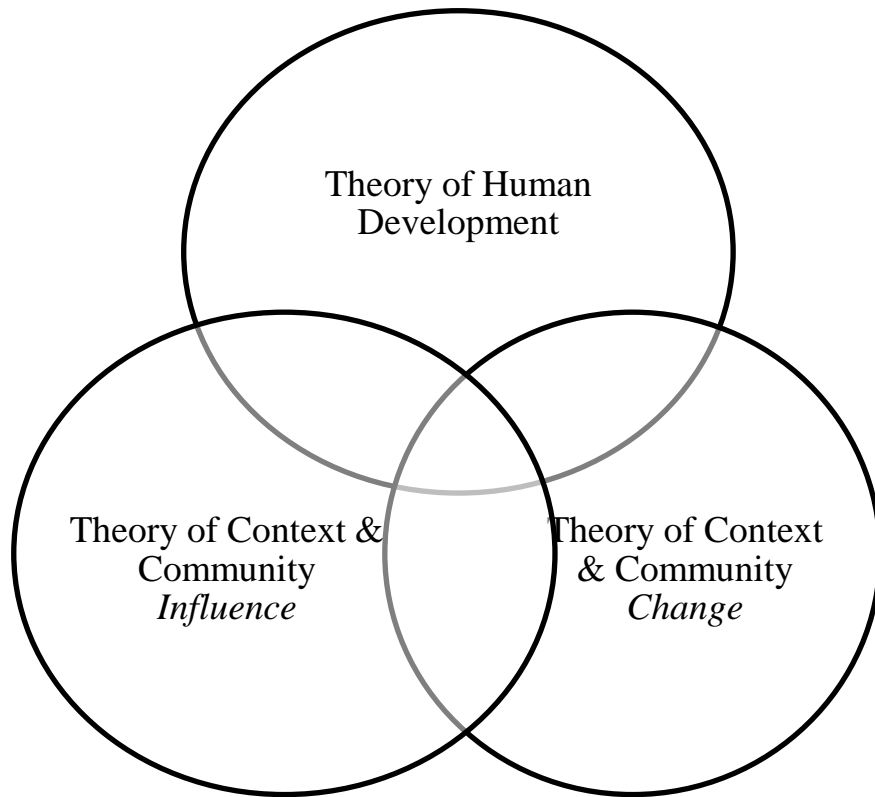


Figure 2. Positive Youth Development Perspective

Due to the broad scope and abstract nature of DC theory, researchers often select the PYD perspective as a complementary and pragmatic model for research. Both frameworks are broad, and together they provide a better framework for methodological operationalization. PYD posits a philosophy that supports EAs in a manner that is holistic, preventative, and pro-social; this support is achieved by maximizing individual strengths or assets and fostering competency attainment from birth to adulthood.

As an alternative to reductionist perspectives, the PYD perspective offers a view that is expansive enough to theoretically support developing EAs in their multiple, diverse, complex contexts (Vondracek & Porfeli, 2008). Lerner (2005) now proposes a new understanding of young people that has empirical utility and if used may assist EAs in improving their life opportunities. Contributions from collaborations with professionals from other disciplines

confirm that directing energy toward individual developmental assets yields improved outcomes for youth. Developmental assets that promote coping strategy development in EAs include culturally appropriate social skills, high levels of self-esteem and self-efficacy, attitudes and thinking that are positive and optimistic, the ability to self-regulate, a strong social support network, and the ability to use multiple coping strategies (Arnett, 2000; Catalano et al., 2004; Santrock, 2008). The goal of PYD is to reduce individuals' health and injury risk and increase protection.

The PYD perspective can be conceptualized in accordance with two hypotheses: (a) youth–contextual alignment promotes achievement of PYD; and (b) PYD comprises five competencies, referred to as the “Five Cs”—individual competence and empowerment, confidence, character development, connection, and caring (Lerner et al., 2005). Development of these competencies is promoted through sustained, supportive, caring adult relationships; youth skill-building activities; and opportunities to participate in positive activities in youth leadership and community.

According to Lerner and colleagues (2010), when the five key competencies are embedded in planned activities and experiences are specifically targeted to address the sensitive developmental stages in adolescence (including emerging adulthood), PYD is the result. Positive youth development is a strength-based primary prevention perspective that promotes healthy transitions by supporting the premise that youth are resources to be developed (Catalano et al., 2004; Oregon Commission on Children & Families [OCCF], 2002). These values and assumptions are embedded in the concept of plasticity—the multifaceted dynamism that originates from developmental contextualism theory and provides the foundation for the PYD perspective. This perspective has been used to implement interventions and to develop

initiatives and strategies to promote healthy development in youth and EAs (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004; Lerner et al., 2005). Scholars of adolescent and emerging adult development agree that successful transitions from adolescence to adulthood are multidimensional and have social, emotional, behavioral, and cognitive linkages to broader social contextual issues (Catalano et al., 2004).

Positive Youth Development Research

Longitudinal research using the PYD perspective indicates that among youth and EAs, risk behaviors tend to co-occur (Catalano et al., 2004; Santrock, 2008; Sherrod, 2005). Moreover, behavior problems tend to ensue when negative environmental contextual issues manifest (Santrock, 2008). On the other hand, some youth manage to experience positive developmental outcomes despite incredible odds—either overcoming or avoiding pitfalls. These successes suggest that there may be individual attributes, qualities, or characteristics that are protective and that promote resilience (Santrock, 2008). In fact, the enormous diversity of developmental outcomes experienced by EAs is related to the systematic relationships that EAs have with key people and institutions in their social context: family, peers, school, work, neighborhood, common society, culture, and history. Developmental assets include cognitive, psychosocial, and physical characteristics. When these assets are actualized in a positive social context, EAs can safely explore, interact with, and enhance their resilient coping skills (Catalano et al., 2004; Lerner, 2002; Santrock, 2008; Zarrett & Eccles, 2006), and as a result, youth can make healthy transitions. A growing body of research indicates that EAs who actualize their developmental assets are more resilient—that is, they are better able to face and surmount obstacles and to buffer themselves against adversity (Santrock, 2008).

Actualization of developmental assets is particularly important during the passage to adulthood. This passage is increasingly challenging—particularly for EAs who are members of LSES families and/or members of ethnic–racial minorities, who are not non-college bound, and who have or have had ACEs. At best, the construction of a precise pathway is diverse and complex. EAs living in urban environs commonly struggle with multiple challenges and barriers to healthy development (i.e., to actualization of their developmental assets).

Ordinarily, developmental changes associated with late adolescence require that EAs learn to integrate necessary competencies (e.g., coping, learning, economic productivity), integrate attitudes and values, and establish social capital necessary for successful transition into adulthood (Zarrett & Eccles, 2006). During this transition, EAs assume roles that are increasingly demanding, such as (a) self-management, (b) identifying personal strengths and weaknesses, (c) refining skills for success, (d) finding purpose and meaning, and (e) learning to cope by making necessary life changes. Little research on the developmental assets of low-income EAWs has been conducted. However, studies are emerging that validate the importance of psychosocial assets such as social support, self-esteem, and self-efficacy. When these assets are present, EAWs experience less depressive symptoms and delinquency and fewer workplace injuries, disabilities, employment problems, adjustment difficulties, and suicides (Greenen & Powers, 2007; Harkonmaki et al., 2007).

The PYD perspective is evolving as a model and shows promise for informing policy development. Interventions that are based on a view of youth development that is both philosophical and practical will support EAWs in their transitions to adulthood and may reduce occupational injury (CDC, 2010b; Lerner, 2004; National Research Council and Institute of Medicine & Kipke, 1999; OCCF, 2002). The PYD perspective is a complex metatheory that

subsumes descriptions of multiple aspects of the human experience (i.e., person, context, and development). PYD interventions promote bonding; resilience; social, emotional, cognitive, and behavioral capabilities; moral competence, self-determination; spirituality; and self-efficacy (Catalano et al., 2004). These interventions assist youth in developing positive identities, belief in the future, and opportunities for pro-social involvement and norms.

Integrated Framework: Understanding the Transition to Emerging Adulthood

Employment

Both DC theory and the PYD perspective elucidate understanding of the transition to EA employment. Both of these frameworks support the realization that EAs respond to the naturally occurring resources available in their individual and environmental contexts (Featherman & Lerner, 1985; Henrich, 2006; Lerner, 1992; Lerner et al., 2005). Unfortunately, changes in traditional cultural and social forces—divorce, poverty, family mobility, single parenthood, out-of-wedlock births, and poverty—present significant challenges for EAs. In order to accomplish healthy transitions, EAs have specific developmental and supportive needs. These needs include support for developing a sense of usefulness, a sense of belonging, and empowerment (Arnett, 2006). The remainder of this chapter focuses on the integration of components from both DC theory and PYD perspective as complementary frameworks for understanding factors that influence occupational injury (see Figure 3).

Integrated PYD and DC Model

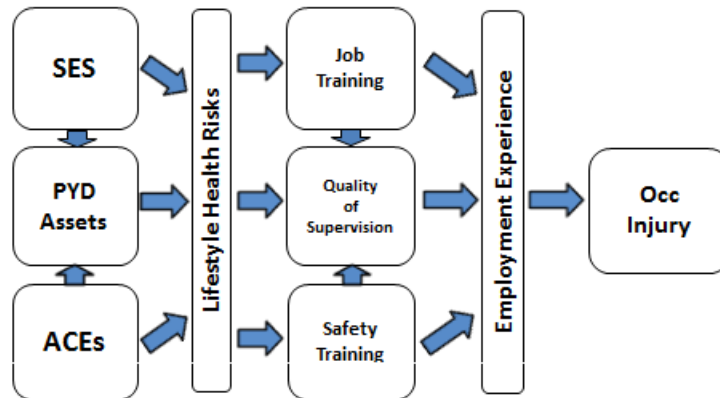


Figure 3: Individual, Contextual and Employment Experience Factors Influencing Occupational Injury for Emerging Adult Workers

Individual characteristics, social contextual factors, and employment experience influence EAWs occupational risk in positive and negative ways. The diagram in Figure 3 is the writer’s conceptualization of the proposed model for understanding EAWs. The integrative model comprises the independent variables analyzed in the study and the dependent outcome variable occupational injury. In this proposed model, EAWs’ LHRs are represented in a composite that includes individual (PYD assets) and social-contextual factors (sociodemographics, substance use, depressive symptoms, sexual health risks, and ACEs) that together represent a concept of the LHRs variable in this study. Positive youth development assets (connectedness and engagement) act as mediating variables that may have buffering effects on EAWs’ LHRs. Moreover, the LHRs variables act as potential moderator variables that influence the composite of employment experience (job training, quality of supervision, and safety training). The job and safety training variables appear to be influenced by the mediating variable quality of supervision. Both PYD assets and quality of supervision may have an indirect effect on the dependent variable occupational injury. Finally, the conceptual model also depicts

a potential pathway for occupational injury, with LHRs and employment experience as intervening factors that may be ameliorated by PYD assets and quality of supervision for EAWs.

Integration of DC theory and the PYD perspective provides a framework from which to examine key factors and their associations with occupational injury. This framework will enable researchers to better understand EAs' complex individual–contextual social connections and how these influence their employment experiences and occupational injury. In the future, this framework may prove to be a useful positive, strength-based framework for developing interventions for transitioning to adulthood employment.

Study Assumptions

The assumptions that underpinned the investigation described in this paper were (a) all youth are valued members of society; (b) LSES EAWs in inner-city environments are not well understood, and research on this group is inadequate; (c) healthcare providers, communities, and employers must assist in keeping all of the nation's youth healthy; (d) the workplace can be hazardous; (e) the individual is not viewed separately from her or his context; and (f) reduction of occupational injury is possible.

Definition of Terms

Occupational injury: Occupational injury is defined as a self-reported injury that occurs as a result of paid or volunteer work experiences (e.g., experience in the context of school, work, job training). An injury is said to be work-related when an event or exposure in the work environment caused or contributed to the condition or significantly aggravated a preexisting condition. *Work environment* includes both the work establishment and other locations where one or more employees are working or are present as a condition of their employment or volunteer experience.

Adverse childhood experiences: ACEs are defined as a constellation of highly interrelated experiences, including child neglect, verbal, physical and sexual abuses, and family dysfunction (i.e., incarceration, mental illness, substance abuse, domestic violence, and absence of a parent because of divorce or separation; Anda et al., 2006). ACEs also include poverty, violence (personal, environmental, or witnessed), and maltreatment that can be associated with family or community dysfunction (Dong et al., 2004).

Employment experience: The range of possible employment experience is broad. For the purposes of this study, employment experience was a composite of three factors: (a) job training, (b) safety training, and (c) quality of supervision.

Life health risks: Life health risks are defined as the aggregation of personal decisions or experiences that may contribute to or cause illness or death. For the purposes of this study, LHRs were a composite of five factors that includes sexual health risks, depressive symptoms, smoking, and drug and alcohol use.

Positive youth development assets: Positive youth development for this study consists of two assets: *connectedness* and *engagement*. *Connectedness* is defined as having a perceived, positive meaningful relationship with a parent, adult, guardian, or friend. *Engagement* is defined as involvement in pro-social activity (e.g., sports, art, and music) or being active in a community agency or volunteer agency.

Chapter 3

Methodology

This chapter describes the methodology used to examine occupational injuries, employment experiences, PYD assets, ACEs, LHRs, and sociodemographic characteristics in an inner-city sample of EAWs who accessed primary care at a nurse-managed community clinic. The methodology includes the study's design, setting, sampling, eligibility criteria, recruitment and enrollment procedures, data collection variables and measures, data collection procedure, protection of human subject's participation in research, and data analytic method.

Research Design

To better understand the relationships among the independent variables (e.g., ACEs, employment experiences, PYD assets, LHRs, and sociodemographics) and with the dependent variable, occupational injury, in inner-city EAWs, a descriptive, cross-sectional design study was conducted. Data collection involved primary and secondary sources. Primary data collection occurred for ACEs, employment experiences, PYD assets, and occupational injuries. Secondary data collection occurred for sociodemographics and LHRs.

Setting

The site for participant recruitment and data collection was a nurse-managed, federally qualified community health center (hereafter referred to as "Center") located in a large urban city in northern California. The Center provides primary care and behavioral health services to approximately 3,500 LSES patients who are vulnerable to the deleterious consequences of poverty, such as unemployment, unstable housing, food insecurity, mental health issues, substance use, trauma and injury, acute and chronic illness. The age range of the Center's patients is 18 to 80 years. The setting was selected because it has a patient population of LSES inner-city EAs and has an existing source of secondary data on these patients via their EHRs.

The number of EAWs enrolled at the Center is 780. In the year preceding the study's inception, 365 EAWs attended clinic appointments.

Sampling and Sample Size

The study included a nonprobability convenience sample of 134 EAs. Mailers were sent to all eligible clinic patients ($n = 780$). Over 50% of the mailers were returned by the postal service for the following reasons: wrong address, patient moved, or mailer was undeliverable. Phone calls were made to the 390 patients for whom mailers were not returned. Of those, we were able to speak to or leave messages for 200 patients; the remaining patients were unreachable due to no answer, wrong number, or telephone disconnection. We contacted the Center's healthcare providers for the eligible 200 patients. Of these contacted patients, 153 (88%) agreed to participate in the study and were determined to be eligible. Of these 153 patients, 19 were excluded for the following reasons: (a) non-English speaking, 4; (b) never having paid or volunteer employment, 2; (c) severe mental illness, 2; developmentally delayed, 1; (d) illiteracy, 1; (e) did not live within the catchment area, 5; (f) did not meet the age requirements, 3; and (g) did not want to answer questions, 1.

The sample size ($N = 134$) represents 17% of the 780 available and consenting EA potential participants in the research setting. This sample size was estimated to provide statistical power of at least 80% to detect a medium effect with the significance level set at $p \leq .05$, two-tailed, in order to describe differences in proportions and mean scores and to detect relationships between study variables (Cohen, 1988). In addition, this sample size was estimated to detect an odds ratio of 2.6 or higher for statistically significant findings (Fleiss, Tytun, & Ury, 1980). The medium effect size was based on findings in the occupational health literature that indicate relatively high estimates of occupational injuries and ACEs in the EAW population.

Eligibility Criteria

To be eligible for study participation, patients were required to meet both the study's and the Center's eligibility criteria. The study's eligibility criteria included inner-city EAs who were born between December 31, 1983 and January 1 1996, reported having a paid job or a volunteer work experience after 18 years of age, provision of written consent, and ability to speak and read English.

In addition, participants were required to satisfy the Center's residency and financial eligibility criteria. Participants were required to be enrolled as patients of the Center and had to reside in San Francisco. In addition to this residency requirement, participants were required to meet the Center's poverty requirement, which was based on the U.S. Department of Health Human Services (2013) income thresholds. The 2013 federal poverty limit was \$11,490 for a single adult and \$15,510 for a family of two. The Center's eligibility process determines the services for which patients are qualified to receive. Potential patients are queried about residency, income and insurance during the Center's enrollment process and upon arrival for Center appointments.

Recruitment, Consent, and Enrollment

Participants were recruited via the Institutional Review Board-approved patient referral letters and informational flyers that contained the (PI) contact information: telephone number (voice and text messaging) and email address. Recruitment flyers were posted throughout the Center and in the surrounding community. In addition, patients who accessed clinic services and who met the study's eligibility criteria were given a recruitment flyer by the clinic support staff or by their primary care provider.

The investigator conducted an eligibility, consent, and enrollment interview in a private room in the clinic. The study, protection of human subjects' participation in research, and consent were explained in lay terms. If a patient gave written informed consent, he or she was enrolled in the study. The signed consent was scanned into the patient's EHR. The consent form served as notification of the patient's approval for the investigator to access his or her EHR. The investigator also retained a copy of the signed consent in a secure location. Study information materials were written and edited at the fifth-grade literacy level as determined by the Flesch-Kincaid Literacy assessment tool (www.flesch-kincaidgrade.com, n.d.). These materials were given to the participant at the time of enrollment.

Recruitment of the target population was challenging. EAs' engagement in health services tends to be sporadic. EAs access services "as needed" for urgent issues or as a school or job requirement rather than as routine yearly health maintenance. As a group, these EAs are transient, have high rates of absenteeism, and can be difficult to track. Several EAs feared they would lose their jobs if their employers discovered they had participated in a study about work-related injuries. EAs were also reluctant to participate in the study if they thought it would require too much of their time or would be too complicated. Of the 153 EAs approached for recruitment into the study, 134 of them agreed, yielding a response rate of 77%.

Data Collection Variables and Measures

Both primary and secondary data were collected for this study. The independent variables were ACEs, employment experiences, PYD assets, LHRs, and sociodemographics. The dependent variable was the occurrence of occupational injury within the last 2 years.

Primary data collection. Primary data collection occurred for ACEs using the ACE questionnaire, and for employment experiences, PYD assets, and occupational injuries using the

Primary Care Occupational Injury and Employment Experience Survey (PCOIEES). Primary data collection strengthened the investigator's control over the study's eligibility criteria, selection of variables and measurement tools, and data quality. After completing the questionnaires, participants chose a \$10 gift among three options: Starbucks gift card, Subway gift card, or movie ticket.

ACEs. Data regarding the occurrence of ACEs were collected using the Adverse Childhood Experiences (ACE) Questionnaire. This instrument is a 10-item questionnaire that was modified, adapted, and validated from the Straus and Gelles Conflict Tactic Scale, the Childhood Trauma Questionnaire, and the Wyatt Sexual Abuse Severity Scale (Dube, Williamson, Thompson, Felitti, & Anda, 2004; see Appendix A). The ACE Questionnaire is completed via self-report and pertains to the respondent's first 18 years of life. The instrument measures four domains of early adversity: emotional abuse, physical abuse, contact sexual abuse, and household dysfunction (e.g., exposure to substance abuse, mental illness, violent treatment of mother or stepmother, parental separation or divorce, and criminal behavior in the household). Dichotomous response options are *yes* (1) and *no* (0). The total score is summed and can range from 0 to 10. Scores are categorized into three categories: no risk (0 points), low risk (1 to 3 points), and high risk (4 or more points). A score of 4 or higher indicates an individual is at risk for negative health and social outcomes (Anda et al., 2006).

Criterion-related validity for the ACE Questionnaire has been established; a high ACE score has been shown to be associated with significant health and social problems and morbidity and mortality from all causes (Anda et al., 2006; Dube et al., 2010; Harkonmaki et al., 2007; Schilling et al., 2007). Cohen's kappa coefficient (κ) is a measure of reliability that indicates the extent of agreement between two administrations of an instrument (Polit & Hungler, 1999). The

ACE Questionnaire has been shown to have moderate agreement with kappa coefficients between .56 and .72 (Dube et al., 2004) and between .46 and .86 (Dong, Dube, Felitti, Giles, & Anda, 2003). Content and construct validity of the questionnaire could not be found in the literature.

The ACE Questionnaire is written at the 7th grade level as calculated by the Flesch-Kincaid literacy indicator (www.flesch-kincaidgrade.com). Although the items are of a sensitive nature and may cause emotional distress, the items are presented in a non-threatening, non-judgmental format. The questionnaire has been used with populations across the lifespan, with diverse ethnic and racial groups, and with people representing a broad range of educational levels (Dube et al., 2003). Administration time needed to complete the instrument is minimal: 10 minutes to complete with minimal respondent burden. Self-report tools are less expensive, but their use is constrained by respondent reading ability and comprehension; also, such tools have greater risk for non-response bias (Switzer, Wisniewski, Belle, Dew, & Schultz, 1999). Despite these limitations, the ACE Questionnaire's versatility made it an appropriate measurement selection for use with low income EAWs, who are often reluctant to complete long, complicated questionnaires that are cumbersome or overly intrusive in nature.

Employment experiences, PYD assets, and occupational injuries. The 23-item PCOIEES was used to measure employment experiences, PYD assets, and occupational injuries (see Appendix B). The investigator developed the PCOIEES by modifying items on the short-form versions of the long-form 42-item Occupational Health History Questionnaire [OHHQ] (Newman, 1995; Taiwo et al., 2010). Newman's short-form OHHQ version consists of seven items and is written at a seventh-grade level. Taiwo and colleagues' short-form version of the OHHQ consists of four items and is written at the fifth-grade level. Reporting of the

psychometric properties of the long- and short-form versions of the OHHQ is limited, but the OHHQ has been shown to discriminate between workers with high hazardous exposure and low hazardous exposure (Rosenstock et al., 1984). The easy to read and understand OHHQ has been used primarily in middle-to-older age worker populations living in urban settings, but not as an occupational health screening tool for the EAW or youth populations.

Occupational injury was assessed via seven items, coded as *yes* (1) or *no* (0) for whether a respondent has been injured at work. A “yes” response prompted respondents to describe the injury type, frequency, date of the injury, and whether the injury was communicated to the employer.

Employment experience was assessed on several dimensions: job experience, work enjoyment, job and safety training, and quality of supervision. Scored as *yes* (1) or *no* (0), job experience was assessed with seven items that pertain to paid and volunteer work. Work enjoyment was assessed with one item rated on a Likert-type scale: *strongly agree* (5), *agree* (4), *neutral* (3), *disagree* (2), or *strongly disagree* (1). Respondents were asked if they received adequate job training (1 item) and adequate safety training (1 item), rated on a Likert-type scale: *strongly agree* (5), *agree* (4), *neutral* (3), *disagree* (2), or *strongly disagree* (1). Quality of supervision was assessed with four items that ask questions about whether one feels comfortable discussing work-related issues with his or her supervisor. Items were rated on a Likert-type scale: *strongly agree* (5), *agree* (4), *neutral* (3), *disagree* (2), or *strongly disagree* (1). Total employment experience scores can range from 7 to 35. Employment experience scores were categorized as *low* (16 or below), *moderate* (17–25), and *high* (26–35). A higher score reflects a more positive overall employment experience.

PYD assets were assessed using three items that relate to connectedness and engagement. The item that assessed connectedness was “Do you have a meaningful relationship with an adult, parent, guardian, or friend who is supportive and has a good influence on you?” The two engagement questions were “Do you have a talent or a hobby?” and “Are you active in a community agency or volunteer activity?” Responses were coded as *yes* (1) or *no* (0). One point was given for each positive response and summed for a possible total PYD assets score of 0 to 3. A score of 1 indicates low PYD assets, 2 indicate moderate PYD assets, and 3 indicate high PYD assets.

Pilot study. The PCOIEES and ACE Questionnaire were piloted with the population of interest to assess the practicality of their administration, clarity, and face and content validity. Content and face validity of the PCOIEES were also established via a systematic review of the literature, review of the items by a panel of experts, and direct conversations with pilot study participants. Also, to establish content validity, the investigator developed the PCOIEES in collaboration with two occupational health experts, Marion Gillen, RN, PhD, MPH-retired, and Robert Harrison, MD, MPH, both clinical professors at the University of California, San Francisco. The specific purposes of the pilot study were to ascertain (a) whether participants understood the questionnaire’s items, terminology, and definitions, the logic of the wording of items, and how to answer the questionnaire; (b) whether participants felt the questionnaire and the study were important; (c) whether participants experienced emotional distress—in particular, extreme levels of distress when answering questions; and (d) degree of questionnaire burden experienced by participants. In this regard, the pilot study sought to determine whether the number of items was excessive, whether answering the questionnaire required too much time, and whether the entire process was laborious, time consuming, or distressing for participants.

Seven people who met study eligibility requirements volunteered to participate and were enrolled in the pilot study. Eligibility criteria included being born between December 31, 1983 and January 1, 1996, living in San Francisco, reported having a paid job or a volunteer work experience after age 18 years, provision of written consent, and ability to speak and read English. Pilot study participants met all of the dissertation study's eligibility criteria except that they did not receive medical services in the Center. Pilot study participants included one male (African American [AA]) and six females (four AAs and two non-Latino Whites); they were affiliated with the Center as employed staff, volunteers, or students who were fulfilling a requirement for college.

Pilot participants reported that they felt the subject matter of items on the questionnaire was important and well-crafted. All seven participants reported never having been asked questions about work, work-injury, or ACEs by a primary care provider. The participants had no problems understanding the items. However, two participants asked for clarification regarding the meaning of "work-injury," stating that because they had not been taken to a hospital or emergency room due to their past work injuries, they were unclear about exactly what type of injury they needed to report for the study. Prior to this clarification by the PI, the two participants had not considered reporting minor work-injuries when answering the questionnaire. The male participant felt the ACEs items were personal; however, he was able to answer the questions without any emotional distress once rationale was provided by the PI. All participants felt that the length of the survey was acceptable and did not experience untoward effects related to any of the items.

Secondary data collection. Secondary data collection occurred for LHRs and sociodemographics; data were collected from participants' EHR via the GE Centricity system,

which is maintained onsite at the Center. These data were collected and recorded in the medical record by clinicians or staff members rather than by the PI. The GE Centricity EHR system is customized for community health centers by the Alliance of Chicago (Centricity, 2011); this EHR system is a computerized repository of patient data in digital form (Boslaugh, 2007). The EHR data are stored and exchanged securely and are accessible by multiple authorized users (Hayrinen, Saranto, & Nyranen, 2008). The EHR system contains retrospective, concurrent, and prospective data. A major advantage of secondary data is availability of relatively “clean” data archives; a major disadvantage of secondary data is lack of control over data quality (Hulley et al., 2007).

Sociodemographics. The sociodemographic characteristics included in this study were age, living situation, time spent in current living situation, relationship status, gender, sexual orientation, education, current employment or volunteer activity, income, health insurance, citizenship, and race–ethnicity.

Life health risks (LHRs). LHRs are defined as an aggregate of personal life decisions, situations, or experiences over which the individual may or may not have control; these risks often contribute to or may cause illness or death (Ka, Kramer, Houser, Chomitz, & Hacker, 2004). In this study, LHRs included substance use, depressive symptoms, violence, general safety, sexual health risks, and medical health risks. Screening for LHRs is a standard practice in the clinic. The screening was conducted by the Center’s trained medical assistants during the routine triage process prior to an office visit. The screening, which is referred to as the Adolescent Health and Safety Assessment (AHSA), consists of a compilation of screening tools in the EHR system to assess LHRs.

Drug and alcohol use were assessed using the Cut-back, Annoyed/Angered, Guilt, Eye-opener, Adapted to Include Drugs (CAGE–AID ; see Appendix C) survey. Response options were *yes* (1) and *no* (0). Internal consistency reliability has been shown to be adequate ($\alpha = .77$) (Couwenbergh, Van Der Gaag, Koeter, De Ruiter, & Van Den Brink, 2009). One or more positive responses to any of the items are considered a positive screening for substance abuse (Brown & Rounds, 1995).

Marijuana use was assessed with one item rated as *yes* (1) or *no* (0).

Tobacco use was assessed by asking participants whether they smoked or chewed tobacco; these data were coded as never smoked or chewed tobacco, currently smoke or chew tobacco, or formerly smoked or chewed tobacco. Participants were asked about their interest in quitting smoking or quitting use of chewing tobacco. These items were scored as *yes* (1) or *no* (0).

Depressive symptoms within the previous 3 months was assessed via the 9-item Patient Health Questionnaire (PHQ-9; see Appendix D) screening tool. Response options were *yes* (1) or *no* (0). The scores were summed to produce a total score that ranged between 1 and 27; higher scores indicated more severe depressive symptomatology. A score of 1 to 4 indicates minimal depression; a score of 5 to 9 indicates mild depression; a score of 10 to 14 indicates moderate depression; a score of 15 to 19 indicates moderately severe depression; and a score of 20 or higher indicates severe depression. In this study, scores greater than 5 were considered to indicate depression. The internal consistency reliability of the PHQ–9 has been shown to be adequate, with Cronbach’s alpha coefficients ranging from .79 to .89 (Huang, Chung, Kroenke, Delucchi, & Spitzer, 2005).

Violence was assessed with one item that asked about past experience of physical, sexual, emotional, psychological, or substance abuse violence. The item was scored as *yes* (1) or *no* (0).

Safety was assessed by asking one item each about whether participants wore a seatbelt and whether they had firearms in the home. Response options were *yes* (1) or *no* (0).

Sexual health risk was assessed by asking questions related to sexual activity, sexual partners, sexually transmitted infections, and contraception use. Response options were *yes* (1) or *no* (0). Sexual health risk-taking behavior is common among EAWs (Ka et al., 2004).

Medical health risks included measurements for height, weight, body mass index (BMI), systolic and diastolic blood pressure (BP), and dental visit within 12 months of enrollment in the study. A normal blood pressure is 120/80 or below for individuals 18 years and older (National Institute of Health Medline Plus, 2011). BMI is an indirect measure of body fat that serves as a screening tool to identify possible weight problems for adults. In adults, a BMI of 25 or above indicates being overweight or obese, and a BMI below 18.5 indicates being underweight.

Data Collection Procedure

The research site staff and primary care providers (PCP) participated in two informational training sessions regarding the study's aims and recruitment and data collection responsibilities. The staff and PCPs also received an Institutional Review Board-approved letter describing the study. The investigator reinforced this training throughout the recruitment process. A research study binder was created for PCPs, administrative staff, medical assistants, and support staff. The binder contained study information, contact numbers, flyers, and workflow screenshots for data entry.

After the clinic registration, patients proceeded to the triage area where, in accordance with the standard clinic protocols, the medical assistant measured their vital signs and weight and

staff asked them routine screening questions were assessed by the medical assistant staff in accordance with standard clinic protocols. Patients who expressed interest in the study were directed to the PI, who then conducted the previously described eligibility, consent, and enrollment process. After this process, primary data collection interviews occurred either in person or by telephone.

In-person interview. In-person interviews occurred with the PI. While participants completed the questionnaires, the PI periodically asked whether questions were upsetting. Participants who reported being upset were offered onsite mental health services, and were told that, if they wished, they could decline to enroll in the study or, if they enrolled, they could at any time withdraw from the study. None of the participants requested mental health services, and once enrolled, none of the participants withdrew from the study. Some of the participants requested to fill out the questionnaires by themselves using a pencil.

Telephone interview. Participants who expressed interest in enrolling in the study, but who indicated that travel to the clinic was a hardship were mailed a comprehensive information packet. Each packet contained (a) a study information sheet with a cover letter describing the study, (b) a consent form, (c) the PCOIEES and ACE Questionnaires, (d) a self-addressed envelope for return of the signed consent form, and (e) a self-addressed stamped refusal postcard for mailing. Participants were called only if their refusal card was not received after 2 weeks and their signed consent form had been received. Subsequently, the investigator called each participant to complete the PCOIEES and ACE Questionnaires; this telephone call used an Institutional Review Board-approved script. In addition, the investigator asked the participant to be in a private location during the call, because of the nature of the questions. During the call, the investigator periodically asked whether questions were upsetting. Study protocol required that, if

a patient indicated being upset, she or he would be offered mental health services at the clinic and/or a referral to mental health resources in the community. None of the participants requested mental health services.

Human Subjects Assurance

The study was approved by the University California San Francisco (UCSF) Committee on Human Research (CHR), the Institutional Review Board, and was in accordance with federal regulations. The study qualified for expedited review because it was considered low-risk behavioral research. The research did not include invasive procedures, medication administration, classified research, or random assignment to group. However, some questionnaire items were deemed personal and to have potential to cause some psychological distress. To minimize participant distress, participants were forewarned about the nature and subject matter of the questionnaire: also, while participants completed the questionnaire, the PI asked several times how they were feeling emotionally. In addition, mental health support was offered to participants, who were advised that they could refuse to answer any question or withdraw from the study at any time. Access to study information was restricted to the PI.

Data Analysis

All research data were stored in the UCSF's Research Electronic Data Capture (REDCap) system, a software application that secures information using HIPPA-compliant methods. The study's use of REDcap storage guaranteed that participants' privacy was protected throughout the study. EHR data were extracted by developing a special report listing study variables; these data were exported to a Microsoft Excel spreadsheet, and then merged and matched with the primary data from the PCOIEES and ACE Questionnaires using unique identifying numbers common to both datasets. A codebook was prepared to track coding decisions. Then, data were

imported to IBM SPSS 21.0 statistical software for data management and statistical analyses. Data were entered and double-verified for errors. Descriptive statistics were performed to examine the data for out-of-range values, data entry errors, logical consistency, and assumptions of normality.

The final dataset contained 190 variables for 134 participants. Missing data for the measurement tools were handled as follows. For the PHQ-9 (nine items), ACE Questionnaire (10 items), CAGE-AID (eight items) and PCOIEES (seven items), mean values for each tool were calculated for participants who answered at least 80% of the items. These mean values served as substituted values for missing items in the calculation of total scores for the tools. Retrieval and/or substitution of missing data were not possible for all of the tools' items because all of the responses were not equally weighted. Several attempts were made to retrieve missing data in order to complete data fields. These attempts include re-examination of patient charts, review of provider notes, phone calls to participants, and text messages and follow-up letters were sent to participants. In instances in which missing data could not be retrieved values were omitted from the final data analysis causing the sample size to vary.

Descriptive statistics were calculated to describe sociodemographics, ACEs, PYD assets, occupational injuries, employment experiences, and LHRs. Depending on the level of data, a Chi-squared test, independent Student's *t*-test, or one-way analysis of variance (ANOVA) was calculated to compare differences in proportions or means of study variables. Spearman's rho rank-order correlations were computed to determine associations between study variables. Based on the proposed *Employment Experience–Occupational Injury for EAWs* theoretical model presented in Chapter 2, logistic regression analyses were computed to determine which factors (employment experiences, ACEs, PYD assets, LHRs, and sociodemographics) predict the

occurrence of occupational injury in inner-city EAWs. For the overall study, when the p value was less than or equal to .05, and two-tailed it was considered statistically significant. Power was set at .80 (Cohen, 1988). To control for Type I error in multiple pairwise analyses, the p value was adjusted as necessary (Munro, 2005). Odds ratios are reported with corresponding 95% confidence intervals.

Cronbach's alpha for internal consistency reliability was calculated for the PHQ-9, the PCOIEES, CAGE-AID and ACE Questionnaire (see Table 1). Reliability is context driven and subject to variability within individuals and with different populations (Munro, 2005). For this study's sample, Cronbach's alpha coefficient for the 8-item CAGE-AID was .90, which is slightly lower than the coefficient (.92) reported by Leonardson et al. (2005) in their sample of 50 Native American Indian adults with severe diabetes and substance use problems. For this study's sample, the Cronbach's alpha coefficient for the 9-item PHQ-9 was .86; for comparison, a sample of 3,000 primary care patients in Kroenke, Spitzer, and Williams' (2001) study had a Cronbach's alpha coefficient for the PHQ-9 of .89. For this study's sample, Cronbach's alpha coefficient for the 10-item ACE Questionnaire was .78, for comparison, the sample in Dong et al.'s (2003) study had a range of Cohen's kappa coefficients for the ACE Questionnaire of .56 to .72, as compared to a range of Cohen's kappa coefficients from .56 to .72 for Dong et al.'s (2003) study. For the current study, the ACE instrument was administered to participants only once; hence, a Cronbach's alpha coefficient is reported. For this study's sample, Cronbach's alpha coefficient for the 7-item PCOIEES was .82.

Table 1

Comparison of Reliability Assessment for Study Measures Using Cronbach's α

Scale	# items	Previous Studies		Current Study	
		<i>N</i>	Cronbach's α	<i>N</i>	Cronbach's α
PHQ-9 ^a	9	3,000	0.89	132	0.86
CAGE-AID ^b	8	50	0.79	131	0.9
PCOIEES ^c	7			134	0.82
			Cohen's κ^*	<i>N</i>	Cronbach's α
ACE ^d	10	658	0.56–0.72	134	0.78

Note: PHQ-9 = Patient Health Questionnaire Nine; CAGE-AID = Cut-down, Annoyed, Guilty, Eye-opener; PCOIEES = Primary Care Occupational Injury Employee Experience Survey; ACE = Adverse Childhood Experience Screening tool

^a Kroenke, Spitzer, and Williams (2001)^b Brown and Rounds (1995)^c Hill, Gillen, and Harrison (current study)^d Dong et al. (2003)

CHAPTER 4

Results

This chapter presents the results of a study that examined the relationship between the occurrence of occupational injury, and employment experiences, PYD assets, ACEs, LHRs, and sociodemographic characteristics in an urban sample of EAWs who accessed primary care in a nurse managed community clinic. The research questions guide the presentation of results in this chapter.

Sociodemographic Profile of Injured and Non-Injured Emerging Adult Workers

Sociodemographic characteristics of the study sample of EAWs are presented in Table 2. The sample ranged in age from 18 to 30 years ($M = 24.6$ years; $SD = 2.98$). Seventy-one (53%) of the sample were female and 63 (47%) were male. The predominant racial–ethnic group was non-Latino White (32%) with other racial–ethnic groups represented as follows: African American (30%), Latino (16%), Asian–Pacific Islander (10%), Native American (2%), and multiracial (10%). A majority of the sample reported being not-partnered (86%), having some college education (52%), being heterosexual (73%), and being homeless or marginally housed (57%); length of time in current living arrangements ranged from 6 months to 1 year (87%). Ninety percent were U.S.-born or naturalized citizens.

Sixty-nine (51.5%) participants were employed or worked as volunteers and 65 (48.5) participants were unemployed at the time of the interview. Monthly income earnings were low, with 45% of participants reporting no income; 25% reported a monthly income of less than \$500, 15% reported a monthly income of \$501–\$1,000, and 15% reported a monthly income of \$1,001–\$2,100. Sixty-eight percent ($n = 92$) of these EAWs reported having enough money for food, but nearly 30% reported not having enough money for food. Only nine (7%) participants acknowledged receiving public insurance health benefits; 80 (60%) were enrolled in Healthy San Francisco, a city-subsidized health access program; and 45 (34%) were enrolled in a sliding scale

payment plan through the City and County public health department or lacked formal healthcare insurance coverage.

The sociodemographic characteristics of injured EAWs were similar to non-injured EAWs except for race, χ^2 ($df = 5, N = 134$) = 17.13, $p = .004$; monthly income, χ^2 ($df = 3, N = 133$) = 7.66, $p = .054$; and health insurance, χ^2 ($df = 2, N = 134$) = 6.29, $p = .043$; see Table 2. The study revealed racial–ethnic differences in participants’ reporting of occupational injury: Non-Latino White, 74%; multiracial, 50%; African-American, 43%; Latino, 43%; Asians–Pacific Islander, 21%; and American Indian, 25%. Interestingly, non-injured EAWs (62%) were more likely to report having “no income” than were injured EAWs (38%). In addition, non-injured EAWs were more likely to report less monthly income than were injured EAWs. In comparison with non-injured EAWs, injured EAWs were *more* likely to have public insurance (41% vs. 59%) or to be enrolled in Healthy San Francisco (44% vs. 56%) and were *less* likely to pay for healthcare services on a sliding scale (64% vs. 36%).

LHRs, ACEs, PYD Assets, Employment Experience, and Occupational Injury in EAWs

Life Health Risks. In this study, LHRs included medical health risks, sexual health risks, general safety, substance use, depressive symptoms, and witnessed or personal violence.

Medical health risks. A health risk evaluated in this study was the participant’s body weight.

The mean BMI for this sample of EAWs was 27.33 ($SD = 8.41$; see Table 3). The mean BMI was 29.34 ($SD = 10.38$) for women, indicating that the majority were overweight or obese, and 24.78 ($SD = 3.6$) for men, indicating the majority were of normal weight, t ($df = 16$) = 3.32, $p = .001$. On average, women weighed 179.42 pounds ($SD = 64.75$); men weighed 167.28 pounds ($SD = 27.75$). The magnitude of the difference in weight between the genders was large: $\eta^2 = .479$. The mean systolic BP was 118.45 ($SD = 12.74$); the mean diastolic BP was 73.06 ($SD =$

10.71). There were no statistically significant gender difference in mean systolic BP between males and females. The mean systolic BP for women was 117.37 ($SD = 14.38$) and 119.83 ($SD = 10.24$) for men. However, there was a statistically significant gender difference in mean diastolic BP, $t(df = 117) = 2.17, p = .032$. The mean systolic BP for women was 117.37 ($SD = 14.38$) and 119.83 ($SD = 10.24$) for men. The mean diastolic BP was significantly higher for women (74.91, $SD = 11.48$) than for men (70.67, $SD = 9.22$), and this difference represents a large η^2 , .274. Whether this difference in mean diastolic BP is clinically significant is unknown. Half of EAWs reported a dental visit in the prior 12 months. Work-exacerbated health problems were reported more frequently by injured EAWs (78%) than by non-injured EAWs (30%).

Sexual health risks. Eighty-four percent of EAWs reported being sexually active and 66% of them reported current contraception use (see Table 3). The mean age of sexual debut was 16.02 years ($SD = 3.07$; range: 6–24 years). Of those who reported recent sexual activity ($n = 128$) within the prior 12 months, 84 (62%) reported having 0–1 sexual partners, 28 (21%) reported 2–4 sexual partners, and 20 (15%) reported having 5 or more partners. The mean number of sexual partners was 2.74 ($SD = 8.9$) in the prior 12 months and 1.15 ($SD = 1.84$) in the prior 2 months. Thirteen percent of EAWs reported having been subjected to forced sex or rape. Of participants with a STI history (29%), 14% reported having more than two infections, with chlamydia being the most common STI (16%). A majority of the EAWs in our study reported engaging in risky sexual behaviors most of the time ($n = 80, 61%$). *Risky sexual behavior* was defined as having an open relationship, no barrier STI protection, or having had an STI, and having had more than one sexual relationship in the past year.

General safety. Two indicators of general safety as experienced by study participants were seatbelt use and presence of a firearm in the home. Seatbelt use was reported by 86% of

participants (see Table 3). Seatbelt use was higher among females (55%) than among males (45%), but this difference was not statistically significant. Seatbelt use was higher among EAWs with more education, but again, this difference was not statistically significant. The proportion of seatbelt use among EAWs who had completed college or who had attended some college was 59%, who had completed grades 9–12 was 34%, and who had who completed grades 1–8 was 7%. Ninety-two percent of participants reported not living in a home with a firearm.

Substance use. Responses to the CAGE–AID questionnaire, alcohol and drug use of EAWs is presented in (see Table 4). In this study sample of EAWs, 85 participants (70%) had “no problem” with alcohol consumption, 17 (14%) of them had a “possible problem,” and 20 (17%) of them had a “probable problem” with alcohol consumption. Similarly, 95 participants (80%) had “no problem” with drug use, 8 (7%) of them had a “possible problem,” and 16 (13%) had a “probable problem” with drug use. When alcohol–drug use CAGE–AID scores were combined, 76 (62%) of participants had “no problem” with substance use, 18 (15%) had a “possible problem” with substance use, and 28 (23%) had a “probable problem” with substance use.

Forty-percent of EAWs reported current marijuana use, and 40% reported current use of tobacco, whether smoked or chewed (see Table 3). Forty-three percent ($n = 56$) of EAWs reported never having smoked; 17% ($n = 22$) reported being past smokers. Thirty-one percent ($n = 120$) received tobacco cessation counseling while seeing a provider at the health center as documented in the EHR. Injured EAWs were more likely to be past smokers (77%) than were “never smokers” (48%) or current smokers (44%).

Depressive symptoms. A PHQ–9 cutoff score of 5 or more indicated risk for depression; analysis of the sample’s PHQ–9 scores determined that almost 50% was at risk for depressive

symptoms (see Table 5). The mean score on the PHQ–9 was 5.29 ($SD = 5.51$). The PHQ–9 evaluates several domains that may be important in occupational safety and injury prevention. Among study participants, the percentage of those who reported several days of having little interest in daily activities was 20% or more; who reported trouble sleeping or sleeping too much, 31%; who reported feeling tired or having little energy, 32%; and who reported having a poor appetite or overeating, 26%.

Adverse childhood experiences. The sample's mean ACE score was 3.84 ($SD = 2.7$; see Table 6). With the exception of current living situation, $F_{(1,132)} = 3.8, p = .05$, mean differences in ACE scores by age, gender, and race–ethnicity were not statistically significant. Although not statistically significant, $F_{(5,128)} = 2.10, p = .07$, EAWs who identified as multiracial had the highest mean ACE score ($M = 4.83, SD = 1.53$), followed by American Indians ($M = 4.25, SD = 3.20$), African–Americans ($M = 4.15, SD = 2.84$), and non-Latino Whites ($M = 3.98, SD = 2.72$). Asian–Pacific Islanders reported the lowest mean ACE score ($M = 1.86, SD = 2.07$). Participants who were homeless or who had unstable housing had a higher mean ACE score ($M = 4.22, SD = 2.67$) than did those who had stable housing ($M = 3.32, SD = 2.66$), $t(df = 132) = 1.94, p = .054$.

Positive youth development assets. The PYD assets score is derived from three questions that relate to connectedness to others and engagement with society. Frequencies and proportions of PYD assets scores are shown in Table 7. Total PYD assets scores ranged from 0 to 3 with a mean score of 2.36 ($SD = .78$), indicating a relatively high degree of engagement and connectedness. In this sample, 116 (86.6%) participants reported having a meaningful relationship with an adult, parent, guardian, or friend; this relationship was perceived as being supportive and having a good influence on the study participants (connectedness). In response to

the two questions that pertained to engagement, 122 (91%) of EAWs reported having a special talent or hobby, and 78 (58%) of EAWs reported being active in a community agency or volunteer activity. PYD assets scores did not differ statistically with regard to age, gender, race–ethnicity, education, living situation, and health insurance status.

Employment experience. The mean score for employment experience was 27.00 ($SD = 5.3$; range, 7–35), indicating a moderately positive employment experience for this sample of EAWs (see Table 8). At the time of the interview, 69 (51.5%) participants were employed or engaged in volunteer work. However, all participants reported either past paid or volunteer work in the last 1–2 years prior to this study; 52% reported having had four or more jobs in their working career. On average, EAWs reported working 27.48 hours per week ($SD = 16.64$) and 4.22 days per week ($SD = 1.67$). More than 75% of EAWs either agreed or strongly agreed that they enjoyed working. In the EAWs' view, enjoyment of work was derived from the job itself (22%), helping people (14%), learning and using new skills (12%), being productive and having variety of experiences (10%), earning income (8%), receiving rewards (5%), and flexibility and convenience (4%).

Almost half of participants (47%) agreed or strongly agreed that their job training was adequate, and 64% of participants agreed or strongly agreed that their job safety training was adequate. In terms of their relationship with workplace supervisors, 70% of the EAWs strongly agreed or agreed that they felt comfortable speaking to a supervisor about the job, 80% agreed or strongly agreed they were comfortable discussing workplace safety and hazards with a supervisor, and 72% agreed or strongly agreed that they were able to talk frankly with a supervisor about conflict between staff, customers, or other supervisors. However, only 45% of

EAWs agreed or strongly agreed that they were able to discuss personal, family, or health problems with a supervisor.

Occupational injury. Among study participants, 68 (51%) of participants were injured at work within the prior 24 months and of those injured, 26 (37%) were injured within the prior 12 months. The mean number of occupational injuries for EAWs was 4.3 ($SD = 4.8$). Of the EAWs who were injured at work, 22% did not disclose their injury to anyone. The 39 study participants who disclosed injury primarily did so to a supervisor (59%), friend (23%), or other person (8%); these EAWs were least likely to disclose an injury to a healthcare provider (5%) or parent (5%).

The primary types of occupational injuries ($n = 89$) were musculoskeletal (including 9 back injuries; 29%), lacerations and cuts (26%), and burns (22%). Nineteen EAWs suffered multiple injuries (see Table 9). Seventy-five (57%) participants reported that their existing health problems were exacerbated by work (see Table 10). The participants self-reported existing health problems are clustered into five categories: (a) musculoskeletal (39%), (b) mental health (31%), (c) other health problems (12%), (d) skin conditions (8%), (e) pain issues (7%), and (f) respiratory problems (4%). In addition, EAWs reported other types of work difficulties: severe disciplinary action (24%, $n = 30$), job layoff due to termination of position (34%, $n = 45$), being fired (37.1% $n = 49$), and quitting a job in lieu of being fired (22%, $n = 28$). EAWs (19%, $n = 25$) who voluntarily terminated employment did so for the following reasons: personnel and management issues (36%, $n = 9$); work injury (4%, $n = 1$); job performance (20%, $n = 5$); career advancement (12% $n = 3$); criminal issues (12%, $n = 3$); and family or personal issues (16%, $n = 4$); some who voluntarily terminated employment could not remember their reasons or opted not to disclose them (24%, $n = 32$).

Association between Employment Experience and LHRs

Spearman rho's rank-order correlations (r_s) were calculated to determine the association between employment experience and specific LHRs (i.e., ACEs, depressive symptoms, and alcohol–drug use) of EAWs (see Table 11). Employment experience was not significantly correlated with depressive symptoms and alcohol–drug use, but its correlation with ACEs was statistically significant ($r_s = -.18, p = .04$). This negative, weak association between employment experience and ACEs indicates that EAWs who have fewer ACEs are likely to have a more positive employment experience.

The study also found other statistically significant correlations—namely, between ACEs and depressive symptoms ($r_s = .27, p = .002$) and between ACEs and alcohol/drug use ($r_s = .18, p = .05$). These weak correlations indicate that EAWs who had more ACEs were more likely to be report depressive symptoms and to use more alcohol and drugs. In addition, an association between depressive symptomology and alcohol–drug use was statistically significant ($r_s = .32, p = .0004$) indicating that those who had higher depressive symptoms also had higher levels of drug and alcohol use.

Individual Factors Predicting Occupational Injury in EAWs

Bivariate logistic regression analyses were calculated separately to determine factors—sociodemographic, employment experience, LHR, PYD, and ACE—that may be associated with occupational injury (see Table 12). Neither age nor gender was statistically significantly associated with occupational injury; however, in this sample, race–ethnicity was associated with occupational injury. Non-Latino White EAWs were 4.4 times more likely to report an occupational injury than were all of the other racial–ethnic groups ($OR = 4.44, 95\% CI = [1.99, 9.93], p < .0001$). Employment experience was not significantly associated with occupational

injury, and total PYD score was not predictive of occupational injury. More specifically, neither the engagement nor connectedness dimensions of PYD assets were associated with occupational injury.

In addition, LHRs such as depressive symptoms and alcohol–drug use were not associated with occupational injury. Smoking status, however, was significantly associated with occupational injury. EAWs who were past smokers were 3.7 times more likely to report an occupational injury than were those who had never smoked ($OR = 3.65$, 95% $CI = [1.18, 11.27]$, $p = .02$). The number of ACEs was found to be statistically significantly associated with occupational injury—the risk of occupational injury increasing by 14% for each additional ACE reported ($OR = 1.14$, 95% $CI = [1.00, 1.30]$, $p = .05$). Individual ACEs that were significantly associated with increased occupational injury were having a family member with mental illness ($OR = 4.08$, 95% $CI = [1.89, 8.81]$, $p = .0001$), feeling unloved or cared for ($OR = 2.17$, 95% $CI = [1.07, 4.40]$, $p = .03$), parental emotional abuse ($OR = 2.08$, 95% $CI = [1.04, 4.14]$, $p = .04$), and a mother having been abused ($OR = 2.39$, 95% $CI = [1.05, 5.45]$, $p = .04$).

Multiple Factors Predicting Occupational Injury in Emerging Adult Workers

Table 13 presents a multivariable logistic regression model that includes study variables that were significant at the $p = .10$ level in the bivariate logistic regression analyses presented in Table 12 (and that were described in the above section). These factors are race–ethnicity, has meaningful talent or hobby, smoking status, and ACE scores. The model also includes factors potentially associated with occupational injury based on the scientific literature—that is, age, employment experience, and alcohol–drug use.

In this model, ACEs remained independently predictive of occupational injury ($OR = 1.19$, 95% $CI = [1.01, 1.39]$, $p = .04$), even when controlling for sociodemographics, personal,

and work-related variables. Non-Latino White race–ethnicity ($OR = 4.09$, 95% CI = [1.56, 10.70], $p = .004$) and PYD—having talent or hobby ($OR = 5.1$, 95% CI = [.99, 26.33], $p = .054$)—continued to be significantly associated with occupational injury, while past smoking behavior was slightly attenuated after simultaneous entry in the combined model.

Chapter 5

Discussion

This chapter synthesizes and evaluates the results of the current study and discusses relationships between these results and those of earlier published research. In addition, the chapter presents the current study's strengths and limitations, implications for nursing and occupational health practice, and recommendations for future research.

Summary

The goal of the study was to explore occupational injury, employment experiences, PYD assets, ACEs, LHRs (including psychosocial contextual factors), and sociodemographic characteristics that affect LSES inner-city EAWs. Study findings indicate that this sample of EAWs, who live in metropolitan environments, experienced a substantial burden of unemployment, underemployment, work-related injury, perceived health concerns, and social problems—issues that can potentially impact long-term health. These issues are obstacles that contribute to a less-than-ideal transition to adulthood for under-resourced emerging adults. For instance, 57% of study participants met the 2013 federal guidelines for homelessness, a disquieting statistic for such a young working population. In comparison, the *San Francisco's 2013 Homeless Point-in-Time Count & Survey* found that 26% of all homeless residents in the city were between the ages 18 and 24 years (Applied Survey Research, 2013).

In this current study, a significant number of EAWs reported lacking enough money to buy food; in addition, they lacked adequate health care coverage and access to dental services. These deficits prevailed despite the fact that in 2013, California had government-sponsored health coverage and opted to re-institute dental coverage for Medi-Cal and low-income persons with managed Medi-Cal health plans (Muirhead, Quinonex, Figueiredo, & Locker, 2009). A large percentage of EAWs do not enroll in health care programs, and when they do, they may

select only catastrophic health plans. Another concern is that some dentists do not accept state-funded plans because of the plans' low reimbursement rates (Muirhead, et al., 2009). Hence, this seemingly added health benefit may perpetuate the extant disparity to access if dentists continue to reject contracting with the state-funded programs.

A majority of the sample had LHRs that included medical and sexual health risks, safety, substance use, depressive symptoms, and childhood adversity that included witnessed and personal violence. Fifty percent of the sample had scores on the PHQ-9 depression screening tool that indicated depressive symptomatology, and 50% of the sample reported parental physical abuse or living in a household with someone with substance abuse problems. Furthermore, study results indicate that EAWs with higher ACE scores also reported more work-related injuries.

Despite having a disproportionate number of ACEs and LHRs, a majority of the EAWs reported PYDs. These EAWs were engaged in positive community activities and were connected in pro-social personal relationships. Several reported having meaningful relationships with supportive and positive adults who had a pro-social influence on them (connectedness). The EAWs also reported having a special talent or hobby and being active in a community agency or volunteer activity (engagement). The high PYD scores are encouraging—indicating that EAWs are resilient and that with adequate support, EAWs' transition to adulthood is pro-social.

However, in the current job market, securing employment is difficult even for EAWs with exemplary education, job skills, and experience (Danis, Kotwani, Ganett, Rivera, Davies-Cole, & Carter-Nolan, 2010). Safe secure jobs that yield a living wage are often acquired by better-trained individuals rather than by novice LSES EAWs. The challenge of successfully transitioning to employment is magnified for LSES EAWs with deficits in resources, education, job skills and experience, and childhood adversity.

In this study, 52% of EAWs were employed at the time of the interview, though many were underemployed in part-time, low paying jobs. All of the participants earned less than \$25,500 annually, while living in an expensive urban city. On average, study participants worked 27-hours a week in a 4-day time period. Underemployment also presents workplace safety risks. Vladutiu et al. (2010) report that, in comparison with full-time workers, part-time workers receive less job and safety training and more frequently have adverse safety outcomes.

Among the current study's sample of EAWs, 51% of the sample reported a work-related injury in the previous 24 months, and 43% reported exacerbated health problems. Although EAW reportedly engaged in job and safety training and considered their relationships with supervisors as satisfactory, these factors did not protect them from injury. These study findings are consistent with those of studies conducted by Breslin et al. (2007), Runyan & Zakocs (2000), Vladutiu, Rauscher, Runyan, Schulman, & Villaveces, 2010) on younger-age-group workplace injury; the current study's findings are contrary to those of Davila et al. (2010) who reports that having a job may be protective for EAWs. Hence, this dissertation research highlights and expands the scientific knowledge as it relates to the work injury burden of LSES EAWs and their employment experiences, PYD assets, ACEs, LHRs, and the unique characteristics of the social context of their lives and work environments.

Discussion of Findings

The nation's social and economic viability depends on a healthy workforce. In the United States, the population of EAWs is nearly 53 million, and if all of them were adequately employed, they would constitute 14% of the workforce (U.S. Census Bureau, 2013). In 2012, the incidence of work-related injury and illnesses among younger workers 16–34 years of age was 364 per 10,000 full-time workers; on average, work-related injury caused 590 of these

younger workers to miss 3 days of work per 10,000 full-time workers (BLS, 2014). The short- and long-term economic and social burden for individuals and society is enormous. In 2010, among all worker age groups, work-related injuries alone accounted for an estimated \$39 billion in worker's compensation (Leigh, 2012). These figures are surely underestimated for EAWs because of how data are collected and tracked. In addition, EAWs often work part-time and commonly do not report injuries to their employers. The personal consequences of work injury and work-exacerbated health problems—which are compounded by debilitating social conditions—must be considered public health priorities and must be addressed with innovative multidisciplinary approaches.

Sociodemographic Profile

In this current study, low-income EAWs with self-reported occupational injuries tended to be younger (18 to 25 years), female, heterosexual, partnered, homeless or marginally housed, and relatively well-educated. Stabein and Appleton (2013) found that early homelessness was associated with disrupted life transitions (e.g., employment) and poorer LHRs, such as risky sexual behavior, perceived poor physical and mental health, and substance use and abuse later in life. Moreover, homelessness was significantly associated with lower educational attainment, higher depressive symptomatology, less stable long-term personal relationships, and higher alcohol and substance use.

In this current study, injured EAWs were more likely to be non-Latino White workers. Existing research, however, indicates that ethnic and racial minority workers experience more occupational injuries than do non-Latino White workers (Bowman, & Salazar, 2005; Dembe, Savageau, Amick, & Banks, 2005; Friedman, & Forst, 2008). The discrepancy between the findings in this study and those of other studies may be the result of chance, sampling bias, or

reporting bias. It is plausible that low-wage ethnic and racial minority workers may have been less likely to report due to fear of job loss. In addition, racial minority workers generally earn less and are more often the head of a household; these workers cannot afford to be without income because losing a job or missing uncompensated days from work would place an intolerable burden on family life.

Occupational Injury

In this study, EAWs were employed primarily in restaurants, construction, recycling, offices, gardening, healthcare, retail, janitorial services, and schools. These job classifications are consistent with the types of jobs that are documented in the literature for EAWs (Laberge & Ledoux, 2011). Participants reported numerous musculoskeletal and back injuries, cuts, falls, burns, and eye injuries. It is well-documented that younger workers have a higher incidence of injuries than older workers do, but fatality rates are lower in younger workers (Saleh, Fourtes, Vaughn, & Bauer, 2001). Most of the injuries reported in the current study were not life threatening. Nonetheless, on average, participants reported 1.3 injuries in their working careers, some of which were very serious. For example, one participant fell approximately 20 feet, and as a result, had multiple surgeries, and is now living with chronic pain.

In a systematic review of the literature, Laberge and Ledoux (2011) found that the majority of musculoskeletal injuries for workers younger than 35 years of age were not serious, but few studies have examined the long-term potential consequences of early career injury. For example, in this current study, a hospital worker had a bone fragment extracted from his facial area, but the participant did not fully comprehend that the injury was work-related. It is possible that other participants who did not report any injuries could have likewise been unaware of the definition of a work-related injury. According to Laberge and Ledoux (2011), even though most

of the reported injuries would be considered clinically mild to moderate, there is no guarantee that the effects of these injuries may not become more serious over time. It is also possible that if more attention were given to health and safety, many if not all of these injuries could have been prevented.

Life Health Risks

Inevitably, life health risks and health problems that are poorly managed and controlled affect employee well-being, work performance, and employability. They also have fiscal implications for individuals and society. Describing and understanding the burden of perceived LHRs and problems for LSES EAWs is multifactorial and complex. Many of their self-reported LHRs and health problems were worsened by their work. Life health risks included medical and dental health risks, sexual health risks, safety, substance use, depressive symptoms, and trauma and violence.

Medical. Obesity and heart disease are leading causes of morbidity and mortality in the nation. In this study, females weighed significantly more and had higher BMIs than did males. This current study finding is in contrast to the nationwide youth obesity survey results, which found a 19% prevalence of obesity in males and a 10% prevalence of obesity in females. In this current study, both male and female EAWs exceeded the CDC's recommended guidelines for healthy weight by 30 pounds (MMWR, 2011).

Although the mean diastolic BP was normal for both males and females, it was statistically significantly higher for females. This finding is notable because Leigh and Du (2012) found that the strongest evidence for hypertension in low-wage workers was low income and being female. The slightly higher mean BP in females might be related to the higher mean BMI among female EAWs. In a 25-year prospective study of urban, 18–30 year-old non-Latino White

and African American EAWs ($n = 5,000$), Allen and colleagues (2014) found that in urban areas, EAW African American females had the highest mean BPs. Not surprisingly, elevations in BP were also associated with increased BMI and smoking. Moreover, participants with increasing and elevated BPs were four times more likely to have subclinical atherosclerosis or coronary artery calcification in early middle age. These medical health risks are compounded by poverty and inadequate access to healthcare services, including dental services. Poor dental health contributes to declines in the integrity of the cardiovascular system and compromises glycemic control (Heavey, 2014).

Dental. Danis et al. (2010) confirmed that a gap exists in dental services for urban, low wage earners; 82% of participants reported dental health to be the second most important priority for overall health, preceded by affordable health insurance (92%) and followed by housing (82%). They concluded underserved populations and individuals with precarious housing situations are 12 times more likely to have dental problems than are individuals in stable housing. Muirhead and colleagues (2009) linked oral health disparities to food-insecurity ($p < 0.001$) and a higher prevalence of toothache, pain and chewing problems, problems speaking, sleeping and work difficulties ($p < 0.001$).

For the poor and the homeless, dental problems are more severe causing early periodontal disease, tooth loss, infection, emergency room visits, increases in prescription drug use, work absenteeism, lower self-esteem, and loss of income and employment (Mertz, 2011). In this study, 50% of EAWs had visited a dental provider in the past year; in comparison, the CDC's Division of Oral Health in California found that 67.2% of clients who were 18 years and older reported a dental visit in the previous year (CDC-DOH, 2010). For EAWs, access to dental services must be a higher priority. This study's findings and existing literature are a clarion call to action for

healthcare professionals, PCPs and employers to address EAWS LHRs risks earlier and more thoroughly.

Sexual. In this study, the mean self-reported age for first sexual encounter was 16 years, with the youngest reporting molestation at 6 years of age and the eldest reporting no sexual contact until 24 years. The number of sexual partners also varied. The average number of partners for this group in the previous 12 months was three; however, the mean for the previous 2 months was two. This study finding differs from the proportion found in the national youth risk survey, which found that 15% of high school youths have had sexual intercourse with four or more partners in the previous 12 months. The discrepancy in number of sexual partners between this study and the national youth risk survey might be due to recall bias, social desirability or reluctance to disclose this type of personal information.

In this study, about one-third of sexually active EAWs did not use protection consistently during sex, and 29% of them contracted STIs. A majority of EAWs reported engaging in risky sexual behaviors most of the time. Although sexual health education is more readily available nowadays, study findings and other current research on EAWs suggest that more must be done to prevent STIs and unintended pregnancies, both of which have potentially have negative ramifications for positive life course outcomes (MMWR, 2011). In the current study's sample, a notable 13% of participants reported subjection to forced sex and rape; in contrast, a national survey reported that the incidence of these ACESs among urban youth nationwide was 8% (MMWR, 2012). Opportunities exist for all health professionals to provide anticipatory guidance about life health risks, workplace safety, and the transition to adulthood for the EAW population in the medical setting and in the workplace.

Society's sexual mores are less rigid today than in the past. EAWs navigate social and romantic relationships, but they delay and place less importance on marriage. Delays in long-term commitments are thought to be related to unstable social and economic circumstances confronting EAWs (Claxton & Van Dulmen, 2013). Emerging adult workers are more likely to engage in casual sexual relationships and experiences (CSREs)—also referred to as “hook-ups,” “friends with benefits,” and “booty calls.” According to Claxton and Van Dulmen (2013), CSREs are common and important to consider because they are associated with a multitude of negative outcomes in this population (e.g., risky sexual behavior, unwanted pregnancies, sexual assaults, mental health problems such as depressive symptoms and low self-esteem, substance use, and poor outcomes in personal relationships). Understanding how EAWs negotiate romantic relationships is paramount for PCPs. The current study found no statistically significant associations between sexual risks and occupational injuries. As LSES EAWs explore their sexuality, numerous opportunities for sexual health education and decision-making support and intervention are needed; this support can be provided by nurses and other health care professionals.

Substance use. Adams, Knopf, and Park (2013) report that 15% of EAs in the United States have substance use problems. In this study, substance use refers to tobacco, marijuana, alcohol, and drugs. A news release from the Substance Abuse and Mental Health Services Administration reports that “older adolescents and young adults with emotional and behavioral health conditions are much more likely to have significant problems with school performance, employment, and housing stability” (2014, p. 1).

Tobacco. Sixty percent of EAWs in this study reported either being a past smoker or having never smoked. Of the 40% who smoked, only 11% of them were offered smoking

cessation information during their medical visit. Although older than the study's sample, the Youth Risk Prevention data reveal that 18% of EAWs use tobacco (MMWR, 2011). Neinstein (2013) reports that although the overall nationwide trend of tobacco use has declined the prevalence of cigarette use in the past month for 18 to 29 year olds remains over 35%.

Alcohol. Overall, a surprisingly 70% of EAWs in this study did not see themselves as having alcohol consumption problems. Because of their developmental stage, this finding may be attributed to lack of insight and perception of risk, or methodological (e.g., the way in which alcohol items were asked). The national percentages for young adult binge drinking and heavy alcohol use are 61% and 15%, respectively (Paul-Mulye et al., 2009). According to Paul-Mulye et al., substance use tends to peak in young adulthood and decrease over the lifespan. In a national and California-based survey conducted from 1986 to 2010, these researchers also found that young adults 18–25 years of age are four times more likely than younger adolescents and twice as likely as 26–30 year-old EAWs to binge drink. In a study conducted by Neinstein (2103), both EAW age groups reported prevalence rates of 20% to 30% for binge drinking and heavy alcohol use and reported even higher incidences of driving while intoxicated.

Marijuana. A recent headline, “Research increasingly confirms that marijuana use is harmful” (p. 1), addresses a serious problem in urban EAWs whose use of marijuana increases with age (SAMHSA, 2013). Among U.S. adolescents and EAs, marijuana is widely consumed, with 40% having used drugs one or more times in their life (SAMSHA, 2014). According to SAMHSA, for 18–30 year olds in the United States, nearly 700,000 were admitted to substance abuse treatment centers, and 340,212 were admitted for marijuana abuse in 2010. In this study, 40% of EAWs reported past or current marijuana use. Emerging adult workers do not consider marijuana an illicit drug and often normalize its use for themselves and their peers, which can

influence social behavior and conduct (Elliott, Vanable, & Carey, 2014). Furthermore, EAs' perception of their peers' usage can influence behavior and often serves as a social guideline of conduct.

In the current study, marijuana use was asked as a separate question because the pilot study found that EAWs were not considering marijuana when answering the CAGE–AID questions. When asked about marijuana use specifically, 40% of the participants reported either past or present use of the drug. Twenty-two percent disclosed daily use, and 7% reported weekly use. Studer et al. (2013) found that non-response bias is a serious problem in substance use research. These researchers reported that the highest prevalence of marijuana use was among silent refusers, late responders, and non-consenters. Further, some EAWs may believe that older adults or PCP may consider marijuana an illicit substance or be biased against use of the drug and, therefore, decide not to disclose personal behaviors. Marijuana use has been associated with reduction in gray matter in the hippocampus (Demirakca et al., 2011), which is important for consolidation of information, short and long-term memory, spatial navigation, judgment, and impulse control (Dahl, 2004).

Chronic marijuana use has been associated with attention impairment, memory, and cognitive function, motivation, difficulty with problems that involve verbal learning, response inhibition, and psychosis (Demirakca et al., 2011). With consistent long-term use, documented health risks include dependence, chronic cough, respiratory impairment, cardiovascular disease and irregular heart rhythm, insomnia, and problems with psychosocial well-being and mental health—problems that persist for weeks after the drug has worn off (SAMHSA, 2013). These marijuana-related deficits may have potential implications for work commitments, maintaining employment, employment experiences, and occupational injury and safety (Hyggen, 2012).

Bowes et al. (2012) found that high marijuana use was associated with groups who were socially and economically disadvantaged.

According to Neinstein (2013), emerging adults are more likely to misuse and abuse illicit drugs such as cocaine and prescription pain relievers. In the Neinstein study, nearly 20% of the sample ($n = 95$) disclosed either a possible or probable drug problem. Fourteen percent of participants felt they needed to stop using drugs, 10% reported that others had complained or urged them to stop using drugs, 11% reported that they felt guilty about using drugs, and 14% reported that they awakened in the morning wanting to use drugs. In this current study, 12% of females possibly or probably may have had drug problems. Consistent with the literature, the males in this sample had more drug problems, with 33% of the scores in the *possible* or *probable* categories for drug misuse. Adams et al. (2013) report that females had lower drug disorder rates than did males.

An accurate, contemporary understanding of substance use in inner-city LSES EAWs is imperative for workforce and health professionals. Use of substances is disproportionately widespread in urban LSES communities. The consequences associated with drug and alcohol abuse have negative employment and life course outcomes for EAWs. In a study of 96 EAWs, fewer than 50% had a paying job, 41% lived in a household receiving public assistance, 85% reported using marijuana, 68% admitted to binge use of alcohol, and 37% reported illicit drug use (Seth, Murray, Braxton, & DiClemente, 2012). Furthermore, substance use and mental health disorders often co-occur. EAWs may use illegal and legal substances to self-medicate undiagnosed and untreated mental health or behavioral problems. Unfortunately, some these substance problems have the potential to result in job loss and unemployment.

Depressive symptoms. According to Paul-Mulye et al., “Depression is the most widely reported mental health disorder” in adolescents and emerging adults, particularly in females (Paul-Mulye et al., 2009, p. 12). In the current study, 45% of the sample reported mild-to-severe depressive symptoms. Younger EAWs (18–25 years of age) had greater moderate to severe depressive symptomatology as compared to older EAWs (26–30 years of age). Current study findings are consistent with those of other studies that have documented that it is not uncommon for mental health disorders and behavioral health disorders to surface in the transitional period of 18–30 years of age (Adams et al., 2013; Paul-Mulye et al., 2009). In the current study, although males and females reported similar depressive symptomatology in most categories, females reported more severe depression; however, this difference was not statistically significant.

This study’s findings are in accordance with those of Adams et al. (2013) who found that EAW females had significantly higher levels of severe psychological distress and major depressive episodes than men did ($p < 0.001$). Emerging adulthood is a critical period for diagnosis and treatment because the third decade of life often heralds the onset of mental and substance use disorders. If problems are diagnosed early and treatment is started early, there is a much higher success of managing the problems associated with long-term mental illness. Adams and colleagues (2013) also found statistically significant ethnic and racial differences in psychological disorders. Non-Latino Whites had higher severe psychological disorders than did African Americans ($p < 0.001$) and Latinos ($p < 0.05$). Although statistically insignificant, similar findings were found in the current study. Non-Latino Whites reported more depressive symptomatology than racial and ethnic minorities. Why African Americans tend to have lower reported rates of depressive symptoms than do Latinos and non-Latino Whites is unclear. Paul-Mulye and colleagues (2009) believe the incidence of depression in African Americans might be

artificially low because of cultural bias, stigma, or depression screening tools that are not sensitive enough for this population.

Mental health is important to performance and safety in the workplace. Depression scores were not significantly related to occupational injury, though they were weakly correlated with both the ACE and CAGE-AID scores. Because of the cross-sectional nature of this study and the fact that this group tended to be underemployed, it is not possible to draw any conclusions about the lack of a relationship with injury and this requires further investigation.

EAWs with mental health disorders and co-occurring substance use disorders are more likely to be unemployed, have difficulty earning an adequate wage, and have more health problems than do their peers (SAMHSA, 2014). According to Neinstein (2013), EAWs have higher rates of suicidal thoughts, plans and attempts, and as a group, they are more likely to have a completed suicide. However, those with health insurance with strong connections to a PCP have fewer depressive disorders than EAWs without insurance.

Adverse childhood experiences. Childhood adversity among this current study sample of inner-city LSES EAWs is prevalent, indicating ACEs may be associated with LHRs, employment experience, and occupational injury. Seventy percent of the sample experienced parental divorce or separation, 43% suffered parental emotional abuse, 47% reported parental physical abuse, 48% reported substance abuse in the home, and 28% experienced family disruption due to a family member's incarceration. Several participants reported never knowing their parental identity or ever living with one or both of their parents; instead, they lived in foster care and group homes. Family disruption and divorce, the most common ACEs, have been shown to have mental health effects in EAWs (Schilling, Aseltine, & Gore, 2007).

Quality of parental relationships or stressful life events has been associated with physiological consequences such as excessive cortisol production (Lucas-Thompson, et al., 2013). Parental conflict was associated with higher early morning cortisol levels. Cortisol is important in the human physiological stress response system and in modulating physical and mental health. High ACE scores also have been associated with poorer overall health, depressive symptomatology, anxiety, low life expectation, and substance use (Mersky, Topitzes, & Reynolds, 2013; Redonnet et al., 2012).

Other researchers have found that increased ACEs have a negative impact on mental health, which is mediated to a small degree by perceived social support and SES with the exception of educational level (Oshio, Umeda, & Kawakami, 2013). People who have a greater number of ACEs are more likely to be obese, current or past smokers, use substances, have poorer self-reported health outcomes, engage in early risky sexual behavior, experience physical violence, been in jail, have lower educational attainment, and greater work difficulties and unemployment and lower workforce qualifications (Bellis et al., 2013; Dube et al., 2010).

In the current study, higher ACEs were seen in older EAWs, females, and those identifying as multiracial, Native American, and African American. Females reported significantly more sexual abuse than did males. Dissimilar to this study's statistically significant gender difference, Mersky, Topitzes, and Reynolds (2013) found that males had higher ACE scores than females in an urban, primarily ethnic minority sample of 1,539 EAs.

Researchers in the United States and worldwide are beginning to investigate the associations between ACEs, LHRs and life course outcomes. Since the results of the Kaiser Permanente Longitudinal Study were published, more investigations focusing on ACEs have emerged, but the impact of ACEs on diverse populations remains understudied. In a sample of 80

inner-city African American males with substance use, Seth and colleagues (2012) found that the experience of living in a violent and overcrowded city has negative effects. Less than half (41%) of the sample had a job, and only 54% had a high school diploma. Participants with high levels of city stress were significantly more likely to use marijuana, illicit drugs, have family members or friends express concerns over their substance use, and to not be able to remember what happened the night before due to alcohol use.

In addition, Dube, Cook, and Edwards (2010) explored the associations between ACEs and smoking, BMI, and self-rated health ($n = 5,378$). The researchers found that 46% of participants had at least one ACE. In this study, respondents with a greater number of ACEs were also 50% more likely to be obese, 40% were current or past smokers, and those with higher scores have also had poor self-reported health outcomes and greater work difficulties and unemployment.

In this current study, there were interesting discrepancies between participants' responses to the ACE questionnaire and their responses to yes/no questions about adversity in the EHR that were posed by PCPs. Some participants' responses to the ACE instrument indicate a history of experiencing violence. Yet, when asked whether they have had past experience with violence, participants often responded, "no." Categorical questioning about ACEs may not be the most reliable way of measuring adverse experiences in clinical settings. EAWs may normalize these experiences and without having concrete choices or examples of what is meant by ACEs, may minimize the adversity they faced.

Employment Experience Profile of Emerging Adult Workers

A successful transition to adulthood requires that EAWs are able to secure and maintain employment. Mortimer (2012) offers that, though features of work (employment experience) are of critical importance for transitioning EAWs, the majority of studies have examined only family, school, and peer influences rather than EAW employment experiences. In the current study, EAWs rated their employment experiences very highly. Similar to older adults, EAWs reported that they enjoyed having a job for the following seven intrinsic and extrinsic reasons: enjoyment, learning new skills, flexibility and convenience, personal reward and creativity, ability to help others, income generation, and productivity and variety of work.

Mortimer et al. (1996) showed that conditions of youth employment vary and the quality of the experience may affect mental health and contribute to delinquent behaviors. For example, Staff and Schulenberg (2010) have reported that wage satisfaction and job flexibility consistent with EAWs lifestyle demands (i.e., demands related to school, leisure, family) enhances their well-being. On the other hand, jobs that are developmentally inappropriate (i.e., that include too much decision making, unsupervised autonomy, and excessive time demands) can exacerbate depressive symptoms, increase tobacco and alcohol use, reduce self-efficacy, and diminish job performance (Mortimer, 2012; Staff & Schulenberg, 2010).

Researchers have conflicting views on the quality of employment experiences for EAWs. Mortimer (2012) suggests that, contrary to the widespread notion that entry level jobs are dead-end with little skill acquisition, research suggests that many offer progressive advancement opportunities such as, training, task complexity, and supervisory responsibility. On the other hand, Staff and Schulenberg (2010) contend that EAWs may be too immature or lack proper training for their jobs and are often in positions where there is an absence of an adult supervisor. A lack of age appropriate supervision may lead to heightened risk for crime and work related

injury, and lack of proper mentorship and training required for PYD. When work is unsatisfactory, EAWs may select to leave their employment. In this study, EAWs opted to end their employment for six primary reasons: supervisor or management issues, poor job performance, family or personal issues, career advancement, criminal or delinquent behavior, or work injury. Poor relationships with management were the most frequent reason EAWs left their jobs. Follow-up questions revealed that many EAWs felt they could not talk with their supervisors about job problems, safety or training issues, staff conflicts, or personal problems. Possible explanations for dissatisfaction may include the following: discomfort in discussing complex problems, supervisors may be EAW peers with similar problems, or sociocultural differences between supervisors and EAWs. Additionally, the newly-developed survey tool may not have had enough concept clarity, although the reliability was high. Notably, although EAWs enjoy work, more than half reported they quit their jobs rather than risk being fired, indicating a great deal of job conflict.

To be sure, EAWs function comfortably at work when they have good relationships with adult supervisors trained about EAW developmental needs (PYD), and unwillingness to provide necessary workplace supervision. In fact, quality supervision heightens EAWs self-efficacy in adult domains of work, family, and health (Mortimer, 2012).

PYD Assets. Though some progress has been made in applied research that integrates resilience and PYD, the field remains in its nascent stage (Kia-Keating, Dowdy, Morgan, & Noam, 2011). Little has been investigated using PYD as a framework to investigate occupational injury, employment experiences, ACEs, and life health risks in EAWs. In this study, participants scored high on the two developmental assets connectedness and engagement; however, these were not protective against occupational injury. Theoretically, there

are approximately 40 developmental assets that might be scientifically tested in future studies. Perhaps other qualities may prove to be more closely associated with occupational injury, employment experience and life health risks for inner-city EAWs.

Females in this study had non-statistically significant higher employment experiences scores than males, whereas those in the multiracial group had the highest scores compared to Latinos who reported the lowest scores. Participants with the highest PYD asset scores were also those with the highest educational attainment, adequate healthcare coverage, and stable housing. Notably, approximately 10% of EAWs reported extremely low scores and could potentially benefit from interventions from supervisors, occupational health nurses and other PCPs.

A key principle of PYD is the realization that EAWs need multiple positive influences in their lives. Researchers have shown that young adults with caring adults, safe places to reside, constructive use of their time, and effective education and opportunities, live healthier longer lives (Scales et al., 2008). Researchers evaluating the physical activity in LSES EAWs have found that stronger social networks and social participation are positively and significantly associated with more physical activity (Shelton et al., 2011). Pedersen et al. (2005) examined engagement and relationship quality in a sample of LSES urban adolescents ($n = 560$) and found that high positive engagement in community resulted in improved employment outcomes and increased participation in sports. More recently, Staff and Schulenberg, (2010) examined the significance of work experiences on academic achievement, PYD, and health-risk behaviors from a national representative database. The investigators reported that working less than 20 hours a week is associated with improved grades. Greater hours are associated with diminished sleep, exercise, and healthy eating, and increased engagement in unsupervised activities with peers. Kia-Keating, Dowdy, Morgan, and Noam (2011) examined the extant literature using

PYD, risk, resilience, academic and transition outcomes. They determined that EAWs must be considered within their psycho-socio-environmental contexts, with strengths and social capital optimization to reduce morbidity and mortality in EAWs, including the workplace. However, absent from the literature is any research about work injury using the PYD framework.

Occupational Injury in Inner-City EAWs

Study findings show that 51% of inner-city EAWs sustained an occupational injury in the previous 2 years. These workers sustained the types of injuries expected for the industries in which they were employed, with musculoskeletal and multiple injuries being the most common of all injuries reported. They also experienced cuts, burns, falls, and eye injuries. Of note, 43% of participants did not tell anyone about their injury, and of those who did, they told someone other than a supervisor, healthcare professional, parent, or other adult who could provide necessary guidance. Anecdotally, there seemed to be a lack of awareness by participants regarding (a) what constitutes a work-related injury; (b) when to report an injury; (c) to whom to report the injury; and (d) how to evaluate the quality of job and safety training.

Almost half of the study sample of EAWs felt that their current health problems were made worse by work. The most frequently mentioned conditions that were aggravated by work were mental health conditions and acute and chronic pain problems such as, musculoskeletal injuries and headaches. This study is consistent with current literature that reports that psychosocial issues for transitioning EAWs may be exacerbated by workplace stress (Porteous & Waghorn, 2009), and that job and safety training do not always translate to less work-injury (Zierold, Walsh, & McGeeney, 2012) .

In this study, only three of the *a priori* independent variables demonstrated statistically significant positive bivariate correlations with the dependent variable, occupational injury in the previous 2 years: being a non-Latino White, past smoker, and having a higher number of ACEs.

In the simultaneous, multivariable, logistic regression, being a non-Latino White, having a higher number of ACEs, and being a past smoker remained statistically significant and were positively associated with a greater likelihood of occupational injury, even when controlling for all other variables including age, employment experience, and drug and alcohol use. Having a special talent or hobby, one of several positive youth assets tested, demonstrated an elevated odds ratio but just missed reaching statistical significance.

Surprisingly, two of the *a priori* independent variables, depressive symptoms and drug and alcohol use were not significantly correlated with the outcome variable, occupational injury. However, depression had a statistically significant, but weak, and positive correlation with both the ACE and CAGE-AID scores. In addition, the Employment Experience score had a weak, but statistically significant and negative correlation with the ACE scores, whereas the CAGE-AID had a weak but statistically significant and positive correlation with them, consistent with what would be expected. Some of these above results, however, were unexpected and it is difficult to interpret how they may affect occupational injury directly or indirectly through supervision and training without further research.

This study is important because it addressed a difficult to access group who are at high risk for occupational injury and who have not been previously studied in a comprehensive way. In order to better understand the occupational injury experience of EAWs, it would be helpful to test different instruments, conduct a more thorough evaluation of instruments used in this study for wording and meaning with a larger sample and multiple sites, or through mixed methods,

including qualitative approaches such as, individual interviews or focus groups. Nonetheless, results from this study provide a good description of the understudied EAW population in terms of their sociodemographic characteristics, ACEs, PYD assets, LHRs, employment experiences, and occupational injuries, highlighting previously undocumented stressors and strengths in their lives that may affect their employment, job satisfaction, and workplace safety.

Strengths and Limitations

This study consisted of primary and secondary data collected at one point in time. Its cross-sectional design limits the inferences about changes over time and causality (Hulley, Cummings, Browner, Grady, & Newman, 2007). Cross-sectional designs are useful for describing phenomena as they exist and can lay the groundwork for prospective, longitudinal studies, which would be helpful with this population (Polit & Hungler, 2004). This type of design, however, is appropriate when trying to access hard-to-reach populations, such as EAWs, and typically yields few problems with attrition. Little is known about inner-city EAWs, their work injury or employment experiences, LHRs and social developmental context. Study findings provided important information about a population that is difficult to access and engage in healthcare services and research.

Primary data collection was strength of this study. Even though this population can be difficult to reach, the response rate to primary data collection was high. There was minimal missing data. Participants were willing to divulge personal and sensitive information that in many situations might be very difficult or embarrassing for them given their developmental stage in life. However, no participants refused to answer any questions or withdraw from the study. The study was conducted in a primary care community clinic that serves mainly low income

residents who are skeptical and reluctant to get involved in research. It was essential to develop trust and have “buy-in” from key leadership, staff and clients.

The use of secondary data has advantages and disadvantages. Secondary data were entered into the EHR by numerous healthcare providers in the same primary care clinic, and then extracted for analysis. Much of the missing data were found and added into the EHR (e.g., BP recordings, health update information etc.). Standardization of variable fields in the EHR may be of a benefit in the data extraction process. A pre-populated variable field that uses drop-down options limits the use of non-retrievable narrative by providers in the EHR. Data fields of this nature are often based on uniformly defined evidence-based standards and guidelines.

Disadvantages of using existing data sets include lack of investigator control over participant selection, which variables are collected and accompanying measurement tools, and how the questions are asked or documented. It also may affect the sample size, subject appropriateness for the study, and data quality including missing data or incorrect data (Hulley et al., 2007). Important confounders, outcomes and measures may not be documented in the database. Despite these limitations, EHRs provide a rich data source to generate knowledge, support public health policy, and use of them is cost effective (Filius et al., 2008).

The study included a non-probability convenience sample that was relatively small. Some potential participants were unreachable due to the unstable nature of their lives and housing situation, and their episodic use of healthcare services. These limitations limit the external validity of the study findings beyond LSES, urban EAWs who sought care from a primary care clinic and relied on public forms of health insurance. Emerging adult workers receiving healthcare services at this particular primary care clinic may differ from EAWs seeking healthcare services elsewhere and who may have private health insurance.

Many of the study results are based on self-reported data, which have several limitations: recall bias, social desirability, fear of retribution if they report occupational injuries or lack of job and safety training, as well as other contextual factors such as sociocultural norms. The questionnaires used for primary data collection to assess ACEs and occupational injury have limited published reliability, validity, and sensitivity psychometrics. Although the occupational injury measurement was investigator-developed, it had adequate internal consistency reliability. It was adapted from existing occupational injury surveys. These methodological limitations may have affected study results. Studies with a larger sample size that are longitudinal with a heterogeneous sample should be conducted in order to better describe the EAW population and their perceptions of their occupational environments and experiences.

The research is the first evidence-based scientific study conducted at this clinical site, and required the active participation from PCPs, staff, and the patients. Hopefully, the results will serve to inform the community, leadership and medical practitioners at the clinic about the occupational health needs, life experiences and developmental needs of this special population. In addition, this new information may also assist in the development of targeted assessment and intervention programs that will improve the health and work life outcomes for high-risk EAWs.

Implications for Practice

A goal of this study was to identify ways PCPs, technology and outpatient settings might facilitate the development of prevention and intervention programs to address the needs of EAWs transitioning to work life. Many EAWs are employed in organizations without occupational health support or supervisors knowledgeable about the specific occupational health needs of EAWs. Therefore, this study may assist in decreasing health disparities for EAWs by

advocating for screenings that include information about ACEs and occupational injury in LSES EAWs and providing them with appropriate education, referrals or services.

The study results demonstrate that there is an association between ACEs, LHRs, employment experiences, and occupational injuries; these findings indicate opportunities for education and development of interventions as research further explores these areas. Its findings might provide one route to a better understanding of these issues. The overall goals are to reduce occupational health disparities, promote occupational wellness, develop a healthy emerging workforce, and improve surveillance about occupational health issues in primary care settings among underserved populations. Ultimately, this study contributes to the primary care, occupational and EA health literature.

Conclusions

Occupational injuries, illnesses, and exposures remain serious health threats for the nation's transitioning EAWs. Workplace risk due to developmental and social issues for EAWs is an understudied phenomenon. Even less is known about the low-income EAWs with adverse childhood experiences and their occupational health risks. Current surveillance systems, most of which are paper-based, may miss or underreport the number of occupational health exposures. LSES EAWs often are employed in industries that do not have healthcare benefits, and they may work part-time, or have sporadic employment. Adolescent health specialists recommend routine occupational health screening and surveillance by primary care providers for young workers (Runyan, 2007), such as those in this current study.

Occupational health researchers and practitioners advocate for occupational health indicators be included in EHRs as a U.S. government meaningful use criteria (IOM, 2011; Filios et al., 2008; NIOSH, 2011; T. W. Hudson, president of the American College of Occupational

Environment Medicine, personal communication, August 4, 2011). An EHR system can serve as an efficient and efficacious secondary data source for the inclusion of screening tools to assess ACEs and occupational health history for LSES EAWs. This type of electronic surveillance system for workers seeking primary care is a beginning step to address the critical problem of workplace injury, illness, and risks. Finally, both primary care and occupational health professionals need to be cognizant of the many factors influencing the work behavior of EAWs to protect them from occupational injury and illness.

EAWs are at risk for increased occupational injury and other exposures due to the nature of their work, lack of employment experience, and special needs due to their developmental stage in life. LSES EAWs or those with significant exposure to ACEs may need even more support in order to succeed in employment and be protected from unwarranted work-related hazards. More extensive research about the quality of life and work life of EAWs is needed so that protective policies, at the state and national level, can be developed. Once these issues have been further explored, appropriate interventions and training programs can be developed. Furthermore, agencies such as the National Institute for Occupational Safety and Health and the Occupational Safety and Health Administration, both charged in different ways with keeping workers safe, may need education about the special needs of EAWs so they can develop appropriate policies at the highest levels.

Recommendations for Future Research

Emerging adult workplace injury is a costly public health problem that is largely unexplored. Policy makers, health care providers, educators, employers, peers, parents and guardians, and, families and communities, all have important roles in protecting the nation's youth. Research is needed to identify interventions that will specifically target low income

EAWs and their employers during the transitional period of early adulthood. Studies with EAWs must be conducted to better describe the population and their occupational environments and experiences. Ultimately, understanding their work and work milieu will allow researchers to develop appropriate injury prevention interventions for this population. To be sure, young workers are capable of recognizing workplace hazards and capable of offering remedies to enhance workplace safety. They are also eager to learn new skills and are interested in safe work, but training, as it is currently provided, is not protecting transitioning EAWs.

The transition to adulthood is an exciting and unique period for the emerging adult. Social context can be an asset or an impediment to a healthy transition from adolescence to adulthood. Social factors can potentially influence worker occupational health, safety, and risk for long-term injury and disability. They act via the following pathways: safety knowledge, attitudes, behaviors, perception of risk, self-efficacy, social support, and adverse childhood experiences. An integration of developmental contextualism theory and the positive youth development perspective allows researchers to better understand the complex individual-contextual connections of the emerging adult as well as to underpin interventions for transitioning to adulthood employment, using a positive, strength-based framework. Employment is difficult in the current job market for EAs with the best of skills. For EAs with barriers, such as, inadequate education, poor to no job training, poor social skills and experiences, poor social skills and adverse childhood experiences, this challenge is compounded.

Additionally, poor workers and those of color are largely missing in the literature. When younger workers are included in studies, however, they are often found to be working longer, later and experiencing higher rates of injuries. Recommendations from young workers in this study include receiving adequate work and safety training, not working too fast, having

supervisors who are trained to work with youth, and having supervisors who are supportive and not demoralizing. Occupational health and safety is a “collective effort” and the risk of an injury increases each time an “event” or “near miss” occurs. Management must be willing to collaborate with EAWs using their ideas and enthusiasm to foster better working environments that are safe and healthy.

References

- ACE Study-Health Presentations. (2012). What's an ACE score? Retrieved from http://acestudy.org/ace_score
- Adams, S. H., Knopf, D. K., & Park, M. J. (2013). Prevalence and treatment of mental health and substance use problems in early emerging adult years in the United States: Findings from the 2010 National Survey on Drug Use and Health. *Emerging Adulthood, 1*(1), 1–10. <http://dx.doi.org/10.1177/2167696813513563>
- Adler, N. E., Boyce, T., Chesney, M. A., Cohen, S., Folkman, S., & Kahn, R. L. (1994). Socioeconomic status and health: The challenge of the gradient. *American Psychologist, 49*(1), 15–24.
- Adler, N. E., & Newman, K. (2002). Socioeconomic disparities in health: Pathways and policies. *Health Affairs, 21*(2), 60–76.
- Allen, N. B., Siddique, J., Wilkins, J. T., Shay, C., Lewis, C. E., Goff, D. C., & Lloyd-Jones, D. (2014). Blood Pressure trajectories in early adulthood and subclinical atherosclerosis in middle age. *Journal of American Medical Association, 311*(5), 490–497.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Anda, R. F. (2007). The ACE score calculator. Retrieved from <http://acestudy.org>
- Anda, R. F., Felitti, V. J., Bremner, J. D., Walker, J. D., Whitfield, C., Perry, B. D., & Giles, W. H. (November 29, 2006). The enduring effects of abuse and related adverse experiences in childhood: A convergence of evidence from neurobiology and epidemiology. *European Archived Psychiatry Clinical Neuroscience, 256*, 174–186. [doi:10.1007/s00406-005-0624-4](https://doi.org/10.1007/s00406-005-0624-4)

- Anda, R., Fleisher, V. I., Felitti, V. J., Edwards, X. V., Whitefield, C. L., Dube, S. R., & Williamson, D. F. (2004). Childhood abuse, household dysfunction, and indicators of impaired adult worker performance. *The Permanente Journal–Winter*, 8(1), 30–38.
- Applied Survey Research. (2013). *Homeless point-in-time count survey*. Retrieved from sfgov.org/ihcb
- Arnett, J. J. (2000). Emerging adulthood. *American Psychologist*, 55(5), 469–480.
- Arnett, J. J. (2003). Conceptions of the transition to adulthood among emerging adults in American ethnic groups. *New Directions for Child and Adolescent Development*, 100 (Summer), 63–75.
- Arnett, J. J. (2006). *Emerging adulthood: Understanding the new way of coming of age*. Washington, DC: American Psychological Association.
- Arnett, J. J. (2007). Afterward: Aging out of care—Toward realizing the possibilities of emerging adulthood. *New Directions for Youth Development*, 113, 151–161.
- Barling, J., Loughlin, C., & Kelloway, E. K. (2002). Development and test of a model linking safety-specific transformational leadership and occupational safety. *Journal of Applied Psychology*, 87, 488–496.
- Baumen, K. E., Foshee, V. A., Ennett, S. T., Pemberton, M., Hicks, K. A., King, T. S., & Koch, G. G. (2001). Influence of a family program on adolescent tobacco and alcohol use. *American Journal of Public Health*, 91(4), 604–610.
- Bellis, M. A., Lowey, H., Leckenby, N., Hughes, K., & Harrison, D. (2013, April 14, 2013). Adverse childhood experiences: Retrospective study to determine their impact on adult health behaviours and health outcomes in a UK population. *Journal of Public Health*, 36(1), 81–91. <http://dx.doi.org/10.1093/pubmed/fdt038>

- Benson, P. L., Scales, P. C., Hamilton, S. F., & Sesma, A. (2007). Positive youth development: Theory, research, and applications. *Handbook of Child Psychology*, 1(16).
- Benavides, F. G., Bemach, J., Muntaner, C., Delcios, G. L., Catot, N., & Amable, M. (2006). Associations between temporary employment and occupational injury: What are the mechanisms? *Occupational Environmental Medicine*, 63, 416–421.
- Bernstein, J., & Hartman, H. (2000). Defining and characterizing the low-wage labor market. In *The Low-Wage Labor Market: Challenges and Opportunities for Economic Self-Sufficiency*. Washington, DC: Government Printing Office.
- Best practices: Positive youth development. (2002). Retrieved from www.npcresearch.com
- Boehmer, T. K., Jones, T. S., Ghosh, T. S., McCammon, C. S., & Vogt, R. L. (2009). Cluster of presumed organic dust toxic syndrome cases among urban landscape workers—Colorado. *American Journal of Industrial Medicine*, 52, 534–538.
- Boslaugh, S. (2007). Secondary data sources for public health: A practical guide. Retrieved from www.cambridge.org.
- Bowes, L., Chollet, A., Fombonne, E., Galera, C., & Melchior, M. (April, 23, 2012). Lifecourse SEP and tobacco and cannabis use. *European Journal of Public Health*, 23(2), 322–327. <http://dx.doi.org/10.1093/eurpub/cks065>
- Bowman, K., & Salazar, M. K. (2005). Racial and ethnic disparities in the workplace—Effects on worker health and safety. *American Association of Occupational Health Nurses*, 53(5), 198–208.
- Breslin, C., & Smith, P. (2010). A commentary on the unique developmental considerations of youth: Integrating the teenage cortex into the occupational health and safety context. *International Journal of Environmental Health*, 16(2), 225–229.

- Breslin, F. C., Polzer, J., MacEachen, E., Morrongiello, B., & Shannon, H. (2007). Workplace injury or “part of the job”? Towards a gendered understanding of injuries and complaints among young workers. *Social Science & Medicine*, *64*, 782–793.
- Brindis, C. D., Morreale, M. C., & English, A. (2003, Spring). Unique health care needs of adolescents. *The Future of Children: Health Insurance for Children*, *13*(1), 117–135. Retrieved from www.princeton.edu/futureofchildren/publications.
- Brown, D. W., Anda, R. F., Tiemeier, H., Edwards, V. J., Croft, J. B., & Giles, W. H. (2009). Adverse childhood experiences and the risk of premature mortality. *American Journal of Prevention Medicine*, *37*(5), 389–396. <http://dx.doi.org/>
- Brown, R. L., & Rounds, L. A. (1995). Conjoint screening questionnaires for alcohol and other drug abuse: Criterion validity in a primary care practice. *Wisconsin Medical Journal*, *94* (3), 135–140.
- Buchanan, S., Vossen, P., Krause, N., Moriarty, J., Frumin, E., Shimek, J. M., & Punnett, L. (2010). Occupational injury disparities in the U.S. hotel industry. *American Journal of Industrial Medicine*, *53*, 116–125. doi:10.1002/ajim.20724
- Burns, N., & Grove, S. K. (2005). *The practice of nursing research: Conduct, critique, and utilization* (5th ed.). Arlington, VA: Elsevier Saunders.
- Casey, B. J., Jones, R. M., & Hare, T. A. (2008). Adolescent brain. *Annual New York Academy of Science*, *1124*, 111–126.
- Castillo, D. N., & Malit, B. D. (1997). Occupational injury deaths of 16 and 17 year olds in U.S.: Trends and comparisons with older workers. *Injury Prevention*, *3*, 277–281.

- Catalano, R. F., Berglund, M. L., Ryan, J. A., Lonczak, H. S., & Hawkins, J. D. (2004). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *Annals of the American Academy*, *591*, 98–123.
- Cavazza, N., & Serpe, A. (2009). Effects of safety climate on safety norm violations: Exploring the mediating role of attitudinal ambivalence toward personal protective equipment. *Journal of Safety Research*, *4*, 277–283.
- Centers for Disease Control Morbidity Mortality Weekly Report (2010). *Occupational injuries and death among young workers—United States 1998–2007* [Weekly 210-623-062/41241 Regionix]. Retrieved April 5, 2010 from <http://www.cdcmmwr.gov>
- Center for Disease Control Morbidity Mortality Weekly Report (2011). *Youth Risk Behavior Surveillance—United States, 2011* [Surveillance Summaries 61(4)]. Retrieved April 5 2014 from <http://www.cidmmwr.gov/pdfss/ss6104.pdf>
- Center for Disease Control and Prevention and National Institute of Occupational Safety & Health (2011). NIOSH thanks IOM, review panel for review and recommendations on incorporation occupational information on electronic health records [NIOSH Update] Retrieved from www.cdc.gov/niosh/updates/upd-10-03-11
- Centers for Disease Control and Prevention & Division of Oral Health, National Oral Health Surveillance System (2010). National oral health and surveillance system [Fact sheet] Retrieved from www.cdc.gov/NOHSS/index.htm
- Centers for Disease Control and Prevention (2003). *Preventing deaths, injuries, and illnesses of young workers* [Annual report DHHS NIOSH Publication Number 2003–128]. Retrieved from <http://www.cdc.gov/niosh>

- Center for Disease Control and Prevention Morbidity Mortality Weekly Report (2012) *Youth risk behavior surveillance*—United States 2011 [Surveillance Summaries June 8, 2012/ 61 (SS04 1-162)]. Retrieved from www.cdc.gov/mmwr/preview/mmwrhtml/ss6104a1.htm
- Centers for Disease Control and Prevention, & National Center for Injury Prevention and Control, Division of Violence Prevention. (2013). Adverse childhood experiences (ACE) *study* [Questionnaires]. Retrieved from <http://www.cdc.gov/ace/>
- Centers for Disease Control and Prevention, & National Center for Injury Prevention & Control. (2010, April 13). Understanding youth violence fact sheet. Retrieved from <http://www.cdc.gov/injury/publications/index.html>
- Centers for Disease Control and Prevention, & National Institute for Occupational Safety and Health (2010, January 24). Young worker safety and health. Retrieved from <http://www.cdc.gov/niosh/topics/youth/>
- Centricity. (2011). In *the free encyclopedia*. Retrieved from www.centricity.org1/12/2013
- Claxton, S. E., & Van Dulmen, M. H. (2013). Casual sexual relationships and experiences in emerging adulthood. *Emerging Adulthood, 2*, 138–150.
<http://dx.doi.org/10.1177/2167696813487181>
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. New Jersey: Lawrence Erlbaum Associates Publishers Hove and London.
- Conger, R. D., & Donnellan, M. B. (2007). An interactionist perspective on the socioeconomic context of human development. *Annals of Review Psychology, 58*, 175-199.
- Corso, P. S., Edwards, V. J., Fang, X., & Mercy, J. A. (2006). Health-related quality of life among adults who experienced maltreatment during childhood. *American Journal of Public Health, 98*, 1094–1100.

- Couwenbergh, C., Van Der Gaag, R. J., Koeter, M., De Ruiter, C., & Van Den Brink, W. (2009). Screening for substances abuse among adolescents validity of the CAGE–AID in youth mental health care. *Substance Use and Misuse, 44*, 823–834.
<http://dx.doi.org/10.1080/10826080802484264>
- Craig, T. K., & Hodson, S. (2000). Homeless youth in London: II. Accommodation, employment and health outcomes at 1 year. *Psychological Medicine, 30*, 187–194.
<http://dx.doi.org/>
- Cubbin, C., & Smith, G. (2002). Socioeconomic inequalities in injuries: Critical issues in design and analysis. *Annual Review Public Health, 23*, 349–375.
- Dahl, R. E. (2004). Adolescent brain development: A period of vulnerabilities and opportunities—Key note address. *Annals New York Academy of Sciences, 1021*, 1–22.
doi:10.1196/annals.1308.001
- Danis, M., Kotwani, N., Ganett, J., Rivera, I., Davies-Cole, J., & Carter-Nolan, P. (2010). Priorities of low income urban residents for intervention to address the socio-economic determinants of health. *Journal Health Care Poor Underserved, 21*(4), 1318–1339.
- Davila, E. P., Christ, S. L., Caban-Martinez, A. J., Lee, D. J., Arheart, K. L., LeBlanc, W. G., & Fleming, L. E. (2010). Young adults, mortality, and employment. *Journal of Occupational Environmental Medicine, 52*(5), 501–504.
- Davis, L., Castillo, D. N., & Wegman, D. H. (2000). *Occupational Health* (4th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Davis, R., Cook, D., & Cohen, L. (2005). Community resilience approach to reducing ethnic and racial disparities in health. *American Journal of Public Health, 95*(12), 2168–2173.

- DeWitte, H., Verhofstadt, E., & Omeij, E. (2007). Testing Karasek's learning and strain hypotheses on young workers in their first job. *Work & Stress*, 2, 131–141.
- Delp, L., Brown, M., & Domenzain, A. (2005). Fostering youth leadership to address workplace and community environmental health issues: A university-school-community partnership. *Health Promotion Practice*, 6, 270–285.
- Dembe, A. E., Savageau, J. A., Amick, B. C., & Banks, S. M. (2005). Racial and ethnic variations in office-based medical care for work-related injuries and illness. *Journal National Medical Association*, 97(4), 498–507.
- Demirakca, T., Sartorius, A., Ende, G., Meyer, N., Welzel, H., Skopp, G., ...Hermann, D. (2011). Diminished gray matter in the hippocampus of cannabis users: Possible protective effects of cannabidiol. *Drug and Alcohol Dependence*, 114, 242–245.
<http://dx.doi.org/10.1016/j.drugalcdep.2010>
- Doll, L. S., Bonzo, S. E., & Mercy, J. A. (Eds.). (2007). Changing the social environment to prevent injuries. In *Handbook of Injury and Violence Prevention* (2nd ed.). New York, NY: Springer.
- Dong, M., Dube, S. R., Felitti, V. J., Giles, W. H., & Anda, R. F. (2003). Adverse childhood experiences and self-reported liver disease. *Archives Internal Medicine*, 163, 1949-1956
- Dong, M., Anda, R. F., Felitti, V. J., Dube, S. R., Williamson, D. F., Thompson, T. J., & Giles, W. H. (2004). The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. *Child Abuse & Neglect*, 24, 771–784.
- Doremus-Fitzwater, T. L., Varlinskaya, E. L., & Spear, L. P. (2010). Motivational systems in adolescence: Possible implications for age differences in substance abuse and other risk-taking behaviors. *Brain and Cognition*, 72, 114–123.

- Downey, L. H., Anyaebunam, C., & Scutchfield, F. D. (2009). Dialogue to deliberation: Expanding the empowerment education model. *American Journal of Health Behavior*, 33(1), 26–36. Retrieved from <http://dx.doi.org/>
- Dube, S. R., Cook, M. L., & Edwards, V. J. (2010). Health-related outcomes of adverse childhood experiences in Texas. *Preventing Chronic Disease: Public Health Research, Practice and Policy*, 7(3), 1–7.
- Dube, S. R., Williamson, D. F., Thompson, T., Felitti, V. J., & Anda, R. F. (2004). Assessing the reliability of retrospective reports of adverse childhood experiences among adult HMO members attending a primary care clinic. *Child Abuse & Neglect*, 28, 729-737.
- Duncan, P. M., Garcia, A. C., Frankowski, B. L., Carey, P. A., Kallock, E. A., Dixon, R. D., & Shaw, J. S. (2007). Inspiring healthy adolescent choices: A rationale for and guide to strength promotion in primary care. *Journal of Adolescent Health*, 41, 525–543.
- Elliott, J. C., Vanable, P. A., & Carey, K. B. (2014). A preliminary evaluation of a web-based intervention of college marijuana use. *Psychology of Addictive Behaviors*, 28(1), 288–293. Retrieved from <http://dx.doi.org/10.1037/a0034995>
- Emery, C. T., & Cooper, S. P. (1998). Prudent management of minors with occupational exposures to hazardous agents: Radiation protection “standards of care.” *Injury Prevention*, 4, 232–235.
- European Association for Injury Prevention and Safety Promotion [EuroSafe]. (n.d.). Retrieved from <http://www.eurosafe.eu.com>
- Evensen, C. T., Schulman, M. D., Runyan, C. W., Zakocs, R. C., & Dunn, K. (2000). Downside of adolescent employment: Hazards and injuries among working teens in North Carolina. *Journal of Adolescence*, 23, 545–560.

- Fan, Z. J., Bonauto, D. K., Foley, M. P., & Silverstein, B. A. (2006). Underreporting of work-related injury or illness to workers' compensation: Individual and industry factors. *Journal of Occupational Environmental Medicine, 48*, 914–922.
- Featherman, D. L., & Lerner, R. M. (1985). Ontogenesis and sociogenesis: Problematics for theory and research about development and socialization across the lifespan. *American Sociological Review, 50*(5), 659–676.
- Filios, M. S., Attfield, M., Graydon, J., Marsh, S., Nowlin, S., Sestito, J., & Davis, L. (2008). The case for collecting occupational health data elements in electronic health records [White paper National Institute for Occupational Safety and Health]. Retrieved from www.NIOSH.gov
- Fineran, S., & Gruber, J. E. (2009). Youth at work: Adolescent employment and sexual harassment. *Child Abuse & Neglect, 33*, 550–559.
- Fitzpatrick, K. M., & Boldizar, J. P. (1993). The prevalence and consequences of exposure to violence among African-American youth. *Journal of American Academy of Child and Adolescent Psychiatry, 32*(2), 424–430.
- Flakerud, J. H., & Wehtje-Winslow, B. W. (2010). Vulnerable populations and the ultimate responsibility [Journal]. *Issues in Mental Health Nursing, 31*, 298–299. Retrieved from <http://dx.doi.org/10.3109/01612840903308556>
- Fleiss, J. J., Tytun, A., & Ury, S. H. (1980). A simple approximation for calculating sample sizes for comparing independent proportions. *Biometrics, 36*, 343–346.
- Fordyce, T. A., Morimoto, L., & Coalson, J. (2010). Neck injuries among electric utility workers 1995-2007. *Journal of Environmental Medicine, 52*(4), 441–449.

- Friedman, L. S., & Forst, L. (2008). Ethnic disparities in traumatic occupational injury. *Journal of Occupational and Environmental Medicine*, 50, 350–358.
- Frone, M. R. (1998). Predictors of work injuries among employed adolescents. *Journal of Applied Psychology*, 83(4), 565–576.
- Frumppkin, H., Walker, E. D., & Friedman-Jimenez, G. (1999). Minority workers and communities. *Occupational Medicine*, 14(3), 495–517.
- Gillen, M., Kools, S., Sum, J., McCall, C., & Moulden, K. (2004). Construction workers' perceptions of management safety practices: A qualitative investigation. *Work*, 23, 245–256.
- Gillen, M., Yen, I. H., Trupen, L., Swig, L., Rugulies, R., Mullen, K., & Janowitz, I. (2007). The association of socioeconomic status and psychosocial and physical workplace factors with musculoskeletal injury in hospital workers. *American Journal of Industrial Medicine*, 50(4), 245–260.
- Gore, S., Kadish, S., & Aseltine, R. H. (2003). Career centered high school education and post-high school career adaption. *American Journal of Community Psychology*, 1(2), 77–88.
- Goroll, A. H., & Mullery, A. G. (2009). Primary care medicine: Office evaluation and management of the adult patient. In A. H. Goroll (Ed.), *Family Medicine* (6th ed). Philadelphia: Wolters Kluwer & Lippincott Williams & Wilkins
- Greene, M. B. (1993). Chronic exposure to violence and poverty: Interventions that work for youth. *Crime & Delinquency*, 106–124. Retrieved from <http://www.sagesocialsciencecollection.com>

- Geenen, S., & Powers, L. E. (2007). “Tomorrow is another problem”: The experiences of youth in foster care during their transition to adulthood. *Children and Youth Services Review*, 29, 1085–1101.
- Gregorio, D. I., Walsh, S. J., & Paturzo, D. (1997). Effects of occupation-based social position on mortality in a large American cohort. *American Journal of Public Health*, 87(9), 122–132.
- Guidelines for Adolescent Preventive Services. (2012). Retrieved from [http://www.ama-assn.org/adolescent health](http://www.ama-assn.org/adolescent%20health)
- Harkonmaki, K., Korkeila, K., Vahtera, J., Kivimaki, M., Suominen, S., Sillanmaki, L., & Koskenvuo, M. (2007). Childhood adversities as a predictor of disability retirement. *Journal of Epidemiology and Community Health*, 61, 479–484.
- Hayrinen, K., Saranto, K., & Nyranen, P. (2008). Definitions, structure, content, use and impacts of electronic health records: A review of the research literature. *International Journal of Medical Informatics*, 77 (5), 291–304.
- He, K., Kramer, E., Houser, R. F., Chomitz, V. R., & Hacker, K. A. (September 18, 2003). Defining and understanding healthy lifestyles choices for adolescents. *Journal of Adolescent Health*, 35, 26–33. Retrieved from <http://dx.doi.org/10.1016/j.jadohealth.2003.09.004>
- Heavey, E. (2014). Open wide: Oral health in primary care. *Nursing*, 3, 59–62. <http://dx.doi.org/doi-10.1097/01NURSE.0000441882.953718c>
- Hennequin, E. (2007). What “career success” means to blue-collar workers. *Career Development International*, 12(6), 565–581. Retrieved from <http://dx.doi.org/10.1108/13620430710822029>

- Henrich, C. C. (2006). Context in action. *Journal of Clinical Psychology, 62*(9), 1083–1096.
- Herbert, R., & Landrigan, P. J. (2000). Work-related death: A continuing epidemic. *American Journal of Public Health, 90*, 541–545.
- Hindelang, R. L., Dwyer, W. O., & Leeming, F. C. (2001). Adolescent risk-taking behavior: A review of the role of parental involvement. *Current Problem Pediatrics, 31*(3), 63–83.
- Hing, E., Hooker, R. S., & Ashman, J. T. (2011). Primary healthcare in community health centers and comparison with office-based practice. *Journal of Community Health, 36*(3), 406–413.
- Hirshon, J. M., Warner, M., Irvin, C., Niska, R. W., Anderson, D. A., Smith, G. S., & McCaig, L. F. (2009). Research using emergency department-related data sets: Current status and future directions. *Society for Academic Emergency Medicine, 16*, 1103–1109.
<http://dx.doi.org/>
- Hodgins, M., Battel-Kirk, B., & Asgeirsdottir, A. G. (2010). Building capacity in workplace health promotion: The case of healthy together e-learning project. *Global Health Promotion, 17*(1), 60–68.
- Holness, D. L., Somerville, S., Kosny, A., Godeski, J., Mastandrea, J. J., & Sinclair, G. M. (2004). Workplace health and safety concerns in service organizations in the inner city. *Journal of Urban Health: Bulletin of the New York Academy of Medicine, 81*(3), 489–497.
- Huang, F. Y., Chung, H., Kroenke, K., Delucchi, K. L., & Spitzer, R. L. (2005). Using the Patient Health Questionnaire–9 to measure depression among racially and ethnically diverse primary care patients. *Journal of General Internal Medicine, 21*, 547–552.
<http://dx.doi.org/10.1111/j.1525-1497.2006.00409.x>

- Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D. G., & Newman, T. B. (2007). *Designing clinical research* (3rd ed.). Philadelphia, PA: Wolters Kluwer & Lippincott Williams & Wilkins.
- Huston, A. C., & Bentley, A. C. (2010). Human development in societal context. *Annual of Review Psychology, 61*, 411–437.
- Hyggen, C. (2012). Does smoking cannabis affect work commitment? *Addiction, 107*, 1309–1315. Retrieved from <http://dx.doi.org/10.1111/j.1360-0443.2012.03796.x>
- Institute of Medicine (2011). *Incorporating occupational information in electronic health records*. [Letter Report] Washington, DC: National Academies Press
- International Labor Union. (2005). ILO estimates over 1 million work-related fatalities each year. Retrieved from http://www.ilo.org/global/about-the-ilo/media-centre/press-releases/WCMS_007969/lang--en/index.htm
- Jackson, L. L. (2001). Non-fatal occupational injuries and illnesses treated in hospital emergency departments in the United States. *Injury Prevention, 7*, 21–26.
doi:10.1136/ip.7suppl_1i21
- Jacobs, T. L. (2011). Intensive meditation training, immune cell telomerase activity and psychological mediators. *Psychoneuroendocrinology, 36*, 664–681.
- Ka, H., Kramer, E., Houser, R. F., Chomitz, V. R., & Hacker, K. A. (2004). Defining and understanding healthy lifestyles choices for adolescents. *Journal of Adolescent Health, 34*, 26–33.
- Kalleburg, A. L. (2012). Job quality and precarious work: Clarification, controversies, and challenges. *Work and Occupations, 39*(4), 427–448 Retrieved from <http://dx.doi.org/10.1177/0730888412460533>

- Kane, R. L., & Radosevich, D. M. (2011). *Conducting health outcomes research* (pp. 281–296). Sudbury, MA: Jones & Bartlett Learning.
- Karmaker, S. D., & Breslin, F. C. (2008). Role of educational level and job characteristics on the health of young adults. *Social Science & Medicine*, *66*, 2011–2022.
- Kenny, G., & Pelletier, J. (2008, September). Spotlight on low income uninsured young adults [Issue brief]. Retrieved from <http://kff.org/uninsured/issue-brief/spotlight-on-low-income-uninsured-young-adults/>
- Kerreny, M. E. (2012). Contemplative/emotion training reduces negative emotional behavior and promotes pro-social responses. *Emotion*, *2*, 338–350. <http://dx.doi.org/10.1037/90002618>
- Kia-Keating, M., Dowdy, E., Morgan, M. L., & Noam, G. G. (August 4, 2010). Protecting and promoting: An integrative conceptual model for healthy development of adolescents. *Journal of Adolescent Health*, *48*, 220–228. Retrieved from <http://dx.doi.org/>
- Kogan, S. M., Brody, G. H., & Chen, Y. (2011). Natural mentoring processes deter externalizing problems among rural African America emerging adults: A prospective analysis. *American Journal of Community Psychology*, *48*(3–4), 272–283.
- Krause, N., Scherzer, T., & Rugulies, R. (2005). Physical workload, work intensification, and prevalence of pain in low wage workers: Results from a participatory research project with hotel cleaners in Las Vegas. *American Journal of Industrial Medicine*, *48*(5), 1–12.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ–9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606–613.
- Laberge, M., & Ledoux, E. (2011). Occupational health and safety issues affecting young workers: A literature review. *Work*, *39*(3), 215–32. Retrieved from <http://dx.doi.org/>

- Lee, J. O., Herrenkohl, T. I., Kosterman, R., Small, C. M., & Hawkins, J. D. (July 17, 2013). Educational inequalities in the co-occurrences of mental health and substance use problems, and its adult social-economic consequences: A longitudinal study of young adults in a community sample. *Public Health*, *127*, 745–753. Retrieved from <http://dx.doi.org/10.1016/j.puhe.2013.04.005>
- Lee, L. Y. (2013). Feasibility and effectiveness of a Chen/Style Tai Chi programme for stress reduction in junior secondary high school. *Stress Health*, *29*(2), 117–124.
- Leigh, J. P. (2011). Economic burden of occupational injury and illness in the United States. *The Milbank Quarterly: A Multidisciplinary Journal of Population Health and Health Policy*, *89*(4), 728–772.
- Leigh, J. P. (December 2012). *Numbers and costs of occupational injury and illness in low-wage occupations* [White paper]. University of California Davis, CA: Center for Poverty Research, and Center for Health Care Policy and Research.
- Leigh, J. P., & Du, J. (2012, January 18 2012). Are low wages risk factor for hypertension? *European Journal Public Health*, *22*, 854-859. Retrieved from <http://dx.doi.org/>
- Leonardson, G. R., Kemper, E., Ness, F. K., Koplín, B. A., Daniels, M. C., & Leonardson, G. A. (2005). Validity and reliability of the AUDIT and CAGE-AID in Northern Plains American Indians. *Psychological Reports*, *97*, 161–166.
- Lerner, R. M. (1992). Dialectics, developmental contextualism, and the further enhancement of theory and puberty and psychosocial development. *The Journal of Early Adolescence*, *12*, 366–388.
- Lerner, R. M. (2002). Contemporary developmental theory and adolescence: Developmental systems and applied developmental science. *Journal of Adolescent Health*, *31*, 122–135.

- Lerner, R. M. (2004). *Liberty: Thriving and civic engagement among America's youth*. Thousand Oaks, CA: Sage.
- Lerner, R. M. (2005). *Promoting Positive Youth Development: Theoretical and empirical basics* [White paper]. Retrieved from www.Tufts.edu
- Lerner, R. M. (2007). *Developmental science, developmental systems, and contemporary theories of human development* (6th ed. Rev vol 1, pp 1–17 ed.). Medford, MA: John Wiley & Sons, Inc.
- Lerner, R. M., Alberts, A. E., Jellicic, H., & Smith, L. M. (2006). Young people are resources to be developed: Mobilizing adults for positive youth development: Strategies for closing the gap between beliefs and behaviors (pp. 19–39) In E. G. Clary (Ed.). *In promoting positive youth development through adult-youth relations and community assets*. New York, NY: Springer.
- Lerner, R. M., Almerigi, J. B., Theokas, C., & Lerner, J. V. (2005). Positive youth development: A view of the issues. *The Journal of Early Adolescence*, 28(10), 10–16.
- Lerner, R. M., & Castellino, D. R. (2002). Contemporary developmental theory and adolescence: Developmental systems and applied developmental science. *Journal of Adolescent Health*, 31, 122–135.
- Lerner, R. M., Dowling, E. M., & Anderson, P. M. (2003). Positive youth development: thriving as a bases of personhood and civil society. *Applied Developmental Science*, 7(3), 172–180.
- Lerner, R. M., Hultsch, D. F., & Dixon, R. A. (1983). Contextualism and the character of developmental psychology in the 1970s. *Annals of New York Academy of Science*, 412, 101–128.

- Lerner, R. M., & Kauffman, M. B. (1985). Concepts of development in contextualism. *Developmental Review, 5*(4), 309–333.
- Lerner, R. M., Von Eye, A., Lerner, J., Lewin-Bizan, S., & Bowers, E. P. (2010). Special issue introduction: The meaning and measurement of thriving: A view of the issues. *Journal of Youth Adolescence, 39*, 707–719.
- Levy, B. S., & Wegman, D. H. (Eds.) (2000). Occupational health recognizing and prevent work-related disease and injury (4th ed.) Philadelphia, PA: Lippincott Williams & Wilkins.
- Lewis, R. J., Friedlander, B. R., Bhojani, F. P., Schorr, W. P., Salatich, P. G., & Lawhorn, E. G. (2002). Reliability and validity of an occupational health history questionnaire. *Journal of Occupational Environmental Medicine, 44*(1), 39–47.
- Linker, D., Miller, M. E., Freeman, K. S., & Burbacher, T. (2005). Health and safety awareness for working teens: Developing a successful, statewide program education teen workers. *Family & Community Health, 28*(3), 225–238.
- Lombardi, D. A., Wirtz, A., Willets, J. L., & Folkard, S. (2012, June 2012). Independent effects of sleep duration and body mass index on the risk of a work-related injury: Evidence from the U.S. national health interview survey. *Chronobiology International, 29*(5), 556–564. Retrieved from <http://dx.doi.org/>
- Loomis, D., & Richardson, D. (1998). Race and the risk of fatal injury at work. *American Journal of Public Health, 88*(1), 40–44.
- Lucas-Thompson, R. G. (2013). Relationship quality with parents, stressful life events, and cortisol production in emerging adulthood. *Emerging Adulthood, 2*(2), 92–104. Retrieved from <http://dx.doi.org/10.1177/21676983503313>

- MacPhee, D., Kreutzer, J. C., & Fritz, J. J. (1994). Infusing a diversity perspective into human development course. *Child Development, 65*, 699–715.
- Mance, G., Mendelson, T., Byrd, B., Jones, J., & Tandem, D. (2010). Utilizing community-based participatory research to adapt a mental health intervention for African American emerging adults. *Progress in Community Health Partnerships: Research, Education, and Action, 4*(2), 131–140.
- Mardis, A. L., & Pratt, S. G. (2003). Nonfatal injuries in young workers in the retail trades and services industries in 1998. *Journal of Occupational Environmental Medicine, 45*, 316–323.
- Masten, A. S., Obradovic, J., & Burt, K. B. (2006). Resilience in emerging adulthood: Developmental perspectives on continuity and transformation. *In Emerging adults in America coming of age in the 21st century* (ed.). In J. J. Arnett, & J. L. Tanner (Eds.). Washington, DC: American Psychological Association.
- McLaughlin, H., Uggen, C., & Blackstone, A. (2008). Social class and workplace harassment during the transition to adulthood. *New Directions for Child and Adolescent Development, 119*, 85-98. <http://dx.doi.org/>
- Meleis, A. I. (2007). *Theoretical nursing* (4th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Mendes, E. (2012). Uninsured rate for 18 to 25 year olds plateaus. Retrieved from www.gallup.com/poll/134737/uninsured-rate-year-olds-plateaus.aspx
- Mercy, J. A., Mack, K. A., & Steenkamp, M. (2007). Changing the social environment to prevent injuries. In L. S. Doll, S. E. Bonzo, & J. A. Mercy (Eds.) *Handbook of injury and violence prevention* (2nd ed., pp. 277–294 Chapter 15). New York, NY: Springer

- Mersky, J. P., Topitzes, J., & Reynolds, A. J. (2013). Impacts of adverse childhood experiences on health, mental health and substance use in early adulthood: A cohort study of an urban, minority sample in the U.S. *Child Abuse & Neglect*, 37(11) 917–925. Retrieved from <http://dx.doi.org/10.1016/j.chiabu.2013.07.011>
- Mertz, E. (2011). Registered dental hygienists in alternative practice: Increasing access to dental care in California. Retrieved from http://futurehealth.ucsf.edu/content/29/2008-05_Registered_D
- Miller, M. E., & Bush, D. (2). Review of the federal and child labor regulations: Updating hazardous and prohibited occupations. *American Journal of Industrial Medicine*, 45, 218–221.
- Miller, M. E., Handleman, E., & Lewis, C. (2007). Protecting young workers: Coordinated strategies help to raise safety awareness. *Professional Safety*, 38–45.
- Miller, M. E., & Salazar, M. K. (2004). Young adolescents in the workforce: A population at risk. , 52(11), 461–464.
- More young adults at risk for high blood pressure. (2011). *NIH Medline Plus*, 6, 10-11.
- Mortimer, J. J. (2012, March 1, 2012). . *The evolution, contributions, and prospects of the youth development study: An investigation in life course social psychology*, 75(1), 5–27. Retrieved from <http://dx.doi.org/10.1177/0190272511434911>
- Mortimer, J. T., Finch, M. D., Ryu, S., Shanahan, M. J., & Call, K. T. (1996). Effects of work intensity on adolescent mental health, achievement, and behavioral adjustment: New evidence from a prospective study. *Child Development*, 67, 1243–1261.
- Muirhead, V., Quinonex, C., Figueiredo, R., & Locker, D. (April 5 2009). Oral health disparities and food insecurity in working poor. 37, 294–304.

- Paul-Mulye, T. P., Park, M. J., Nelson, C. D., Adams, S. H., Irwin, C. E., & Brindis, C. D. (2009). Trends in adolescent and young adult health in the United States. *Journal of Adolescent Health, 45*, 2–24.
- Munro, B. H. (2005). *Statistical methods for health care research* (5th ed.). Philadelphia: Lippincott William & Wilkins.
- Murray, L. R. (2003). Sick and tired of being sick and tired: Scientific evidence, methods, and research implications for racial and ethnic disparities in occupational health. *American Association of Occupational Health Nurses, 93*(2), 221–226.
- Muuss, R. E. (1996). *Theories of adolescence*. (6th). New York, N.Y.: McGraw-Hill Companies.
- National Institute for Occupational Safety and Health. (2003). *Preventing deaths, injuries, and illness of young workers* (DHHS Publication No. 2003-128). Washington, DC: Government Printing Office.
- National Research Council and Institute of Medicine, & Kipke, M.D. (1999). *Risks and opportunities: Synthesis of studies on adolescence* [Online forum comment]. Retrieved from <http://www.nap.edu>
- National Research Council/Institute of Medicine Board on Children, Youth and Families Workshop on the Science of Adolescence, & Lerner, R.M. (2005). *Promoting positive youth development: Theoretical and empirical bases* [Paper]. Retrieved from www.boyconf.org/lerner_paper
- Neinstein, L. S. (2013). The new adolescents: An analysis of health conditions, behaviors, risks, and access to services among emerging young adults. In *The new adolescents: An analysis of health status* (pp. 1–79). Retrieved from www.usc.edu/student/health_center

- Nesman, T. M. (2007). Participatory study of school dropout and behavioral health of Latino adolescents. *The Journal of Behavioral Health Services & Research*, 34(4), 414-430.
- Nesselroade, J. R., Schaie, K. W., & Baltes, P. B. (1972). Ontogenetic and generational components of structural and quantitative change in adult behavior. *Journal of Gerontology*, 27, 222–228.
- Neufeld, S., Wright, S. M., & Gaut, J. (2002). Not raising a “bubble kid”: Farm parents’ attitudes and practices regarding the employment, training and supervision of their children. *The Journal of Rural Health*, 18(1), 57–66.
- Newman, L. S. (1995). Occupational illness. *The New England Journal of Medicine*, 333(17), 1128–1134.
- Nicholson, N., & De Waal, A. W. (2005). “Playing to win: biological imperative, self-regulation and trade-offs in the game”. *Journal of Organizational Behavior*, 26, 137–54.
- Nicholson, V. J., Bunn, T. L., & Costich, J. F. (2008). Disparities in work-related injuries associated with worker compensation coverage status. *American Journal of Industrial Medicine*, 51, 393–398.
- Oshio, T., Umeda, M., & Kawakami, N. (July 20, 2013). Impact of interpersonal adversity in childhood on adult mental health: How much is mediated by social support and socio-economic status in Japan? *Public Health*, 127, 754–760. Retrieved from <http://dx.doi.org/10.1016/j.puhe.2013.05.005>
- Overton, W. F. (2007). Coherent metatheory for dynamic systems: Relational organicism-contextualism. *Human Development*, 50, 154–159.
- Ozer, E. M. (2007). The adolescent primary care visit: Time to build strengths. *Journal of Adolescent Health*, 41(6), 519.

- O'Connor, T., Loomis, D., Runyan, C., Abboud dal Santao, J., & Schulman, M. (2005). Adequacy of health and safety training among young Latino construction workers. *Journal of Occupational Environmental Medicine, 47*, 272–277.
- Paul-Mulye, T., Park, M. J., Nelson, C. D., Adams, S. H., Irwin, C. E., & Brindis, C. D. (2009). Trends in adolescent and young adult health in the United States. *Journal of Adolescent Health, 45*(1), 8–24.
- Pedersen, S., Seidman, E., Yoshikawa, H., Rivera, A. C., Allen, L., & Aber, J. L. (2005). Contextual competence: Multiple manifestations among urban adolescents. *American Journal of Community Psychology, 35*(1/2 March 2005), 65–82.
- Pepper, S. C., & Harrell, B. J. (1998). Stephen C. Pepper home page. Retrieved from <http://people.sunyit.edu>
- Peterson, G. W. (1995). Need for common principles in prevention programs for children, adolescents, and families. *Journal of Adolescent Research, 10*, 470–485.
- Phillips, S., & Sandstrom, K. L. (1990). Parental attitudes toward youth work. *Youth Society, 22*(2), 160–184.
- Plog, B. A., Quinlan, P. J., & Villarreal, J. (2012). *Fundamentals of Industrial Hygiene* (6th ed.). Ithaca, NY: National Safety Council.
- Polit, D. F., & Hungler, B. P. (1999). *Nursing research: Principles and methods* (6th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Polit, D. F., & Hungler, B. P. (2004). *Nursing research: Principles and methods* (7th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.

- Porteous, N., & Waghorn, G. (2009). Developing evidence-based supported employment service for young adults receiving public mental health services. *New Zealand Journal of Occupational Therapy*, 56(1), 34–39.
- Redonnet, B., Chollet, A., Fombonne, E., Bowes, L., & Melchior, M. (2012, 10.1016/j.drugalcdep.2011.09.002). Tobacco, alcohol, cannabis and other illegal drug use among young adults: The socioeconomic context. *Drug and Alcohol Dependence*, 121, 231–239. Retrieved from <http://dx.doi.org/10.1016/j.drugalcdep.2011.09.002>
- Redwood, Y., Schulz, A. J., Israel, B. A., Yoshihama, M., Wang, C. C., & Kreuter, M. (2010). Social, economic, and political processes that create build environment inequities: Perspectives from urban African Americans in Atlanta. *Family Community Health*, 33(1), 53–67.
- Rosenstock, L., Logerfo, J., Heyer, N. N., & Carter, W. B. (1984). Development and validation of a self-administered occupational health history questionnaire. *Journal of Occupational Medicine*, 28(1), 50–54.
- Rosner, D. (2000). When does a workers' death become murder? *American Journal of Public Health*, 90(4), 535–539.
- Rowan, L. J. (2000). Caring for the adolescent patient. In A. H. Goroll, & A. G. Mulley (Eds.), *Primary Care Medicine* (4th, pp. 1233–1236). Philadelphia, PA.: Lippincott Williams & Wilkins.
- Rubenstein, H., Stern, M. R., & Pollack, S. H. (1999). Protecting the health and safety of working teenagers. *American Family Physician*, 60, 575–587.

- Runyan, C. W. (2007). Advocating the inclusion of adolescent work experience as part of routine preventive care. *Journal of Adolescent Health, 41*, 221–223. Retrieved from <http://dx.doi.org/10.106/jadohealth.2007.06009>
- Runyan, C. W., Bowling, M., Schulman, M., & Gallagher, S. C. (December 18, 2003). Potential for violence against teenage retail workers in the United States. *Journal of Adolescent Health, 36*(3), 1–5.
- Runyan, C. W., Vladutiu, C. J., Rauscher, K. J., & Schulman, M. (2008). Teen worker's exposures to occupational hazards and use of personal protective equipment. *American Journal of Industrial Medicine, 51*, 735–740.
- Runyan, C. W., & Zakocs, R. C. (2000). Epidemiology and prevention of injuries among adolescent workers in the United States. *Annual review public health, 21*, 247–269.
- Saleh, S. S., Fourtes, L., Vaughn, T., & Bauer, E. P. (2001). Epidemiology of occupational injuries and illnesses in a university population: A focus on age and gender differences. *American Journal of Industrial Medicine, 39*, 581–586. Retrieved from <http://dx.doi.org/>
- Salminen, S. (2004). Have young worker more injuries than older ones? An international literature review. *Journal of Safety Research, 35*(5), 513–521.
- Sampson, R. (2004). Neighborhood and community. *New Economy, 11*, 106–113.
- Santrock, J. W. (2008). *Adolescence* (12th ed.). Boston, MA: McGraw-Hill Higher Education.
- Scales, P. C., Benson, P. L., Moore, K. A., Lippman, L., Brown, B., & Zoff, J. F. (2008, March 29, 2008). Promoting equal developmental opportunity and outcomes among America's children and youth: Results from the national promise study. *Journal of Primary Prevention, 121–144*. Retrieved from <http://dx.doi.org/10.1007/s10935-008-0129-9>

- Schilling, E. A., Aseltine, R. H., & Gore, S. (2007). Adverse childhood experiences and mental health in young adults: A longitudinal survey. *Biomed Central*, 7(30), 1–10. Retrieved from <http://dx.doi.org/10.1186/1471-2458-7-30>
- Schulenberg, J. E., & Zarett, N. R. (Eds.). (2006). Mental health during emerging adulthood: Continuity and discontinuity in courses, causes, and functions. Washington, DC: American Psychological Association.
- Schulte, P. A., Stephenson, C., Okum, A. H., Palassis, J., & Biddle, E. (2005). Integrating occupational safety and health information into vocational and technical education and other workforce preparation programs. *American Journal of Public Health*, 95(3), 404–411. doi:10.2105/AJPH.2004.047241
- Schultz, I. Z., Crook, J., Berkowitz, J., Milner, R., & Meloche, G. R. (2005, September). Predicting return to work after low back injury using the psychosocial risk for occupational disability instrument: A validation study. *Journal of Occupational Rehabilitation*, 15(3), 365–376
- Schuster, M. A., Eastman, K. L., Fielding, J. E., Rotherman-Borus, M. J., Breslow, L., Fanzoi, L. L., & Kanouse, D. (2001). Promoting adolescent health: Worksite-based interventions with parents of adolescents. *Journal of Public Health Management Practice*, 7(2), 41–52.
- Schwartz, K., & Schwartz, T. (2008). *Uninsured young adults: A profile and overview of coverage options*. Retrieved from Kaiser Family Foundation: www.kaiserfamilyfoundation.org
- Schwarz, D. F., Grisso, J. A., Miles, C., Holmes, J. H., & Sutton, R. L. (1993). An injury prevention program in an urban African American community. *American Journal of Public Health*, 83(5), 675–680.

- Seidel, H. M., Ball, J. W., Dains, J. E., & Benedict, G. W. (1999). *Mosby's guide to physical examination* (4th ed.). St Louis, MO: Mosby.
- Seth, P., Murray, C. C., Braxton, N. D., & DiClemente, R. J. (2012). The concrete jungle: City stress and substance abuse among young adult African American men. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, *90*, 307–313. Retrieved from <http://dx.doi.org/10.1007/s11524-012-9716-4>
- Shelton, R. C., McNeill, L. H., Puleo, E., Wolin, K. Y., Emmons, K. M., & Bennett, G. G. (2011). The association between social factors and physical activity among low income adults living in public housing. *Research and Practice*, *101*(11), 2102–2110. Retrieved from <http://dx.doi.org/10.2105/AJPH.2010.196030>
- Sherrod, L. R. (2005). Ensuring liberty by promoting youth development. *Human Development*, *48*(48), 376–381.
- Shilling, E. A., Aseltine, R. H., & Gore, S. (2007, March 7 2007). Adverse childhood experiences and mental health in young adults: a longitudinal study. , *7*(30), 1–10. Retrieved from <http://dx.doi.org/10.1186/1471.2458.7.30>
- Shonokoff, J. P., Boyce, W. T., & McEwen, B. S. (2009). Neuroscience, molecular biology, and the childhood roots of health disparities. *Journal of American Medical Association*, *301*(21), 2252–2259.
- Shute, N. (2011). Your teen's amazing brain. *U.S. News & World Report Special Edition*, 20–22.
- Smetana, J. G., Campione-Barr, M., & Metzger, A. (2006). August 31, 2006. *Annual Review Psychology*, *57*, 255–284. doi:10.1146/annurev.psych.57.102904.190124
- Smith, P. M., & Mustard, C. A. (2007). How many employees receive safety training during their first year of a new job? *Injury Prevention*, *13*(1), 37–41.

- Sommers, B. D., Buchmueller, T., Decker, S. L., Carey, C., & Kronick, R. (2012). The affordable care act has led to significant gains in health insurance and access to care for young adults. *Health Affairs*, *32*(1), 1–10. Retrieved from <http://dx.doi.org/10.1377/hlthaff.2012.0552>
- Sorell, G. T., SoRelle-Minor, D. A., & Pause', C. J. (2007). Moving on: The challenges of dynamic systems perspectives. *Human Development*, *50*, 160–164.
- Stablein, T., & Appleton, A. A. (2013, July 15, 2013). A longitudinal examination of adolescent and young adult homelessness experiences, life course transitions, and health. *Emerging Adulthood*, *1*, 305–313. Retrieved from <http://dx.doi.org/10.1177/2167696813495682>
- Staff, J., & Schulenberg, J. E. (2010). Millennials and the world of work: Experiences in paid work during adolescence. *Journal of Business Psychology*, *25*, 247–255.
- Steinberg, L. (2010). Commentary: A behavioral scientist looks at the science of adolescent brain development. *Brain and Cognition*, *72*(1), 160–164. Retrieved from <http://dx.doi.org/10.1016/j.bandc.2009.11.003>
- Studer, J., Baggio, S., Mohler-Kuo, M., Dermota, P., Gaume, J., Bertholet, N., . . . Gmel, G. (2013, March 25, 2013). Examining non-response bias in substance use research: Are late respondents proxies for non-respondents? *Drug and Alcohol Dependence*, *132*, 316–323. Retrieved from <http://dx.doi.org/10.1016/j.drugalcdep.2013.02.029>
- Substance Abuse and Mental Health Services Administration [SAMHSA], Center for Behavioral Health Statistics and Quality. (2013). *The TEDS Report: Marijuana admissions aged 18 to 30: Early vs. adult initiation* (August 13, 2013). Washington, DC: Government Printing Office.

- Substance Abuse and Mental Health Services Administration (May 6, 2014) *SAMHSA data reveal the impact of behavioral health conditions on treatment on older adolescent and young adults* [Press release]. Retrieved from <http://www.samhsa.gov/newsroom/advisories/1405060514.aspx>
- Sudhinaraset, M., & Blum, R. W. (2010). The unique developmental considerations of youth-related work injuries. *International Journal Occupational Environmental Health, 16*(2), 216–222.
- Super, C. M., & Harkness, S. (2003). Metaphors of development. *Human Development, 46*, 3-23.
- Switzer, G. E., Wisniewski, S. R., Belle, S. H., Dew, M. A., & Schultz, R. (1999). Selecting, developing, and evaluating research instruments. *Social Psychiatry Psychiatric Epidemiology, 34*, 399-409.
- Taiwo, O. A., Mobo, B. P., & Cantley, L. (2010). Recognizing occupational illnesses and injuries. *American Family Physician, 82*(2), 169–174.
- Tak, S., Alterman, T., Baron, S., & Calvert, G. M. (2010, April 29, 2010). Racial and ethnic disparities in work-related injuries and socio-economic resources among nursing assistants employed in US nursing homes. *American Journal of Industrial Medicine, 53*, 951–959. Retrieved from <http://dx.doi.org/10.1002/ajim.20852>
- The uninsured: An interactive tool. (2013). Retrieved from www.kff.org
- Trzesniewski, K. H., Donnellan, M. B., Moffitt, T. E., Robins, R. W., Poulton, R., & Caspi, A. (2006). Low self-esteem during adolescence predicts poor health, criminal behavior, and limited economic prospects. *Developmental Psychology, 42*(2), 381–390.
- U. S. Bureau of Labor Statistics (2008). *A profile of the working poor*, [Fact sheet Report 1022]. Retrieved March 20, 2013 from: www.bls.gov

- U. S. Bureau of Labor Statistics (2010). *Employment and unemployment among youth summary* [Summary report USDL-10-1175]. Retrieved from www.bls.gov
- U. S. Bureau of Labor Statistics (2014). Nonfatal occupational injuries and illnesses requiring days away from work, 2012. Retrieved from <http://www.bls.gov/nes.releas/osh2t6.htm>.
- U.S. Census Bureau. (2013). *America's families and living arrangements*. Retrieved from <http://www.census.gov/prod/2013pubs/p20-570.pdf>.
- Vaez, M., Ekberg, K., & Laflamme, L. (2004). Ratings of health and quality of life by young working people: Are there occupation education-based differences? *Work*, 23, 193–198.
- Veazie, M. A., & Smith, G. S. (2000, December 24, 2000). Heavy drinking, alcohol dependence, and injuries at work among young workers in the United States labor force. *Alcohol Clinical Experimental Research*, 12, 1811–1819.
- Verum, J. R. (1993). Training among young adults: Who, what kind, and for how long? *Monthly Labor Review*, 27–31.
- Vladutiu, C. J., Rauscher, K. J., Runyan, C. W., Schulman, M., & Villaveces, A. (2010). Hazardous task recognition among U.S. adolescents working in the retail or service industry. *American Journal of Industrial Medicine*, 53, 686–692.
- Vondracek, F. W., Gomes-Ferreira, J. A., & Ribeiro Dos Santos, E. J. (2010). Vocational behavior and development in times of social change: New perspective for theory and practice. *International Journal of Education Vocational Guidance*, 10, 125–138.
- Vondracek, F. W., & Porfeli, E. J. (2008). Social contexts for career guidance throughout the world developmental-contextual perspectives on career across the lifespan. In E. Athanasou, & J. Van Esbroeck Raoul (Eds.), *International handbook of career guidance*, pp. 340-370. Springer Netherlands:

- Walker, L. O., & Avant, K. C. (2005). *Strategies for theory construction in nursing* (4th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Weisz, J. R., & Hawley, K. M. (2002). Developmental factors in the treatment of adolescents. *Journal of Counseling and Clinical Psychology, 70*(1), 21–43.
- West, C., De Castro, A. B., & Fitzgerald, S. T. (2005). Youth workforce: Unique occupational health considerations and challenges. *AAOHN, 53*(7), 297–305.
- Westaby, J. D., & Lowe, J. K. (2005). Risk-taking orientation and injury among youth workers: Examining the social influence of supervisors, coworkers, and parents. *Journal of Applied Psychology, 90*(5), 1027–1035. Retrieved from <http://dx.doi.org/>
- Wilkins, K., & Mackenzie, S. G. (2007). Work injuries. *Health Reports, 18*(3), 1–18.
- Williams, D. R. (2003). The health of men: Structured inequalities and opportunities. *American Journal of Public Health, 93*(5), 724-731.
- Winkleby, M. A., & Boyce, W. T. (1994). Health-related risk factors of homeless families and single adults. *Journal of Community Health, 19*(1), 7–23.
- Woolf, A. D., & Flynn, E. (2000). Workplace toxic exposures involving adolescents aged 14 to 19 years. *Archives of Pediatric Adolescent Medicine, 154*, 234–239.
- Youngblade, L. M., Theokas, C., Schudenberg, J., Curry, L., Huang, I. C., & Novak, M. (2007). Risk and promotive factors in families, schools, and communities: A contextual model of positive youth development in adolescence. *Pediatrics, 119* (Supplement 1), 547–553. Retrieved from <http://dx.doi.org/>

- Zarrett, N., & Eccles, J. (2006). Passage to adulthood: Challenges of late adolescence. *New Directions for Youth Development*, *111*, 13–28. Retrieved from <http://dx.doi.org/10.1002/yd.179>
- Zierold, K. M., & Anderson, H. A. (2006). Racial and ethnic disparities in work-related injuries among teenagers. *Journal of Adolescent Health*, *39*, 422–426.
- Zierold, K. M., Appana, S., & Anderson, H. A. (2011, March 12, 2011). School-sponsored work programs: A first look at differences in work and injury outcomes of teens enrolled in school-to-work programs compared to other-working teens. *Occupational Environmental Medicine*, *68*, 818–825. Retrieved from <http://dx.doi.org/10.1136/oem.2010.059170>
- Zierold, K. M., Walsh, E. C., & McGeeney, T. J. (2012). Attitudes of teenagers toward workplace safety training. *Journal Community Health*, *37*, 1289–1295.
- Zimmer-Gembeck, M. J., & Mortimer, J. T. (2006). Adolescent work, vocational development, and education. *Review of Educational Research*, *76*(4), 537–566. Retrieved from <http://dx.doi.org/>

Appendices

Appendix A. ACE Score

Finding Your ACE Score

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often or very often**...
Swear at you, insult you, put you down, or humiliate you?
or
Act in a way that made you afraid that you might be physically hurt?
Yes No If yes enter 1 _____
2. Did a parent or other adult in the household **often or very often**...
Push, grab, slap, or throw something at you?
or
Ever hit you so hard that you had marks or were injured?
Yes No If yes enter 1 _____
3. Did an adult or person at least 5 years older than you **ever**...
Touch or fondle you or have you touch their body in a sexual way?
or
Attempt or actually have oral, anal, or vaginal intercourse with you?
Yes No If yes enter 1 _____
4. Did you **often or very often** feel that ...
No one in your family loved you or thought you were important or special?
or
Your family didn't look out for each other, feel close to each other, or support each other?
Yes No If yes enter 1 _____
5. Did you **often or very often** feel that ...
You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
or
Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
Yes No If yes enter 1 _____
6. Were your parents **ever** separated or divorced?
Yes No If yes enter 1 _____
7. Was your mother or stepmother:
Often or very often pushed, grabbed, slapped, or had something thrown at her?
or
Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?
or

Ever repeatedly hit at least a few minutes or threatened with a gun or knife?

Yes No

If yes enter 1 _____

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?

Yes No

If yes enter 1 _____

9. Was a household member depressed or mentally ill, or did a household member attempt suicide?

Yes No

If yes enter 1 _____

10. Did a household member go to prison?

Yes No

If yes enter 1 _____

Now add up your “Yes” answers: _____ This is your ACE Score

Appendix B. Primary Care Occupational Injury and Employment Experience Survey

Employment and Volunteer Experience

We are going to ask you a few questions about your work and volunteer experience. When answering these questions, please consider any paid-work or volunteer jobs you have had since you were 18 years old.

1. Since you were 18 years old, have you had paid-work or a volunteer job?
 Yes (1)→ (a) How many paid-work or volunteer jobs have you had?
1 2 3 4+ don't know
 No (0)→ (b) If no:
2. Do you plan to have a work or volunteer job? Yes No Maybe
3. Are you **currently** working?
Yes (1)
No (0) (Go to question (6))
4. How many hours a week do you work, approximately, at your current job? _____
5. How many days a week do you work? (1) (2) (3) (4) (5) (6) (7)
6. If you **have or had** paid work or a volunteer job in the past did you like it?
 strongly agree (5) agree (4) neutral (3) disagree (2) strongly disagree (1)
Why? _____

B. Primary Care Occupational Injury

The following questions ask about your experience of any health problems or injuries you have had because of a paid job or volunteer work. For example: Did you develop a skin or sleep, stress or worry problems or did your asthmas get worse?

7. Have you ever had any other health problem that was caused by work or made worse by work?

(Mark only one box)

- Yes (1)→ (a) What was the health problem? _____
- No (0)→ Go to question 8

8. Have you ever been injured at work? (Either serious or not so serious)

Yes (1)→ Go to question 9

No (0)→ Go to section C

9. When was your last paid or volunteer work-related injury?

In the last 12 months

>1 to 2 years ago

>2 to 3 years ago

More than 3 years ago

10. What kind of injury did you have; For example, a cut, burn, sprain, fall or something else?

11. Have you had more than one injury at work?

No (0)

Yes (1)→ (a) How many times have you been injured because of work?

If you can't remember exact number give an approximate number. _____

12. Did you tell anyone you were injured at work?

Yes (1)→

No (0)

→ (a) Who did you tell you were injured?

Friend

Parent

Other

Guardian

Supervisor

Doctor /NP Practitioner

C. Next, we are going ask you about problems or difficulties you may have had at work.

People sometimes have problems at work. Hearing about your experiences may help us to know how often these difficulties happen for young people. We have listed some problems.

Please tell us if any of these have ever happened to you at work. None of this information will be shared with anyone and there will be no judgments about your answers. Your answers may help us to better understand your work experience.

Thank you for you honesty.

13. Have you ever been?

- a. Laid-off? Yes (1) No (0)
- b. Seriously disciplined at work; such as given a final warning or suspension? Yes (1) No (0)
- c. Fired? Yes (1) No (0)
- d. Quit a position so you wouldn't get fired? Yes (1) No (0)

If yes, Can you tell us why? _____

14. How many work or volunteer jobs have you been laid off from, fired from, or quit so that you wouldn't NOT get fired from?_____

- Can't remember
- Don't want to say

D. Workplace factors:

Now we would like to know if you ever received training at a work or volunteer job.

Job training is how you “do” the work.

Safety training is how you “do the job without getting hurt” while at work or doing the job.

Job and safety training

15. The job training I received was adequate”?

- strongly agree (5) agree (4) neutral (3) disagree (2) strongly disagree (1)

16. The safety training I received was adequate”?

- strongly agree (5) agree (4) neutral (3) disagree (2) strongly disagree (1)

E. Quality of Supervision: *Now we have a few questions about your supervisors at work or volunteer jobs.*

17. Do/did you feel comfortable speaking to your supervisor about issues about your **job or work**? For example, the number hours you work, earned pay, days off requests or co-worker problems.

- strongly agree (5) agree (4) neutral (3) disagree (2) strongly disagree (1)

18. Do/did you feel comfortable speaking to your supervisor about **safety or hazards on the job**? For example, broken equipment, needed safety equipment, additional training on a machine or work related skill, security concerns.

strongly agree (5) agree (4) neutral (3) disagree (2) strongly disagree (1)

19. If you needed to, do/did you have a supervisor you could discuss work problems with such as conflict between staff, customer problems another supervisor?

strongly agree (5) agree (4) neutral (3) disagree (2) strongly disagree (1)

20. If you needed to, do/did you have a supervisor you could discuss personal problems with such as difficulty at home, with a health problem, family member?

strongly agree (5) agree (4) neutral (3) disagree (2) strongly disagree (1)

F. Individual factors

Positive youth developmental assets

Finally, we are going to ask a few questions about you.

21. Do you have a meaningful relationship with an adult, parent, guardian, or friend that is supportive and has a good influence on you? For example, can you go to this person if you have a problem or just want to talk? Do you feel you can trust them?

Yes (1)

No (0)

22. Do you have talent or hobby; For example, are you active in a sport, art, or music

Yes (1)

No (0)

23. Are you active in a community agency or volunteer activity; for example, a church, youth group, recreation center, or volunteer agency?

Yes (1)

No (0)

Thank you for completing this survey!

List of Tables

Table 2

Sociodemographic Profile of Injured and Non-Injured Emerging Adult Workers

Characteristic	<i>N</i>	<i>M</i>	<i>Mdn</i>	<i>SD</i>	Range
Age in years	134	24.63	25.00	2.97	(18, 30)
Income	133	\$397	\$46.00	\$534.00	(0, \$2100)

Characteristic		Total	Injured	Non-Injured	<i>p</i> value
		<i>N</i>	<i>n</i> (%)	<i>n</i> (%)	
Age category	18–25 years	82	38 (46.34)	44 (53.66)	0.2
	26–30 years	52	30 (57.69)	22 (42.31)	
Gender	Female	71	35 (49.30)	36 (50.70)	0.72
	Male	63	33 (52.38)	30 (47.62)	
Sexual orientation	Heterosexual	98	47 (47.96)	51 (52.04)	0.23
	Gay male/Lesbian	28	18 (64.29)	10 (35.71)	
Race–Ethnicity	African American	40	17 (42.50)	23 (57.50)	0.004
	Non-Latino White	43	32 (74.42)	11 (25.58)	
	Latino	21	9 (42.86)	12 (57.14)	
	Asian	14	3 (21.43)	11 (78.57)	
	Native American	4	1 (25.00)	3 (25.00)	
	Multiracial	12	6 (50.00)	6 (50.00)	
Citizenship	Citizen/Naturalized	120	62 (51.67)	58 (48.33)	0.35
	Immigrant/Other	12	6 (50.00)	6 (50.00)	
Currently partnered	Partnered	15	6 (40.00)	9 (60.00)	0.34
	Non-Partnered	115	61 (53.04)	54 (46.96)	
Living Situation	Housed	57	29 (50.88)	28 (49.12)	0.96
	Non-housed	76	39 (51.32)	37 (48.68)	
Time spent in current living situation	6 months	66	33 (50.00)	33 (50.00)	0.62
	1 year	21	13 (61.90)	8 (38.10)	
	Other/unknown	47	22 (46.81)	25 (53.19)	
Education	Unknown	11	5 (45.45)	6 (54.55)	0.08
	Grade 1–8	8	1 (12.50)	7 (87.50)	
	Grade 9–12	46	22 (47.83)	24 (52.17)	
	Some College/College	69	40 (57.97)	29 (42.03)	

(Table 2 continues)

(Table 2 continued)

Characteristic		Total	Injured	Non-Injured	<i>p</i> value
		<i>N</i>	<i>n</i> (%)	<i>n</i> (%)	
Currently employed/ volunteering		39	23 (58.97)	16 (41.03)	.47
Income	No income	60	23 (38.33)	37 (61.67)	.05
	< \$500	33	21 (63.64)	12 (36.36)	
	\$501–\$1,000	20	11 (55.00)	9 (45.00)	
	\$1,001–\$2,100	20	13 (65.00)	7 (35.00)	
Health Insurance	Sliding Scale	45	16 (35.56)	29 (64.44)	.04
	Public Insurance	80	47 (58.75)	33 (41.25)	
	Health SF (grant)	9	5 (55.56)	4 (44.44)	
Seatbelt Use		115	56 (48.70)	59 (51.30)	.50

Table 3

Life Health Risk Profile of Emerging Adult Workers (N= 134)

Variables	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	Range
Height	117	66.68	3.37	66.5	60, 75
Weight	118	174.07	52.0	166.07	93, 381
Male	52	167.28	27.75		
Female	66	179.42	64.75		
BMI	118	27.33	8.41	25.25	18, 56
Male	52	24.78	3.59		
Female	66	29.34	10.38		
Systolic blood pressure	119	118.45	12.74	117	92, 160
Male	52	119.83	10.24		
Female	67	117.37	14.38		
Diastolic blood pressure	119	73.06	10.71	74	51, 102
Male	52	70.67	9.22		
Female	67	74.91	11.48		
Sexual debut	122	16.02	3.07	16	6, 24
Sex partners in last year	128	2.74	8.92	1	0, 100
Sex partners in last 2 months	128	1.15	1.84	1	0, 20

(Table 3 continues)

(Table 3 continued)

Variables	<i>n</i>	%
Sexually active	112	83.58
History of forced sex	18	13.43
Currently contraception use	87	65.91
History of sexually transmitted infection	38	28.79
Current tobacco use	52	40.00
Smoking cessation information	42	11.19
Marijuana use	53	39.55
Marijuana use frequency		
Daily	30	22.39
Weekly	9	6.72
Monthly	14	10.45
Seatbelt Use	115	85.82
Firearms in home	6	4.48
Enough money for food	92	68.7
Dental visit in the last 12 months	65	50.39

Table 4

CAGE–AID Alcohol and Drug Profile for Emerging Adult Workers

Characteristic	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	Range
CAGE–AID Alcohol	122	0.59	1.07	0	(0, 4)
CAGE–AID Drug	119	0.49	1.09	0	(0, 4)
CAGE–AID Total	122	1.06	1.89	0	(0, 8)

Characteristic		<i>n</i>	%
CAGE Alcohol	Felt the need to stop drinking?	29	23.8
	Complaints about his/her drinking?	15	12.30
	Felt guilty about drinking?	12	9.84
	Woken up wanting to drink?	16	13.11
CAGE Drugs	Felt the need to stop drinking?	16	13.45
	Complaints about his/her drinking?	12	10.17
	Felt guilty about drinking?	13	11.02
	Woken up wanting to drink?	16	13.56
CAGE–AID Alcohol	No problem (0)	85	70
	Possible problem (1)	17	14
	Probable problem (2–4)	20	17
CAGE–AID Drugs	No problem (0)	95	80
	Possible problem (1)	8	7
	Probable problem (2–4)	16	13
CAGE–AID Total	No problem (0)	76	62
	Possible problem (1)	18	15
	Probable problem (2–4)	28	23

Table 5

PHQ-9 Depressive Symptom Profile of Emerging Adult Workers

Characteristic		<i>N</i>	<i>M</i>	<i>Mdn</i>	<i>SD</i>
PHQ-9 scores		128	5.29	4.00	5.51
Depression				<i>N</i>	%
	None			27	20.15
	Minimal (1-4)			43	32.09
	Mild (5-9)			36	26.87
	Moderate (10-14)			14	10.45
	Moderately severe (15-19)			4	2.99
	Severe (20+)			4	2.99
Characteristic		None <i>n</i> (%)	Minimal/Mild <i>n</i> (%)	Moderate <i>n</i> (%)	Severe <i>n</i> (%)
Age	18-25	17 (20.73)	46 (56.10)	11 (13.41)	4 (4.88)
	26-30	10 (19.23)	33 (63.46)	3 (5.77)	4 (7.69)
Gender	Female	14 (19.72)	42 (59.15)	7 (9.86)	6 (8.45)
	Male	13 (20.63)	37 (58.73)	7 (11.11)	2 (3.17)
Race- Ethnicity	African American	9 (22.50)	23 (57.50)	2 (5.00)	3 (7.50)
	Non-Latino White	5 (11.63)	29 (67.44)	6 (13.95)	2 (4.65)
	Latino	5 (23.81)	10 (47.62)	4 (19.05)	1 (4.76)
	Asian	5 (35.71)	8 (57.14)	1 (7.14)	0.00
	Native American	1 (25.00)	1 (25.00)	0.00	1 (25.00)
	Multiracial	2 (16.67)	8 (66.67)	1 (8.33)	1 (8.33)

Note. There were no statistical differences between non-Latino Whites and all other groups.

(Table 5 continues)

(Table 5 continued)

PHQ-9 Questions How often in the last two weeks?	Not at all <i>n</i> (%)	Several days <i>n</i> (%)	> half the days <i>n</i> (%)	Every day <i>n</i> (%)
Little interest or pleasure in doing things	86 (64.18)	27 (20.15)	11 (8.21)	8 (5.97)
Feeling down, depressed, hopeless	88 (65.67)	27 (10.15)	9 (6.72)	8 (5.97)
Trouble sleeping, sleeping too much	53 (39.55)	41 (30.60)	13 (9.70)	22 (16.42)
Feeling tired, having little energy	54 (40.30)	43 (32.09)	19 (14.18)	13 (9.70)
Poor appetite or overeating	72 (53.73)	35 (26.12)	10 (7.46)	11 (8.21)
Feeling bad about yourself	87 (64.93)	24 (17.91)	10 (7.46)	8 (5.97)
Having trouble concentrating	84 (62.69)	25 (18.66)	8 (5.97)	11 (8.21)
In slow motion or feeling fidgety	107 (79.85)	13 (9.70)	0	7 (5.22)
Thinking about hurting yourself	109 (81.34)	12 (8.96)	2 (1.49)	4 (2.99)

Table 6

Prevalence of Adverse Childhood Experiences

Characteristic	<i>N</i>	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Total ACE Scores	134	3.84	4.00	2.7
Age				
18–25	82	3.59	3.00	2.71
26–30	52	4.23	5.00	2.65
Gender				
Female	71	4.17	4.00	2.72
Male	63	3.46	3.00	2.64
Race–Ethnicity				
African American	40	4.15	4.00	2.84
Non-Latino White	43	3.98	4.00	2.72
Latino	21	3.62	3.00	2.78
All Others	30	3.37	3.00	2.44

Adverse Childhood Events	Total	Gender		Race	
	<i>n</i> (%)	Female <i>n</i> (%)	Male <i>n</i> (%)	White <i>n</i> (%)	Non-White <i>n</i> (%)
Parental physical abuse	58 (43.28)	33 (46.48)	25 (39.68)	20 (46.50)	38 (41.76)
Parental emotional abuse	63 (47.01)	38 (53.52)	25 (39.68)	25 (58.20)	38 (41.90)
Sexual abuse	35 (26.17)	24 (33.80)	11 (17.46)	28 (25.58)	24 (26.37)
Felt unloved by family	53 (39.55)	29 (40.85)	24 (38.10)	19 (44.19)	34 (37.36)
Often not enough to eat	28 (20.90)	16 (22.54)	12 (19.05)	7 (16.28)	21 (23.08)
Parents divorced/separated	94 (70.15)	55 (77.46)	39 (61.90)	30 (69.77)	64 (70.33)
Mother/caretaker abused	33 (24.63)	15 (21.13)	18 (28.57)	10 (23.26)	23 (25.27)
Drinker/drug user in household	65 (48.51)	36 (50.70)	29 (46.03)	21 (48.84)	44 (48.35)
Family member depressed/suicidal	47 (35.07)	29 (40.85)	18 (28.57)	20 (46.51)	27 (29.67)
Household member in jail	38 (28.36)	21 (29.58)	17 (26.98)	8 (18.60)	30 (32.97)

Table 7

Positive Youth Developmental Assets

Characteristics	N	PYD Score			
		0	1	2	3
		n (%)	n (%)	n (%)	n (%)
PYD	134	5 (3.73)	10 (7.46)	51 (38.06)	68 (50.75)
Age					
18–25	82	2 (2.44)	6 (7.32)	30 (36.59)	44 (53.66)
26–30	52	3 (5.77)	4 (7.69)	21 (40.38)	24 (46.15)
Gender					
Female	71	1 (1.41)	5 (7.04)	30 (42.25)	35 (49.30)
Male	63	4 (6.35)	5 (7.94)	21 (33.33)	33 (52.38)
Race–Ethnicity					
African American	40	1 (2.50)	3 (7.50)	19 (47.50)	17 (42.50)
Non-Latino White	43	2 (4.65)	2 (4.65)	15 (34.88)	24 (55.81)
Latino	21	1 (4.76)	4 (19.05)	9 (42.86)	7 (33.33)
All Others	30	1 (3.33)	1 (3.33)	8 (26.67)	20 (66.67)
Education					
Unknown	11	2 (18.18)	0	4 (36.36)	5 (45.45)
Grades 1–8	8	0	1 (12.50)	3 (37.50)	4 (50.00)
Grades 9–12	46	2 (4.35)	5 (10.87)	18 (39.13)	21 (45.65)
Some College/College	69	1 (1.45)	4 (5.80)	26 (37.68)	38 (55.07)
Living Situation					
Housed	57	0	5 (8.77)	19 (33.33)	33 (57.89)
Homeless	76	5 (6.58)	5 (6.58)	32 (42.11)	34 (44.74)
Insurance					
Sliding Scale/Self-pay	45	3 (6.67)	4 (8.89)	18 (40.00)	20 (44.44)
Medi-Cal/Medicare	80	2 (2.50)	5 (6.25)	31 (38.75)	42 (52.50)
Healthy SF Subsidy	9	0	1 (11.11)	2 (22.22)	6 (66.67)

Table 8

Employment Experience Profile of Emerging Adult Workers

Characteristic	N	EE Score (0–35)		Liked Work (1–5)		Adequate Job Training		Adequate Safety Training	
		M	p value*	M	p value*	M	p value**	M	p value**
Total	134	27.00		4.16		3.91		3.72	
Age			.24		.74		.34		.30
18–25	82	27.43		4.14		4.02		3.80	
26–30	52	26.32		4.2		3.73		3.58	
Gender			.70		.88		.59		.30
Female	71	26.83		4.13		3.86		3.62	
Male	63	27.19		4.19		3.97		3.91	
Race–Ethnicity			.68		.78		.36		.54
African American	40	26.95		4.11		4.03		3.93	
Non-Latino White	43	27.21		4.19		3.98		3.70	
Latino/Hispanic	21	25.81		4.05		3.57		3.45	
All Others	30	27.00		4.27		3.9		3.63	
Education			.18		.21		.08		.19
Unknown	2	23.50		3.50		3.00		3.50	
Grades 1–8	8	30.50		4.50		4.50		4.50	
Grades 9–12	46	26.49		3.98		3.70		3.83	
Some College/College	69	27.30		4.24		4.01		3.62	
Declined to state	9	25.00		4.22		3.89		3.22	

* Wilcoxon rank sum test

** Kruskal–Wallis test

(Table 8 continues)

(Table 8 continued)

Characteristic	N	Quality of Supervision: Can Comfortably Discuss											
		Job Issues (1-5)			Safety Issues (1-5)			Conflicts at Work (1-5)			Personal Problems (1-5)		
		M	p value*	M	p value*	M	p value**	M	p value**	M	p value**		
Total	134	3.84		4.10		3.94		3.31					
Age			.23		.53		.30		.73				
18-25	82	3.95		4.17		4.01		3.33					
26-30	52	3.65		4.00		3.83		3.27					
Gender			.92		.70		.98		.91				
Female	71	3.82		4.07		3.93		3.23					
Male	63	3.86		4.14		3.95		3.29					
Race-Ethnicity			.77		.66		.74		.58				
African American	40	4.00		3.93		3.85		3.18					
White, non-Hispanic	43	3.77		4.19		4.00		3.30					
Latino/Hispanic	21	3.62		4.05		3.86		3.19					
All Others	30	3.87		4.27		4.03		3.56					
Education			.41		.51		.46		.32				
Unknown	2	3.00		4.00		4.00		2.50					
Grades 1-8	8	4.38		4.38		4.38		3.89					
Grades 9-12	46	3.80		3.91		3.98		3.28					
Some College/College	69	3.84		4.22		3.94		3.36					
Declined to state	9	3.67		4.00		3.33		2.67					

* Wilcoxon rank sum test

** Kruskal-Wallis test

Table 9

Self-Reported Type of Work Injury in the Previous 24 Months of Employment
(N = 89, 19 with multiple injuries)

Characteristics	<i>n</i>	%
Musculoskeletal (including 9 back injuries)	26	29
Cuts	23	26
Burns	20	22
Falls	9	10
Other and unknown	9	10
Eye injury	2	2
Total	89	99*

*rounding error

Table 10

Self-Reported Health Problems Made Worse by Employment (N = 75)

Characteristic	<i>n</i>	%
Musculoskeletal problems	29	39
Mental health	23	31
Other health concerns ^a	9	12
Skin problems	6	8
Pain issues	5	7
Respiratory problems	3	4
Total	75	101*

^a Examples include GI distress, sickle cell anemia, infections

*Rounding error

Table 11

Correlations Between Scales

Characteristic	EE Score (range 7–35)	ACEs Score (range 0–10)	PHQ–9 Score (range 0–27)	CAGE–AID Score (range 0–8)
	Spearman's r_s p value	Spearman's r_s p value	Spearman's r_s p value	Spearman's r_s p value
Employment Experience Score (EE)	1.00	-0.18 .04	-0.12 .18	0.02 .82
Adverse Childhood Events Score (ACEs)		1.00	0.27 .002	0.18 .05
PHQ-9 Score			1.00	0.32 .0004
CAGE–AID Score				1.00

Table 12

Predictors of Occupational Injury in Emerging Adult Workers

Characteristics	<i>n</i>	%	<i>OR</i>	95% CI	<i>p</i> value
Age					
18–25	38	46.34	ref		
26–30	30	57.69	1.58	[0.78, 3.18]	.20
Gender					
Female	35	49.30	ref		
Male	33	52.38	1.13	[0.57, 2.23]	.72
Race					
All others	36	39.56	ref		
Non-Latino White	32	74.42	4.44	[1.99, 9.93]	< .0001
Smoking status					
Non-smoker	27	48.21	ref		
Past smoker	17	77.27	3.65	[1.18, 11.27]	.02
Current smoker	23	44.23	0.85	[0.40, 1.82]	.68
Employment Experience score <i>M (SD)</i>	27.0	(5.3)	1.00	[0.94, 1.06]	.97
PYD Score <i>M (SD)</i>	2.4	(0.78)	1.14	[0.74, 1.77]	.56
Have meaningful relationship	116	86.60	0.80	[0.29, 2.17]	.66
Have talent/hobby	122	91.04	3.42	[0.88, 13.25]	.08
Active in community agency	78	58.21	1.05	[0.53, 2.09]	.88

(Table 12 continues)

(Table 12 continued)

Characteristics	<i>n</i>	%	<i>OR</i>	95% CI	<i>p</i> value
Adverse childhood events					
Number of events <i>M (SD)</i>	3.8	(2.7)	1.14	[1.00, 1.30]	.05
0–3 events	29	43.94	ref		
More than 3 events	39	57.35	1.72	[0.87, 3.40]	.12
Individual events					
Parental emotional abuse	38	60.32	2.08	[1.04, 4.14]	.04
Parental physical abuse	33	56.90	1.54	[0.78, 3.08]	.21
Sexual abuse	19	54.29	1.21	[0.56, 2.62]	.63
Feel unloved, uncared for	33	62.26	2.17	[1.07, 4.40]	.03
Not enough to eat	16	57.14	1.38	[0.60, 3.21]	.45
Parents separated, divorced	47	50.00	0.90	[0.43, 1.90]	.79
Mother abused	33	24.60	2.39	[1.05, 5.45]	.04
Problem drinker, drug user	22	66.67	1.00	[0.51, 1.97]	.99
Mentally ill family member	33	50.77	4.08	[1.89, 8.81]	< .0001
Household member in prison	34	72.34	0.71	[0.34, 1.51]	.38
PHQ–9 score <i>M (SD)</i>	5.3	(5.5)	1.04	[0.98, 1.12]	.19
CAGE–AID Drugs					
No problem (0)	51	53.68	ref		
Possible problem (1)	5	62.50	1.43	[0.33, 6.36]	.63
Probable problem (2–4)	10	62.50	1.44	[0.48, 4.27]	.51
Missing	2	13.33			
CAGE–AID Alcohol					
No problem (0)	46	54.12	ref		
Possible problem (1)	7	41.18	0.59	[0.21, 1.71]	.33
Probable problem (2–4)	13	65.00	1.57	[0.57, 4.34]	.38
Missing	2	16.67			
CAGE–AID Total					
No problem (0)	40	52.63	ref		
Possible problem (1)	9	50.00	0.90	[0.32, 2.51]	.84
Probable problem (2–4)	17	60.71	1.39	[0.58, 3.36]	.46
Missing	2	16.67			

Table 13

Multivariable Logistic Regression: Predictors of Occupational Injury

Characteristic	OR	95% CI	p value
Age	1.03	[0.89, 1.19]	.66
Race–Ethnicity			
Other race	ref		
Non-Latino White	4.09	[1.56, 10.70]	.004
Gender	1.36	[0.58, 3.19]	.48
Smoking status			
Non-smoker	ref		
Current smoker	1.35	[0.51, 3.56]	.55
Past smoker	4.26	[1.09, 16.60]	.04
Adverse childhood events score	1.19	[1.01, 1.39]	.04
Has talent/hobby	5.10	[0.99, 26.33]	.05
Employment experience score	1.01	[0.94, 1.09]	.75
CAGE–AID score	1.1	[0.87, 1.39]	.43

List of Figures

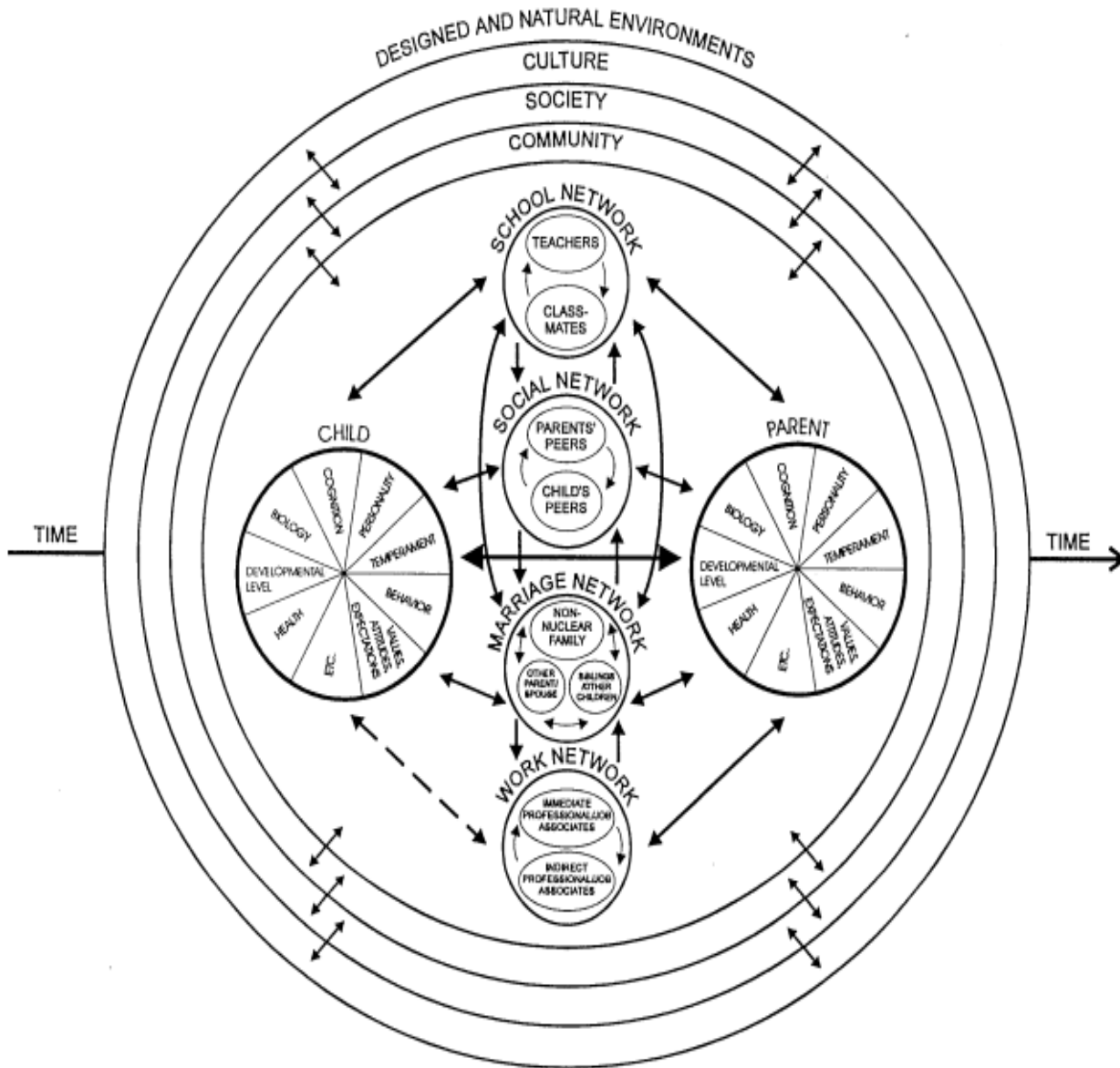


Figure 1. Lerner's Developmental Contextualism Model.

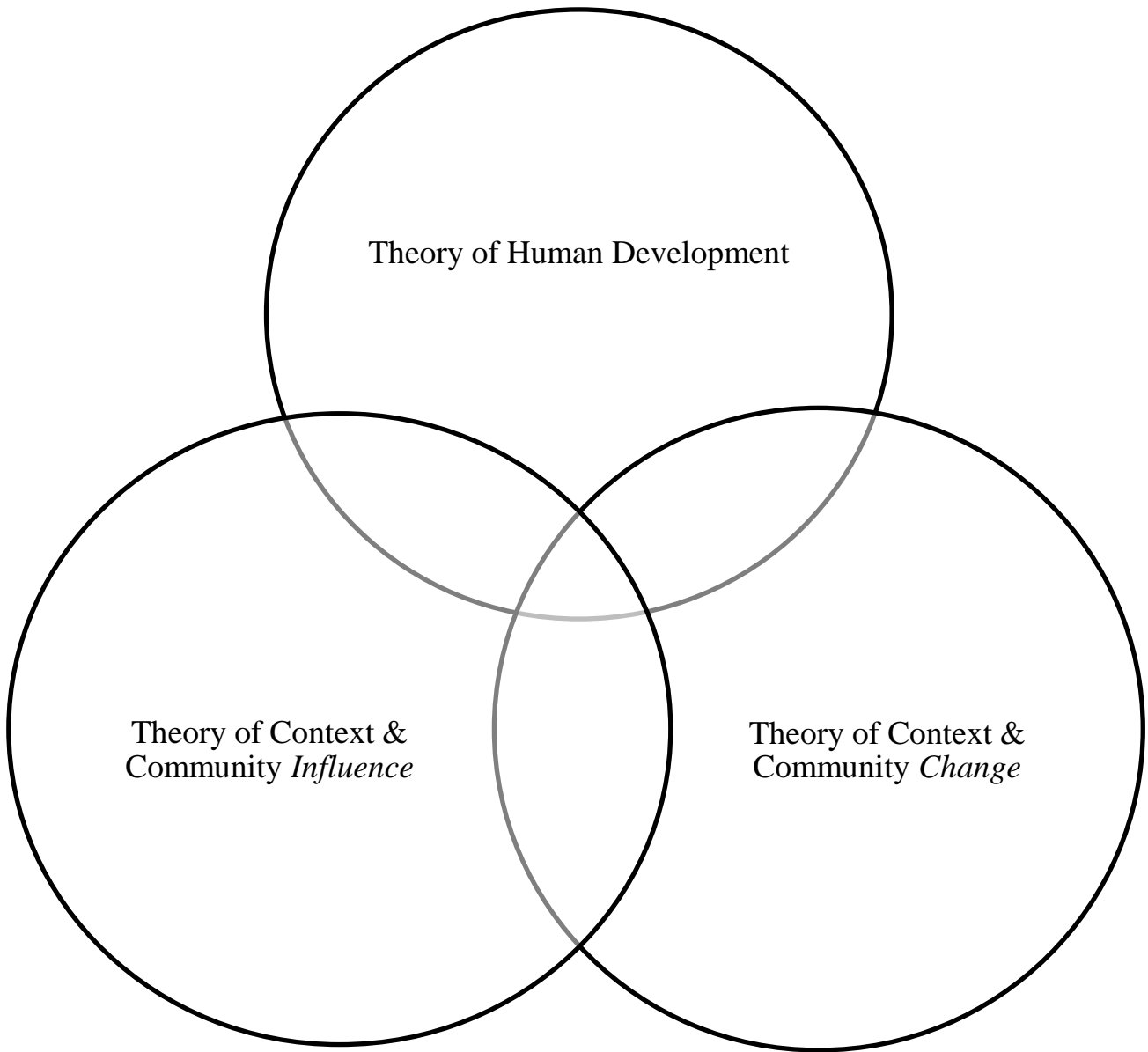


Figure 2. Positive Youth Development Perspective

Integrated PYD and DC Model

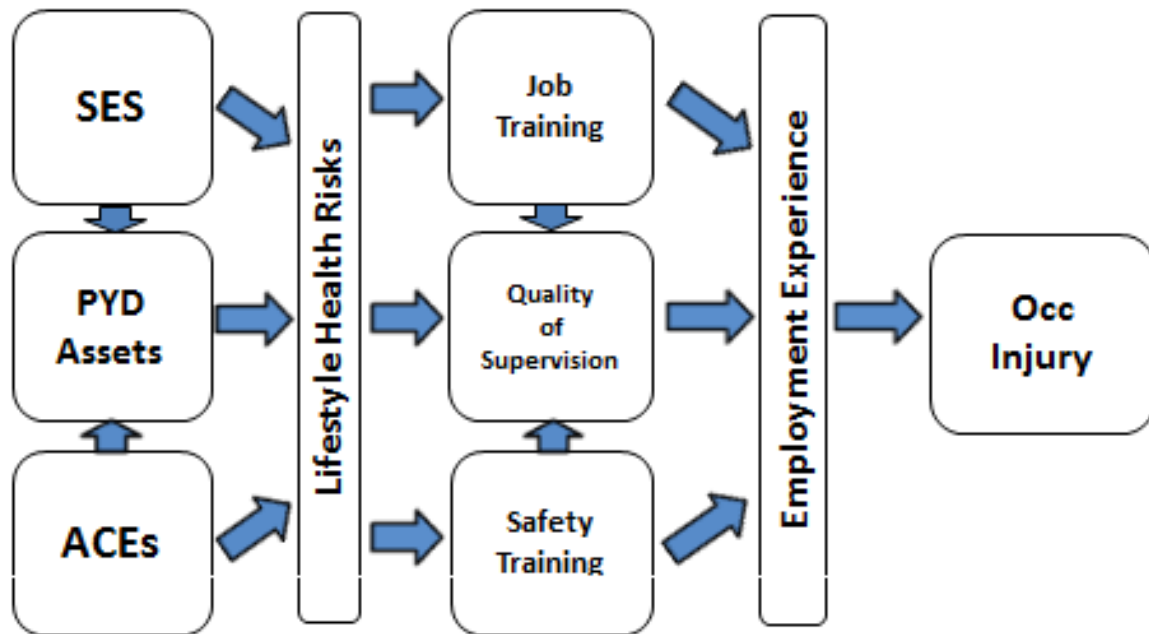


Figure 3: Individual, Contextual and Employment Experience Factors Influencing Occupational Injury for Emerging Adult Workers

Publishing Agreement

It is the policy of the University to encourage the distribution of all theses, dissertations, and manuscripts. Copies of all UCSF theses, dissertations, and manuscripts will be routed to the library via the Graduate Division. The library will make all theses, dissertations, and manuscripts accessible to the public and will preserve these to the best of their abilities, in perpetuity.

Please sign the following statement:

I hereby grant permission to the Graduate Division of the University of California, San Francisco to release copies of my thesis, dissertation, or manuscript to the Campus Library to provide access and preservation, in whole or in part, in perpetuity.

Karen L. Hill
Author Signature

6.23.2014
Date