



DOCUMENTOS DE TRABAJO 36

JULIO, 2013

THE MULTIPLICATIVE EFFECT OF INDIVIDUAL -AND COUNTRY- LEVEL UNEMPLOYMENT ON LIFE SATISFACTION IN 97 NATIONS (1981-2009)

Esteban Calvo, Ph.D
*Public Policy Institute, School of
Business and Economics, Diego
Portales University*

Christine A. Mair, Ph.D
*Department of Sociology and
Anthropology, University of Maryland*

**IPP. INSTITUTO DE
POLÍTICAS PÚBLICAS **udp****

FACULTAD DE ECONOMÍA Y EMPRESA

www.politicaspUBLICAS.udp.cl

**The Multiplicative Effect of Individual- and Country-level Unemployment
on Life Satisfaction in 97 Nations (1981-2009)**

Esteban Calvo, Ph.D.

*Public Policy Institute, School of Business and Economics, Av. Ejercito Libertador 260,
Universidad Diego Portales, Santiago, 8370056, Chile*

Christine A. Mair, Ph.D.

*Department of Sociology and Anthropology, 1000 Hilltop Circle, University of Maryland,
Baltimore County, Baltimore, MD, 21250, USA*

Running head: Unemployment and Life Satisfaction

Corresponding Author Contact Information:

Esteban Calvo, Ph.D.
Public Policy Institute
School of Business and Economics
Universidad Diego Portales
Av. Ejercito Libertador 260
Santiago, 8370056, Chile
Email: esteban.calvo@udp.cl
Mobile phone: (+569) 9820-2839

Acknowledgments:

Manuscript under review. Last update: February, 2013. The authors would like to thank Ariel Azar, Meagan Colvin, Catalina Figueroa, Natalia Sarkisian, Amelia del Villar, and Macarena Vivent for their comments and other forms of help in connection to this article. Esteban Calvo acknowledges partial financial support from Fondecyt #11100176. However, the authors should be held responsible for any errors or inaccuracies that remain in this article. The findings and conclusions expressed herein are solely those of the authors and do not represent the views of Universidad Diego Portales, University of Maryland - Baltimore County, or Fondecyt.

Abstract

Although the negative association between unemployment and life satisfaction is well-documented, much theoretical and empirical controversy surrounds the question of how unemployment actually shapes life satisfaction. Previous studies suggest that unemployment may endanger subjective well-being through individual experiences, contextual conditions, or a combination of both. Drawing data from the World Values Survey, European Values Survey, and World Development Indicators databases for 400,917 individuals in 97 nations (1981-2009), we use three-tiered hierarchical linear models to test four competing theory-based hypotheses—that unemployment shapes life satisfaction through individual, contextual, additive, or multiplicative effects. Our results support a multiplicative interaction between individual- and country-level unemployment. Unemployed individuals are less satisfied than workers, students, retirees, and homemakers, but this life satisfaction gap varies in complex ways depending on national unemployment rates. We discuss these findings in light of previous theoretical models and combine them with the life course perspective to argue for a model where individual unemployment is understood in comparison with diverse labor force statuses that make up the life course and within the broader context of national unemployment rates. We conclude with suggestions for public policy to promote subjective well-being through individualized and contextualized plans addressing the negative consequences of unemployment.

Keywords:

Hierarchical linear model; joblessness; life satisfaction; multilevel model; subjective well-being; unemployment.

INTRODUCTION

The reduction of unemployment rates is a central goal of public policy in almost all industrial societies. Although awareness of the negative consequences of unemployment can be traced back to the early 19th century, social scientists have only recently explored whether unemployment endangers subjective well-being through individual experiences, contextual conditions, or a combination of both (Paul and Moser 2009). Yet, theoretical and empirical explanations regarding to what extent individual unemployment status and contextual unemployment rates shape life satisfaction are varied and disjointed, resulting in competing hypotheses and mixed findings.

Many scholars characterize the individual experience of unemployment as a stressful life event (Lucas et al. 2004) associated with latent deprivation beyond monetary losses, such as decreased social interaction and a loss of identity and status (Clark and Oswald 1994; Jahoda 1988). They argue that these individual experiences can lead to decreased subjective well-being.

In contrast, other scholars emphasize the context of unemployment and argue that living in a nation with a high unemployment rate may be detrimental to everybody, including individuals who are not unemployed (Stewart 2005). Unemployed individuals' children and spouses may experience elevated distress (Jalovaara 2003; Rege, Telle and Votruba 2011), a form of network strain (Lincoln 2000). Employed individuals who see coworkers lose jobs may have lower well-being due to the perceived risk of losing their own job (Brockner et al. 1997).

Whereas these explanations emphasize the effect of either individual unemployment status or aggregate unemployment rates in isolation, a small, but growing, body of literature examines their joint effects. However, there is little agreement about the nature of this joint effect. One group of scholars theorizes that the joint influence of individual and aggregate unemployment is

additive; that is, the individual experience of unemployment and the aggregate unemployment rate both have negative effects on subjective well-being, and their joint effect equals the sum of the individual unemployment effect and the aggregate unemployment rate effect (Blanchflower 2008; Di Tella, MacCulloch and Oswald 2001; Dooley, Catalano and Rook 1988; Stavrou, Schlosser and Fetchenhauer 2011). Consistent with the idea of additive effects, life course literature on overlapping social disadvantage can be extended to characterize unemployed individuals in areas of high aggregate unemployment as experiencing “double jeopardy” (Ferraro and Farmer 1996).

Finally, yet another group of scholars argue that the joint influence of individual and contextual unemployment may be *multiplicative*; that is, aggregate unemployment rates may moderate the effect of individual unemployment status on subjective well-being (Clark, Knabe and Rätzel 2010). Specifically, unemployed individuals may suffer less than the employed when living in contexts of high unemployment, as the “social norm of unemployment” de-stigmatizes unemployment (Clark 2003; Shields and Price 2005).

These disagreements about the effects of unemployment on subjective well-being persist despite the proliferation of empirical research on this issue in a number of wealthy countries. In this paper, we address this controversy by using a substantially larger and income-diverse sample of countries, as well as by approaching unemployment from a life course perspective and simultaneously testing these four competing hypotheses about individual, contextual, additive, and multiplicative effects of unemployment on subjective well-being (Figure 1 provides a summary and serves as guide to the argument in the following sections). The life course perspective recognizes the contextual, dynamic, and subjective nature of life events and is designed to study individuals’ experiences over biographical and historical time (Butz and

Torrey 2006; Elder 2003). From this perspective, we conceptualize unemployment as a stressful life event at multiple levels and propose a new multiplicative model—the “contextual adaptation to life course events” model—that incorporates a consideration of individual unemployment status compared to diverse labor force statuses, such as being a worker, student, retiree, or homemaker.

We begin by reviewing literature on the four competing theoretical frameworks of unemployment and subjective well-being. Next, we describe the longitudinal and multilevel data structure and methods, based on a comprehensive sample of 400,917 individuals living in 97 low-, middle-, and high-income countries, observed between 1981 and 2009. We use life satisfaction as a measure of subjective well-being. After defining variables and methods, we present results of a three-level hierarchical linear regression model that estimates the effects of individual- and country-level unemployment on life satisfaction, including cross-level interactions. Finally, we discuss the meaning of our findings for the models of unemployment and subjective well-being, and reflect on the implications of these results for social policy aimed at reducing the personal suffering and social problems associated with unemployment.

[FIGURE 1 ABOUT HERE]

LITERATURE REVIEW

Figure 1 summarizes four competing frameworks regarding the manner in which unemployment affects subjective well-being and, more specifically, life satisfaction. Unemployment may have an individual-level effect through stressful life events and latent deprivation, a contextual effect through social network strain and perceived risk, an additive effect of both through double

jeopardy, or a multiplicative effect of both through social norms and contextual adaptation to stressful life events. We review the literature on these competing frameworks below and propose a new model to understand the multiplicative effects of unemployment on subjective well-being.

Individual Framework: Stressful Life Events and Latent Deprivation

Social strain theorists hypothesize that stressful life events, such as the individual experience of unemployment (Lucas et al. 2004), get “under the skin” to create poorer well-being (Dupre et al. 2012; Ferraro, Shippee and Schafer 2009; Taylor, Repetti and Seeman 1997). Yet, not all scholars agree about the long-term detrimental effects of stressful life events. The dynamic equilibrium/set point theory, for example, proposes that individuals have a personal baseline or set point of life satisfaction and tend to return to this level following a stressful life event (Brickman and Campbell 1971; Headey 2006). While evidence suggests this may be true for most life events, this process may not hold for unemployment, which is a uniquely taxing life event. Nationally representative longitudinal studies of Americans (Young 2012) and Germans (Lucas et al. 2004) find that individual unemployment has long-term negative effects on subjective well-being and that individuals do not return to baseline levels. Enduring negative effects of unemployment are also noted in a range of well-being outcomes in the United States (McKee-Ryan et al. 2005; Strully 2009; Winkelmann 2009) and cross-nationally (Alavinia and Burdorf 2008; Blanchflower 2001, 2008; Carroll 2007; Ervasti and Venetoklis 2010).

In order to understand why the individual experience of unemployment has a uniquely detrimental effect compared to other stressful life events, we turn to the latent deprivation model. Based on the work of Robert Merton, the latent deprivation model (Jahoda 1988) assumes that employment provides unintended—or latent—benefits for an individual’s subjective well-being.

Benefits include a time-structured day, regular contact with peers who have common goals, social status and identity, and activity engagement. Therefore, a loss of employment deprives one of these non-material benefits, which can lead to stress and poorer subjective well-being. Empirical research generally supports this assessment (Clark and Oswald 1994; Brereton, Clinch and Ferreira 2008; Scutella and Wooden 2008), with numerous studies reporting that the relationship between unemployment and life satisfaction is not explained solely by income loss, but also loss of non-material functions of work (Blanchflower and Oswald 2008; Ervasti and Venetoklis 2010; Winkelmann and Winkelmann 1998).

Although loss of the latent functions of employment is detrimental for the unemployed, the individual experience of being a student, homemaker, or retiree may allow individuals to detach from work and create new identities and activities to cope with the loss of employment's latent functions. Empirical research, however, tends to focus on the relationship between subjective well-being and the employed/unemployed dichotomy, with only a few exceptions considering more diverse labor force statuses. Lin and Leung (2010) find that detaching from the role of unemployed leads to mental health improvements. Strandh (2000) finds similar mental health benefits among those who exit unemployment in favor of student status, though he found no effect of retirement. Brereton et al. (2008) find a life satisfaction advantage for respondents engaged in household activities compared to the full-time employed. Additional studies of older Americans and Europeans report that transitions to retiree or homemaker predict lower subjective well-being, particularly if the transition was early and involuntary (Alavinia and Burdorf 2008; Gallo et al. 2006; Stolzenberg 2011).

Contextual Framework: Social Network Strain and Perceived Risk

Individual-level studies do not and cannot address the role of aggregate unemployment on well-being. In contrast, numerous cross-national studies report that high unemployment rates are linked to lower life satisfaction and other subjective well-being indicators (Fenwick and Tausig 1994; Luechinger, Meier and Stutzer 2010; Novo, Hammarstrom and Janlert 2001; Shah and Bhandarkar 2008; Stewart 2005). These findings suggest that regardless of an individual's labor force status, contextual unemployment may have a detrimental effect on subjective well-being through social network strain and perceived labor market risk.

The social network strain model postulates that social interactions with individuals experiencing strain may be negative, causing a rippling effect throughout a social network (Lincoln 2000). In particular, when a growing number of individuals experience unemployment, relatives' subjective well-being decreases (Jalovaara 2003; McLoyd 1989; Rege et al. 2011). In this model, social strain is a driving force that affects the unemployed individual's supportive social ties, as well as those relying on the individual for support. Children and spouses of the unemployed are at particular risk for social network strain from high contextual unemployment through poorer academic performance and higher divorce risk, respectively (Jalovaara 2003; Rege et al. 2011). Thus, high aggregate unemployment rates may have far-reaching effects, harming multiple members of a population, regardless of whether or not they are unemployed.

Complementing the social network strain model, the perceived labor market risk model argues that regardless of individual unemployment status, members of a population can become aware of high contextual unemployment due to media coverage, word of mouth, or knowledge of layoffs at one's workplace (De Witte 1999). This awareness can lead to an increase in employment-related distress, labor market anxiety, and a decrease in subjective well-being for all

members of a population, whether employed or unemployed. Clark et al. (2010:53) summarize the perceived risk model as, “the anticipation of redundancy is at least as distressing as the experience of unemployment itself.” In areas of high aggregate unemployment, even those who receive notice that they will not lose their jobs appear to suffer consequences in the form of increased stress and lower satisfaction (Brockner et al. 1997). While most studies of contextual unemployment focus on the macro-level implications, more recent studies have begun to explore whether individual and aggregate unemployment may affect life satisfaction jointly.

Additive Framework: Stressful Life Course Events and Double Jeopardy

Considering the separate literatures on individual and contextual unemployment effects, it is possible that unemployment operates as a mechanism of poor subjective well-being at the individual- and country-level simultaneously. To link these effects with one conceptual framework, we turn to the life course perspective.

Life course theorists consider the role of overlapping social disadvantages in creating health risk over time (Dannefer 2003) and emphasize variation in experiences by temporal and geographic context (Elder 2003). This perspective characterizes joint effects as “double jeopardy,” a concept used to describe the well-being risk associated with experiencing two stressful conditions simultaneously—such as elderly and minority (Ferraro and Farmer 1996). Similarly, it is theoretically reasonable that being unemployed in a nation with high unemployment may yield a type of double jeopardy.

By applying the double jeopardy model to unemployment, we assume an additive effect wherein individual- and country-level risks to subjective well-being operate the same jointly as they do independently. Empirical assessments of such an additive effect, however, are limited

and produce inconclusive results. Using multilevel data for 28 OECD European countries observed between 1999 and 2009, Stavrova et al. (2011) find significant effects of both individual employment status and national unemployment rates on life satisfaction. In a similar study using multilevel data for 15 European countries observed between 1992 and 2002, Pittau, Zelli and Gelman (2010) find that unemployment rates in 70 subnational units reduce life satisfaction, even after controlling for unemployment status. Kassenboehmer and Haisken-DeNew (2009) find a strong additive effect of unemployment status and state unemployment rate for West Germany, but a weaker or inexistent additive effect for East Germany. Dooley, Fielding and Levi (1996) find that both individual- and regional-level unemployment are significant predictors of poorer psychological well-being in one California region. However, their panel sample is too small to test effects over time (N=296), and is geographically limited.

Other authors explore additive effects more indirectly. Blanchflower (2008) examines individual unemployment status and individuals' perceptions that the unemployment rate is increasing in a cross-national sample. He finds negative effects on life satisfaction for both factors. Yet, individuals' perceptions of unemployment rates do not capture the potential empirical reality of a high aggregate unemployment context. Bockerman and Ilmakunnas (2006) find that Finland's increasing national unemployment rate in the 1990s did not correlate with a corresponding drop in national mean subjective well-being. Further, they find that individual-level unemployment predicts lower individual life satisfaction, but not lower happiness, in a three wave sample from the World Values Survey. Kapuvari (2011) theorizes that although there is limited evidence of an additive-like effect in Western nations, it is unknown how this model operates in diverse cross-national samples. Therefore, despite extensive literature on the separate effects of individual and contextual unemployment, the potential for an additive effect that

creates a form of “double jeopardy” requires examination cross-nationally.

Multiplicative Framework: Social Norm and Contextual Adaptation to Life Course Events

An additive effect framework may be inaccurate if the main effect of individual unemployment status is moderated by aggregate unemployment rates. Addressing this possibility, a multiplicative effect framework considers if and to what extent the effects of individual unemployment status and contextual unemployment rates vary when combined. In this section, we first outline the social norm of unemployment model, the core multiplicative framework in the current unemployment literature. We then propose our own multiplicative model, the contextual adaptation to life course events, which integrates previous models.

The social norm of unemployment model states that high and prolonged unemployment rates may create an environment where being unemployed individually is more normative and less stigmatized. This model suggests that the unemployed individual within a nation with high unemployment does not suffer a “double jeopardy,” but rather, experiences a weakening of the negative effects of individual unemployment. As Clark (2003:326) states, “unemployment hurts less the more there is of it around.” At the same time, employed individuals in an area with high unemployment may experience intensified labor market anxiety as unemployment rates climb or persist over time. Therefore, the social norm effect should reduce the subjective well-being gap between the employed and the unemployed.

Empirical tests of the adaptation to social norm hypothesis yield conflicting results, perhaps due to debate over the mechanisms that drive this multiplicative process. A few studies indicate that high or long-term unemployment rates can be beneficial, or at least less harmful, for the unemployed. Most studies identifying a social norm effect have been conducted within Great

Britain (Clark and Oswald 1994; Clark 2003; Shields and Price 2005), other wealthy countries in Europe (Ochsen 2011), and Australia (Shields, Price and Wooden 2009). To our knowledge, there is only one study in a middle-income country (Powdthavee 2007). This study, in South Africa, documented a weaker social norm effect. Further, there are no studies evaluating the social norm effect in low-income countries at all.

Another group of studies finds no support for the social norm of unemployment model. Using data for Ireland, Brereton et al. (2008) find no statistical difference in the subjective well-being impact of being unemployed when the local unemployment rate is below or above average. Pittau et al. (2010) find no support for a social norm effect when the reference group is the European subnational region. Scutella and Wooden (2008) find that the mental health of unemployed Australians is not improved nor deteriorated because of living in a jobless household.

Yet another group of studies argue that the unemployment rates are a poor indicator of a social norm and that other indicators are better suited to identify the mechanisms that drive the social norm effect. Clark et al. (2010) posit that the mechanism driving differences in subjective well-being is individual job market prospects, or labor market attachment, rather than employment rates, and report evidence in Germany supporting their theory. Stavrova et al. (2011) focus on direct measures of macro-level social norms about work as a mechanism. They examine the social norm to work in a cross-national sample of European OECD countries and find that “unemployment hurts less in societies with more tolerant attitudes towards being out of work” (Stavrova et al. 2011:160). Using data for Switzerland, Sutzer et al. (2004) also argue for a direct measure of aggregate social norms and find support for this approach.

Overall, the studies exploring the social norm effect use limited samples of wealthy nations

and do not report on data from the last decade—a period in which unemployment has been on the rise (US Census Bureau 2012). Furthermore, they focus on various components of the unemployment experience, rather than consider the diverse effects it may yield on people of different labor force statuses, such as worker, student, retiree, or homemaker; a theme frequently explored in studies of individual-level effects (Dooley et al. 1996; Lin and Leung 2010; Strandh 2000). Therefore, we propose the multiplicative contextual adaptation to life course events model, which combines these long-theorized models of unemployment with a life course perspective to emphasize diverse labor force statuses in a longitudinal sample of low-, middle-, and high- income nations. The core proposition of this new model is that the individual experience of unemployment should be understood in contrast to other labor force statuses and situated within broader national context.

Our theorization draws directly from current theories of the individual (social strain of latent deprivation) and contextual (social network strain and perceived labor market risk) effects of unemployment, combined with a life course emphasis on life events, risk, and context. Consistent with previous research, we propose that unemployed individuals are less satisfied than individuals in any other labor force group. However, we also propose that when country-level unemployment rates increase, the life satisfaction gap between the unemployed and individuals in other labor force statuses varies in complex ways. In contexts of high unemployment rates, the life satisfaction gap may increase for unemployed individuals compared to workers and students. Working fulfills latent functions and maintains life satisfaction, perhaps offsetting stress associated with national unemployment. Further, studying may be an attractive option to circumvent potential unemployment, avoid the detrimental effects of perceived labor market risk, and therefore, protect life satisfaction. Conversely, in contexts of high

unemployment rates the life satisfaction gap may decrease for unemployed individuals compared to retirees and homemakers. While studying may be the most prevalent option for those who are younger in their life course when education is normative, older adults may consider retirement as a normatively acceptable escape from unemployment, but retirements occurring in contexts of high unemployment may be more likely to be a constrained or forced choice disguising an otherwise unavoidable unemployment, and thus resulting in poorer subjective well-being outcomes. Finally, for those who were unemployed by choice, such as homemakers, this role may become more unpleasant in the context of high unemployment rates as the probability of having an unemployed partner increases, creates social network strain, and, in turn, results in poorer subjective well-being outcomes.

In short, we argue that the detrimental effects of individual unemployment status on life satisfaction vary in complex ways, depending country-level unemployment rates and various life course labor force statuses. Specifically, when country-level unemployment rates are high, working becomes a *survival* strategy, studying becomes a *delaying* strategy, retiring becomes a *disguising* strategy, and being a homemaker becomes an *insecure* strategy.

RESEARCH HYPOTHESES

Based on these theoretical propositions and empirical findings, we examine four competing hypotheses about the effect of unemployment on subjective well-being (Figure 1).

1. Only the individual experience matters: Unemployed individuals have lower life satisfaction than workers, students, homemakers, and retirees (Figure 1A).
2. Only the social context matters: Higher national unemployment rates are associated with lower life satisfaction (Figure 1B).

3. Additive combination of the individual experience and the social context: Both individual-level unemployment status and country-level unemployment rates are associated with lower life satisfaction, but effects are independent (Figure 1C).
4. Multiplicative combination of the individual experience and the social context: The joint effect of individual-level unemployment status and country-level unemployment rate on life satisfaction is different than their independent effects (Figure 1D). Specifically, the joint detrimental effect is stronger for unemployed individuals compared to workers or students, but weaker for unemployed compared to retirees or homemakers.

METHODOLOGY

Data and Sample

Our main data sources are the World Values Survey and European Values Survey, which include nationally representative repeated cross-sectional surveys in 97 countries containing almost 90% of the world's population (WVS-EVS 2012). We pulled additional aggregate information for gross domestic product and national unemployment rates from the World Development Indicators and combined them into a single dataset with multilevel scope and longitudinal dimension (World Bank 2012). In the resulting dataset, countries are observed repeatedly between 1981 and 2009 (on average 3.76 times), including different individuals each time. These data are hierarchically clustered, including a sample of 400,917 individuals at level 1, 280 country×year observations at level 2, and 97 countries at level 3. For countries that split or merge, we dropped country×year observations prior to the current geopolitical configuration.

Dependent Variable

Our dependent variable is life satisfaction, traditionally defined as an enduring subjective enjoyment of life as a whole, and measured at level 1 with a single question: “All things considered, how satisfied are you with your life as a whole these days?” Answers range from one to 10 (“completely dissatisfied” to “completely satisfied”). Despite limitations of this measure, there is considerable evidence of the validity, reliability, and overall adequacy of self-reported measures of life satisfaction (Blanchflower and Oswald 2008; Lucas and Donnellan 2012). Poor life satisfaction is linked to declines in mental and physical health over (Siahpush, Spittal and Singh 2008) and single-item measures of life satisfaction have strong validity and reliability in cross-national European samples (Blanchflower and Oswald 2008; Lucas and Donnellan 2012).

Independent Variables

Individual-level labor force status is measured at level 1 using four dummy variables indicating worker, student, retired, and homemaker (reference category=unemployed). Country-level unemployment rate is measured at level 2 using the percentage of the labor force that is without work but available for and seeking employment, as reported in the World Development Indicators (World Bank 2012). This variable is centered at 10.

Control Variables

To isolate the effect of unemployment on life satisfaction it is necessary to control for a number of possible confounding factors. Therefore, we include controls for both individual and country-level characteristics. Individual characteristics are measured at level 1 and include gender, education, income, age, health, and, marital status. We include a dichotomous measure for

gender (1=men, 0=women). Education is categorical and measured through a series of dummy variables for no education or incomplete primary school, primary school completed but less than high school, and high school completed (reference category=more than high school completed). We measure income as an ordinal scale ranging from one (“lowest step”) to 10 (“highest step”), and centered at five. Age is measured in years with a cap of 100 (centered at 40), and we also include a squared term of age to test for curvilinear effects. We control for health with a dichotomous measure of healthy (1=“very good” or “good”) compared to less healthy (0=“fair,” “poor,” or “very poor”). Finally, we also include a categorical measure of three types of marital statuses coded in dummy variables for divorced, separated, or widowed, as well as single, never married (reference category=married or partnered).

Time varying country characteristics include time and gross domestic product. Time is measured in years, ranging from 1981 to 2009, centered at 2008, and recoded into 10 year units. We also included a squared term of time to test for curvilinear effects. Gross domestic product (GDP) is measured using the World Development Indicators (World Bank 2012), in per capita and \$1,000 units, adjusted by PPP to 2005 constant United States dollars, logarithmically transformed, and centered at the equivalent of \$15,000. Time invariant country characteristics include postmaterialist values measured at level 3. Observed values range from 0.46 to 1.13, and were grand-mean centered at 0.79. Lower values indicate a materialist culture that emphasizes economic and physical security and high values indicate a postmaterialist culture that emphasizes autonomy and self-expression (Inglehart et al. 2008).

Descriptive statistics for life satisfaction, individual-level labor force status, country-level unemployment rate, and individual- and country-level control variables are presented in Table 1.

[TABLE 1 ABOUT HERE]

Analytic Strategy

The multilevel and longitudinal nature of our data is well-suited for assessing the effects of individual- and country-level unemployment on life satisfaction. For many years, research used either individual- or country-level data to study this topic. Such data, however, raise serious concerns about individualistic and ecologic fallacies, which can yield erroneous conclusions about countries or individuals, respectively. Recent studies started to include multilevel and longitudinal data, but largely restricted to Europe and covering short periods of time. We take advantage of the multilevel and longitudinal nature of our data by employing three-level hierarchical linear modeling (HLM) technique to simultaneously estimate the effect of individual- and country-level unemployment on life satisfaction, testing for cross-level interactions, and controlling for individual-level characteristics, time-varying country characteristics, and time-invariant country characteristics (Blakely and Woodward 2000; Luke 2004; Raudenbush and Bryk 2002).

We begin with a null model including only random effects to decompose variance across levels. Next, we estimate models including individual- and country-level unemployment as independent variables, and testing for cross-level interactions. Then, we estimate models including control variables, starting with individual-level controls, and finally adding country-level controls. The following equation provides a formal description of the final model:

$$\begin{aligned}
\text{LSAT}_{ij} = & \gamma_{000} + \gamma_{100} \times \text{WORKER}_{ij} + \gamma_{200} \times \text{STUDENT}_{ij} + \gamma_{300} \times \text{RETIREE}_{ij} + \\
& \gamma_{400} \times \text{HOMEMAKER}_{ij} + \gamma_{010} \times \text{UNEMPR}_{ij} + \gamma_{110} \times \text{WORKER}_{ij} \times \text{UNEMPR}_{ij} + \\
& \gamma_{210} \times \text{STUDENT}_{ij} \times \text{UNEMPR}_{ij} + \gamma_{310} \times \text{RETIREE}_{ij} \times \text{UNEMPR}_{ij} + \\
& \gamma_{410} \times \text{HOMEMAKER}_{ij} \times \text{UNEMPR}_{ij} + \gamma_{500} \times \text{INDIVIDUAL}_{ij} + \\
& \gamma_{020} \times \text{TVCOUNTRY}_{ij} + \gamma_{001} \times \text{TICOUNTRY}_j + e_{ij} + r_{0ij} + u_{00j}
\end{aligned}$$

Here, the subscripts i, j , and k denote individuals, country×year observations, and countries, respectively. LSAT_{ijk} is the life satisfaction of individual i in year j and country k . The intercept γ_{000} indicates the adjusted grand mean of life satisfaction for an individual scoring zero in all variables. In the model reported, we center all continuous predictors around specific values to facilitate interpretation of the intercept and calculation of predicted values; as documented in the variable descriptions above. Other γ s are the coefficients that indicate the direction and strength of association between independent variables and life satisfaction. Life satisfaction gaps between unemployed individuals and workers, students, retirees are captured by the terms $\gamma_{100} \times \text{WORKER}_{ij}$, $\gamma_{200} \times \text{STUDENT}_{ij}$, $\gamma_{300} \times \text{RETIREE}_{ij}$, and $\gamma_{400} \times \text{HOMEMAKER}_{ij}$. The term $\gamma_{010} \times \text{UNEMPR}_{ij}$ captures the effect of country-level unemployment on life satisfaction.

Cross-level interactions between individual- and country-level unemployment are captured by the terms $\gamma_{110} \times \text{WORKER}_{ij} \times \text{UNEMPR}_{ij}$, $\gamma_{210} \times \text{STUDENT}_{ij} \times \text{UNEMPR}_{ij}$, $\gamma_{310} \times \text{RETIREE}_{ij} \times \text{UNEMPR}_{ij}$, and $\gamma_{410} \times \text{HOMEMAKER}_{ij} \times \text{UNEMPR}_{ij}$. INDIVIDUAL_{ijk} is a vector of individual-level control variables (i.e., gender, education, income, age, health, and marital status) and γ_{500} is the corresponding vector of regression coefficients. TVCOUNTRY_{ij} is a vector of time-varying country-level control variables (i.e., time and GDP) and γ_{020} is the corresponding vector of regression coefficients. The term $\gamma_{001} \times \text{TICOUNTRY}_j$ captures the effect

of time-invariant postmaterialist values on life satisfaction. The equation ends with three residual or random effects, allowing correct estimates of standard errors at each level: e_{ijk} is a random individual effect indicating the deviation of individual ijk 's life satisfaction from the country-year mean, r_{0jk} is a random country-year effect indicating the deviation of country-year jk 's mean life satisfaction from the country mean, and u_{00k} is a random country effect indicating the deviation of country k 's mean life satisfaction from the grand mean.

Prior to estimating HLM models, we examined the data for normality, outliers, and linearity, and employed corrective transformations when necessary and possible (these are documented in the above variable descriptions). To handle 9.76% of missing data, we first perform a linear interpolation at the country-level using two valid observations at an average of ± 1.7 years, and then complete a stochastic imputation with chained equations at all three levels (Royston 2004).

RESULTS

Table 2 reports results of the three-level hierarchical linear regression model for the effect of individual- and country-level unemployment on life satisfaction. Positive coefficients for workers, students, retirees, and homemakers show that individual-level unemployment has a detrimental effect on life satisfaction. Country-level unemployment rate also has a detrimental effect, as indicated by the coefficient of -0.02. Furthermore, as significant cross-level interactions demonstrate, the detrimental effect of individual-level unemployment on life satisfaction varies depending on country-level unemployment rates, and it does so in complex ways. Specifically, unemployed individuals living in a context of higher unemployment rates have a larger life satisfaction gap compared to workers and students, but smaller compared to retirees. The gap between unemployed individuals and homemakers shows non-significant variation.

[TABLE 2 ABOUT HERE]

To better illustrate these interaction effects, we examine predicted differences in life satisfaction for unemployed individuals compared to workers, students, homemakers, and retirees. These predicted differences are calculated for an individual who scored zero on all control variables, that is, for a male, with more than high school education, income equivalent to the fifth step in a scale going from one to 10, very poor to fair health, 40 years old, and married, living in 2008 in a country with a GDP per capita of \$15,000 dollars, and average levels in postmaterialist values. These predicted differences are presented in Figure 2. White bars represent predicted differences in a context of low country-level unemployment rates, while gray bars represent predicted differences in a context of high country-level unemployment rates.

[FIGURE 2 ABOUT HERE]

As Figure 2 demonstrates, individual-level unemployment status is associated with lower life satisfaction compared to any other labor force status. Grey bars show that in nations with low unemployment rates, homemakers have the greatest advantage over unemployed individuals, followed closely by students and retirees, and then workers. White bars show that in contexts of high unemployment rates, students have the greatest life satisfaction advantage over the unemployed, followed by homemakers, workers, and retirees. Therefore, the life satisfaction gap for the unemployed holds both in contexts of low and high unemployment rates. However, we do observe variations in the effect of individual-level unemployment depending on country-level

unemployment rates. Specifically, the difference in size between the two bars for a specific labor force status suggests that the advantage for workers and students increases in contexts of high unemployment rates, while the advantage for retirees decreases. However, the increase in the advantage for homemakers is non-significant. Overall, these results clearly support the fourth hypothesis of a multiplicative combination of individual and contextual effects of unemployment. However, the life satisfaction gap between the employed and the unemployed does not decrease as predicted by the social norm of unemployment model.

Control variables essentially show expected effects and are consistent with previous literature (Table 2). Females are slightly more satisfied than males, education is beneficial for life satisfaction but the magnitude of this effect decreases as educational attainment increases, high income contributes to life satisfaction, age and life satisfaction have a U-shaped relationship, good or very good health are strongly associated with life satisfaction, and married individuals tend to have better life satisfaction outcomes. Life satisfaction also shows expected patterns at the country-level. Results show a small non-linear increase in life satisfaction over time, GDP per capita increases have marginally decreasing beneficial effects on life satisfaction, and increases in postmaterialist values are associated with increases in life satisfaction.

Finally, Table 3 reports random effects and model fit statistics. Significant variance in life satisfaction remains to be explained and most random variance is between individuals. Compared to a null model with random components and no independent variables, the final model explains 8.75% of the variance between individuals, 14.90% in time-varying country characteristics, and 67.58% in time-invariant country characteristics.

[TABLE 3 ABOUT HERE]

DISCUSSION

The present study addressed three uncertainties about the effect of unemployment on subjective well-being. First, while numerous studies find a detrimental effect of unemployment on subjective well-being, most studies do not systematically and simultaneously test whether unemployment shapes subjective well-being through individual, aggregate, additive, or multiplicative effects. Second, the few studies considering additive or multiplicative effects treat unemployment status simplistically by focusing on comparisons to workers, rather than on diverse labor force statuses that make up the life course, such as being a worker, student, retiree, or homemaker. Third, previous literature is largely limited to single-country studies or tends to focus on a narrow sample of wealthy nations, thus preventing the generalizability of results across low-, middle-, and high-income countries. Using longitudinal and multilevel data from 97 income-diverse countries, three-level hierarchical regression techniques, and cross-level interactions, our study provides evidence of a multiplicative detrimental effect of individual unemployment status and country unemployment rates on life satisfaction, that depends on individuals' life course adaptations to diverse labor force statuses.

We find that unemployed individuals have lower predicted life satisfaction compared to any other labor force status group examined, including worker, student, retiree, and homemaker. This finding echoes previous studies that describe unemployment as a stressful life event, which can yield social strain and latent deprivation and result in lower subjective well-being (Clark and Oswald 1994; Jahoda 1988; Lucas et al. 2004). However, we also find evidence of an aggregate effect. Regardless of individual labor force status, individual-level controls, and country-level controls, those living in nations with high unemployment have lower life satisfaction. The stressful experience of living in a country with high aggregate unemployment, therefore, may

affect the population as a whole through media coverage or social network ties (e.g., co-workers, friends, and family). This finding is consistent with previous literature that posits living in a context of high unemployment negatively affects well-being (Brockner et al. 1997; Jalovaara 2003; Lincoln 2000; Rege et al. 2011).

Our findings provide clear evidence of both adverse subjective well-being effects of own unemployment, as well as spillover effects on others. However, because both the individual and contextual effects are present, neither the individual- or country-level hypothesis is supported. Rather, the presence of both effects points to some type of joint effect. The first joint effect considered, the additive effect, hypothesizes that individuals may experience a form of “double jeopardy” risk (Ferraro and Farmer 1996) for low subjective well-being when unemployed in areas with high unemployment rates (Blanchflower 2008; Dooley et al. 1988). Although we find that individual- and country-level unemployment both have detrimental effects on life satisfaction, the joint effects of these forces are different than the sum of their separate effects. That is, the life satisfaction gaps between unemployed individuals and individuals in other labor force statuses show significant variation depending on the national unemployment context. Therefore, our findings do not support an additive effect and instead, suggest a type of multiplicative effect.

Contextual Adaptation to Life Course Events and Life Satisfaction

Previous literature focuses on one form of multiplicative effect—the social norm of unemployment model (Clark 2003; Clark et al. 2010; Stavrova et al. 2011). In contrast to this model, we find that the detrimental effect of being individually unemployed does not *weaken* when unemployment is high and presumably more normative. Further, the social norm of

unemployment model generally neglects diverse labor force statuses. Yet, we find that consistent with individual-level studies (Dooley et al. 1996), diverse labor force statuses are key components to unlocking the complex relationship between unemployment and subjective well-being. We find that unemployed individuals have consistently lower life satisfaction than workers, students, retirees, and homemakers, but the life satisfaction difference between unemployed individuals and individuals of other labor force statuses varies in complex ways depending on a nation's unemployment rate. Higher national unemployment rates are associated with greater advantages for workers and students and smaller advantages for retirees. Lower national unemployment rates have the opposite effect. Therefore, our findings offer preliminary support for a different, and more comprehensive, multiplicative model that incorporates the strengths of previous models—our contextual adaptation to life course events model.

Our model suggested that in contexts of high unemployment rates, workers and students have greater advantages over unemployed individuals, as working becomes a survival strategy and studying becomes a delaying strategy that help to deal circumvent unemployment. Our results offer preliminary support for this proposition. Both workers and students fare better than the unemployed at any time, but this effect is particularly pronounced when national unemployment rates are high. Therefore, working and attending school may represent methods of circumventing the negative effects of high unemployment rates on life satisfaction. This finding complements Strandh's (2000) research, which suggests that unemployed individuals who transition to the role of student gain mental health benefits. Working and attending school likely provide similar latent functions such as a time-structured day, regular contact with peers who have common goals, social status and identity, and activity engagement (Jahoda 1988; Ervasti and Venetoklis 2010). Furthermore, worker and student labor force statuses may also ease social network strain for

partners (Jalovaara 2003) and buffer perceived risk (Brockner et al. 1997) by offering productivity and an option for career development during times of high national unemployment.

Our model also suggests that in contexts of high unemployment rates, retirees have smaller advantages over unemployed individuals as retirement becomes a disguising strategy of an otherwise unemployed status. As we expected, our results suggest that retirement does offer an overall advantage over being unemployed, but this advantage is weaker in contexts of high unemployment rates. This finding may reflect an involuntary aspect to retirement, wherein older adults who become unemployed may transition to the role of retiree. The likelihood of involuntary retirement is likely accentuated in contexts of high aggregate unemployment, explaining the weaker advantage of retirees compared to unemployed individuals. This result is consistent with previous studies noting declines in subjective well-being following involuntary or early retirement (Alavinia and Burdorf 2008; Gallo et al. 2006).

Finally, our model suggests that being a homemaker is an insecure strategy when aggregate unemployment is high. Although homemakers always fare better than the unemployed in terms of life satisfaction in our analysis, this advantage is not significantly strengthened in contexts of high unemployment rates. In other words, perhaps due to economic dependence on a working partner, homemakers are unlikely to experience an alleviation of social strain during contextual economic instability, such as while living in a nation with a higher unemployment rate.

In sum, whereas being a worker or student in the context of high unemployment becomes a particular advantage compared to being individually unemployed, being a retiree is a disadvantage, and the effect of being a homemaker remains steady.

Contextualizing and Individualizing Social Policies

With our multiplicative framework in mind, future policy regarding the promotion of life satisfaction cross-nationally should be more holistic and nuanced. On the one hand, policymakers may focus on individual-level solutions such as resume-building skills, job searching skills, or self-esteem promotion for the unemployed. On the other hand, policymakers may focus on group-based solutions such as protecting workers from co-worker unemployment, or offering services to support family members of the unemployed. Most importantly, however, policies should consider the multiplicative effects of being unemployed in contexts of high unemployment and simultaneously contextualize and individualize plans for addressing unemployment and subjective well-being.

One potential solution that addresses multiple levels at once is national unemployment insurance, which is a payment system for individuals experiencing job loss. Unemployment insurance benefits the unemployed directly and individually by offering resources during a stressful life event. Unemployment insurance can be also helpful to prevent involuntary retirement in contexts of high unemployment rates. Furthermore, the opportunities and resources associated with unemployment insurance may also help reduce strain among the unemployed network and buffer the perceived risk among workers, students, retirees, and homemakers.

Traditional proposals for unemployment insurance highlight the unemployed as an at-risk population in need of a public health intervention (Brown et al. 2003). Further, unemployment insurance is linked to improved subjective well-being in Europe (Sjoberg 2010). Our results suggest that the national population as a whole may be in need of a public unemployment insurance intervention. When countries face high unemployment rates, the well-being of the population as a whole is at risk, not just the unemployed.

Limitations and Future Research

Limitations of the analyses presented here point to directions for future research. First, this study has clear implications for policy discussions on unemployment insurance, but it does not directly test the effects of such insurance as these data are not readily available for all the countries and the whole period analyzed. Future studies should harmonize cross-national unemployment insurance data to directly assess the extent to which this policy would benefit people from diverse labor force statuses across the life course. Similarly, future studies should include direct measures of job prospects and social norms. Our study finds no evidence of a counteracting effect of unemployment rates for unemployed individuals, but job prospects and favorable attitudes towards unemployment may ease the detrimental effect of being unemployed on life satisfaction. Next, future studies should adjust for genetic inheritance and personality traits that are known to explain substantial variation in life satisfaction between individuals. In our analyses these traits are unobserved and cannot be addressed through fixed effects as repeated observations at the individual-level are not available. Future research should also include more in-depth consideration of life course themes such as age, gender, and cultural differences in the effects of unemployment. Although we control for all these variables, modeling age, gender, and cultural variation in the effects of unemployment is beyond the scope of this paper. Finally, future research should include other well-being outcomes, from happiness and affect scales to various social relationships and physical health indicators. Studies including health indicators, however, are more prone to potential selection effects and reverse causality going from poor health to unemployment and thus should combine multilevel methods with quasi-experimental research designs.

The strengths of the analysis presented here also point to some directions for future research. In this paper, we combine multilevel data sources with a complex, theoretically-grounded multiplicative framework that assesses the joint effects of individual- and country-level unemployment on individual life satisfaction cross-nationally. Future studies should continue to incorporate multiplicative frameworks and multilevel data. Use of these theoretical and empirical contributions may not only clarify the process through which unemployment affects subjective well-being, but also help avoid the pitfalls of individualistic and ecological fallacies.

CONCLUSION

In sum, our study suggests that the well-documented detrimental effects of unemployment on subjective well-being vary in complex ways, depending on multiplicative interactions between individual unemployment status and country-level unemployment rates, as well as on whether workers, students, retirees, or homemakers are included in the comparison group. Thus, we conclude that the individual experience of unemployment should be understood as situated within the broader context of national unemployment rates and should be examined in contrast to other labor force statuses that make up the life course.

References

- Alavinia, Seyed M. and Alex Burdorf. 2008. "Unemployment and Retirement and Ill-health: A Cross-sectional Analysis across European Countries." *International Archives of Occupational and Environmental Health* 82(1):39-45.
- Blakely, Tony A. and Alistair J. Woodward. 2000. "Ecological Effects in Multi-level Studies." *Journal of Epidemiology and Community Health* 54:367-74.
- Blanchflower, David G. 2001. "Unemployment, Well-being, and Wage Curves in Eastern and Central Europe." *Journal of the Japanese and International Economies* 15(4):364-402.
- Blanchflower, David G. 2008. *International Evidence on Well-being*. Discussion Paper 3354. Institute for the Study of Labor (IZA).
- Blanchflower, David G. and Andrew J. Oswald. 2008. "Hypertension and Happiness across Nations." *Journal of Health Economics* 27(2):218-33.
- Bockerman, Petri and Pekka A. Ilmakunnas. 2006. "Elusive Effects of Unemployment on Happiness." *Social Indicators Research* 79(1):159-69.
- Brereton, Finbarr, J. Peter Clinch and Susana Ferreira. 2008. "Employment and Life-satisfaction: Insights from Ireland." *Economic and Social Review* 39(3):207-34.
- Brickman, Philip and Donald T. Campbell. 1971. "Hedonic Relativism and Planning the Good Society." Pp. 287-301. *Adaptation-level Theory*. Mortimer H. Appley, editors. New York, NY: Academic Press.
- Brockner, Joel, Robert Hurley, Rocki L. Dewitt, Batia Wiesenfeld, Steven Grover, John Stephan, Thomas Reed and Christopher Martin. 1997. "The Effects of Layoff Survivors on their Fellow Survivors' Reactions." *Journal of Applied Social Psychology* 27(10):835-63.
- Brown, David W., Lina S. Balluz, Earl S. Ford, Wayne H. Giles, Tara W. Strine, David G. Moriarty, Janet B. Croft and Ali H. Mokdad. 2003. "Associations between Short- and Long-term Unemployment and Frequent Mental Distress among a National Sample of Men and Women." *Journal of Occupational and Environmental Medicine* 45(11):1159-66.
- Butz, William P. and Barbara B. Torrey. 2006. "Some Frontiers in Social Science." *Science* 30(312):1898-900.
- Carroll, Nick. 2007. "Unemployment and Psychological Well-being." *Economic Record* 83(262):287-302.
- Clark, Andrew. 2003. "Unemployment as a Social Norm: Psychological Evidence from Panel Data." *Journal of Labor Economics* 21(2):323-51.
- Clark, Andrew and Andrew J. Oswald. 1994. "Unhappiness and Unemployment." *Economic Journal* 104(424):648-59.
- Clark, Andrew, Andreas Knabe and Steffen Rätzel. 2010. "Boon or Bane? Others' Unemployment, Well-being and Job Insecurity." *Labour Economics* 17:52-61.
- Dannefer, Dale. 2003. "Cumulative Advantage/Disadvantage and the Life Course: Cross-fertilizing Age and Social Science Theory." *Journal of Gerontology: Social Sciences* 58B(6):S327-37.
- De Witte, Hans. 1999. "Job Insecurity and Psychological Well-being: Review of the Literature and Exploration of Some Unresolved Issues." *European Journal of Work and Organizational Psychology* 8(2):155-77.
- Di Tella, Rafael, Robert J. MacCulloch and Andrew J. Oswald. 2001. "Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness." *American Economic Review* 91(1):335-41.

- Dooley, David, Ralph Catalano and Karen S. Rook. 1988. "Personal and Aggregate Unemployment and Psychological Symptoms." *Journal of Social Issues* 44(4):107-23.
- Dooley, David, Jonathan Fielding and Lennart Levi. 1996. "Health and Unemployment." *Annual Review of Public Health* 17:449-65.
- Dupre, Matthew E., Linda K. George, Guangya Liu and Eric D. Peterson. 2012. "The Cumulative Effect of Unemployment on Risks for Acute Myocardial Infarction." *Archives of Internal Medicine* 172(22):1731-7.
- Elder, Jr., Glen. H. 2003. "The Life Course in Time and Place." Pp. 57-71. *Social Dynamics of the Life Course*. Walter R. Heinz and Victor W. Marshall, editors. New York, NY: Aldine de Gruyter.
- Ervasti, Heikki and Takis Venetoklis. 2010. "Unemployment and Subjective Well-being: An Empirical Test of Deprivation Theory, Incentive Paradigm and Financial Strain Approach." *Acta Sociologica* 53(2):119-39.
- Fenwick, Rudy and Mark Tausig. 1994. "The Macroeconomic Context of Job Stress." *Journal of Health and Social Behavior* 35(3):266-82.
- Ferraro, Kenneth F. and Melissa M. Farmer. 1996. "Double Jeopardy, Aging as Leveler, or Persistent Health Inequality? A Longitudinal Analysis of White and Black Americans." *Journal of Gerontology: Social Sciences* 51B(6):S319-28.
- Ferraro, Kenneth F., Tetyana P. Shippee and Markus H. Schafer. 2009. "Cumulative Inequality Theory for Research on Aging and the Life Course." Pp. 413-33. *Handbook of Theories of Aging, Second Edition*. Vern L. Bengtson, Daphna Gans, Norella M. Putney and Merrill Silverstein, editors. New York, NY: Springer Publishing.
- Gallo, William T., Elizabeth H. Bradley, Joel A. Dubin, Richard N. Jones, Tracy A. Falba, Hsun-Mei Teng and Stanislav V. Kasl. 2006. "The Persistence of Depressive Symptoms in Older Workers who Experience Involuntary Job Loss: Results from the Health and Retirement Study." *Journal of Gerontology: Social Sciences* 61B(4):S221-8.
- Headey, Bruce. 2006. *Happiness: Extending Dynamic Equilibrium Theory to Account for Both Short Term Stability and Long Term Change*. Discussion Paper 607. German Institute for Economic Research (DIW).
- Inglehart, Ronald, Roberto Foa, Christopher Peterson and Christian Welzel. 2008. "Development, Freedom, and Rising Happiness: A Global Perspective (1981-2007)." *Perspectives on Psychological Science* 3(4):264-85.
- Jahoda, Marie. 1988. "Economic Recession and Mental Health: Some Conceptual Issues." *Journal of Social Issues* 44(4):13-23.
- Jalovaara, Marika. 2003. "The Joint Effects of Marriage Partners' Socioeconomic Positions on the Risk of Divorce." *Demography* 40(1):67-81.
- Kapuvári, Virág. 2011. "Psychological Effects of Economic Recession and Unemployment." *European Journal of Mental Health* 6(1):83-93.
- Kassenboehmer, Sonia C. and John P. Haisken-DeNew. 2009. "You're Fired! The Causal Negative Effect of Entry Unemployment on Life Satisfaction." *Economic Journal* 119(536):448-62.
- Lin, Xiaowan and Kwok Leung. 2010. "Differing Effects of Coping Strategies on Mental Health During Prolonged Unemployment: A Longitudinal Analysis." *Human Relations* 63(5):637-65.
- Lincoln, Karen D. 2000. "Social Support, Negative Social Interactions, and Psychological Well-being." *Social Service Review* 74(2):231-52.

- Lucas, Richard E. and M. Brent Donnellan. 2012. "Estimating the Reliability of Single-item Life Satisfaction Measures: Results from Four National Panel Studies." *Social Indicators Research* 105(3):323-31.
- Lucas, Richard E., Andrew E. Clark, Yannis Georgellis and Ed Diener. 2004. "Unemployment Alters the Set Point for Life Satisfaction." *Psychological Science* 15(1):8-13.
- Luechinger, Simon, Stephan Meier and Alois Stutzer. 2010. "Why Does Unemployment Hurt the Employed? Evidence from the Life Satisfaction Gap between the Public and the Private Sector." *Journal of Human Resources* 45(4):998-1045.
- Luke, Douglas A. 2004. *Multilevel Modeling*. Paper Series on Quantitative Application in the Social Sciences 07-143. Thousand Oaks, CA: Sage University.
- McKee-Ryan, Frances, Zhaoli Song, Connie R. Wanberg and Angelo J. Kinicki. 2005. "Psychological and Physical Well-being during Unemployment: A Meta-analytic Study." *Journal of Applied Psychology* 90(1):53-76.
- McLoyd, Vonnie C. 1989. "Socialization and Development in a Changing Economy: The Effects of Paternal Job and Income Loss on Children." *American Psychologist* 44(2):293-302.
- Novo, Mehmed, Anne Hammarstrom and Urban Janlert. 2001. "Do High Levels of Unemployment Influence the Health of Those Who Are Not Unemployed? A Gendered Comparison of Young Men and Women during Boom and Recession." *Social Science & Medicine* 53(3):293-303.
- Ochsen, Carsten. 2011. "Subjective Well-being and Aggregate Unemployment: Further Evidence." *Scottish Journal of Political Economy* 58(5):634-55.
- Paul, Karsten I. and Klaus Moser. 2009. "Unemployment Impairs Mental Health: Meta-analyses." *Journal of Vocational Behavior* 74(3):264-82.
- Pittau, M. Grazia, Roberto Zelli and Andrew Gelman. 2010. "Economic Disparities and Life Satisfaction in European Regions." *Social Indicators Research* 96(2):339-61.
- Powdthavee, Nattavudh. 2007. "Are there Geographical Variations in the Psychological Cost of Unemployment in South Africa?" *Social Indicators Research* 80(3):629-52.
- Raudenbush, Stephen W. and Anthony S. Bryk. 2002. *Hierarchical Linear Models: Applications and Data Analysis Methods*. Thousand Oaks, CA: Sage Publications.
- Rege, Mari, Kjetil Telle and Mark Votruba. 2011. "Parental Job Loss and Children's School Performance." *Review of Economic Studies* 78(4):1462-89.
- Royston, Patrick. 2004. "Multiple Imputation of Missing Values." *Stata Journal* 4:227-41.
- Scutella, Rosanna and Mark Wooden. 2008. "The Effects of Household Joblessness on Mental Health." *Social Science and Medicine* 67(1):88-100.
- Shah, Ajit and Ritesh Bhandarkar. 2008. "Cross-national Study of the Correlation of General Population Suicide Rates with Unemployment Rates." *Psychological Reports* 103(3):793-6.
- Shields, Michael A. and Stephen Wheatley Price. 2005. "Exploring the Economic and Social Determinants of Psychological Well-being and Perceived Social Support in England." *Journal of the Royal Statistical Society: Series A (Statistics in Society)* 168(3):513-37.
- Shields, M.A., Stephen Wheatley Price and Mark Wooden. 2009. "Life Satisfaction and the Economic and Social Characteristics of Neighbourhoods." *Journal of Population Economics* 22(2):421-43.
- Siahpush, Mohammad, Matt M. Spittal and Gopal K. Singh. 2008. "Happiness and Life Satisfaction Prospectively Predict Self-rated Health, Physical Health, and the Presence of

- Limiting, Long-term Health Conditions.” *American Journal of Health Promotion* 23(1):18-26.
- Sjoberg, Ola. 2010. “Social Insurance as a Collective Resource: Unemployment Benefits, Job Insecurity and Subjective Well-being in a Comparative Perspective.” *Social Forces* 84(3):1521-37.
- Stavrova, Olga, Thomas Schlosser and Detlef Fetchenhauer. 2011. “Are the Unemployed Equally Unhappy All around the World? The Role of the Social Norms to Work and Welfare State Provision in 28 OECD Countries.” *Journal of Economic Psychology* 32(1):159-71.
- Stewart, Kitty. 2005. “Dimensions of Well-being in EU Regions: Do GDP and Unemployment Tell Us All We Need to Know?” *Social Indicators Research* 73(2):221-46.
- Strandh, Mattias. 2000. “Different Exit Routes from Unemployment and their Impact on Mental Well-being: The Role of the Economic Situation and the Predictability of the Life Course.” *Work Employment and Society* 14(3):459-79.
- Strully, Kate W. 2009. “Job Loss and Health in the US Labor Market.” *Demography* 46(2):221-46.
- Stolzenberg, Ross M. 2011. “Do Not Go Gentle into that Good Night: The Effect of Retirement on Subsequent Mortality of U.S. Supreme Court Justices, 1801-2006.” *Demography* 48(2):1317-46.
- Taylor, Shelly E., Rena L. Repetti and Teresa Seeman. 1997. “Health Psychology: What is an Unhealthy Environment and How Does it Get Under the Skin?” *Annual Review of Psychology* 48:411-47.
- US Census Bureau. 2012. *Table 622. Unemployed Workers—Summary: 1990 to 2010*. Labor Force, Employment, and Earnings. Available at <http://www.census.gov/compendia/statab/2012/tables/12s0622.pdf>.
- Winkelmann, Rainer. 2009. “Unemployment, Social Capital, and Subjective Well-being.” *Journal of Happiness Studies* 10(4):421-30.
- World Bank. 2009. *World Development Indicators*. Washington, DC: International Bank for Reconstruction and Development. Available at <http://www.worldbank.org/>.
- World Values Survey and European Values Survey (WVS-EVS). 2009. *Integrated EVS-WVS Database, 1981-2008*. Available at <http://www.worldvaluessurvey.org/>.
- Young, Cristobal. 2012. “Losing a Job: The Nonpecuniary Cost of Unemployment in the United States.” *Social Forces* 91(2):609-34.

Table 1. Descriptive Statistics

Variable	Mean	SD	Min.	Max.
<i>Dependent variable</i>				
Life satisfaction	6.71	2.44	1.00	10.00
<i>Individual-level labor force status</i>				
Unemployed	0.11	0.31	0.00	1.00
Worker	0.53	0.50	0.00	1.00
Student	0.07	0.26	0.00	1.00
Retired	0.15	0.35	0.00	1.00
Homemaker	0.14	0.35	0.00	1.00
<i>Country-level unemployment rate</i>				
Unemployment rate (% total labor force)	9.53	6.72	0.70	47.50
<i>Individual-level controls</i>				
Female	0.53	0.50	0.00	1.00
No education or less than primary	0.11	0.32	0.00	1.00
Primary completed, but less than high school	0.35	0.48	0.00	1.00
High school	0.31	0.46	0.00	1.00
More than high school	0.23	0.42	0.00	1.00
Income scale	4.62	2.47	1.00	10.00
Age	42.00	16.73	14.00	100.00
Good or very good health	0.64	0.48	0.00	1.00
Divorced, separated, or widowed	0.13	0.33	0.00	1.00
Single, never married	0.25	0.43	0.00	1.00
Married	0.62	0.48	0.00	1.00
<i>Country-level controls</i>				
Time	1999.16	7.72	1981	2009
GDP per capita (\$1,000 current ID, PPP)	14.74	13.09	0.70	89.17
Postmaterialist values	0.79	0.17	0.46	1.13

Notes: N=400,917 for individual characteristics measured at level 1; N=280 for time-varying country characteristics measured at level 2 (time and GDP); and N=97 for time-invariant country characteristics measured at level 3 (postmaterialist values).

Table 2. Hierarchical Linear Model Results for the Effects of Individual- and Country-level Unemployment on Life Satisfaction, Fixed Effects

	Coefficient	Std. Error
<i>Dependent variable</i>		
Adjusted mean life satisfaction (intercept)	5.96***	0.08
<i>Individual-level labor force status</i>		
Unemployed (omitted)		
Worker	0.41***	0.01
Student	0.52***	0.02
Retiree	0.43***	0.02
Homemaker	0.53***	0.02
<i>Country-level unemployment rate</i>		
Unemployment rate (% total labor force)	-0.02**	0.01
<i>Cross-level interactions</i>		
Worker*Unemployment rate	0.01***	0.00
Student*Unemployment rate	0.01***	0.00
Retired*Unemployment rate	-0.01**	0.00
Homemaker*Unemployment rate	0.00	0.00
<i>Individual-level controls</i>		
Female	0.10***	0.01
No education or less than primary	-0.19***	0.01
Primary completed, but less than high school	-0.07***	0.01
High school	-0.03**	0.01
More than high school (omitted)		
Income scale	0.13***	0.00
Age	-0.02***	0.00
Age squared	0.05***	0.00
Good or very good health	1.01***	0.01
Divorced, separated, or widowed	-0.48***	0.01
Single, never married	-0.29***	0.01
Married (omitted)		
<i>Country-level controls</i>		
Time	0.32**	0.11
Time squared	0.02***	0.00
GDP per capita (log, \$1,000 current ID, PPP)	0.36***	0.06
Postmaterialist values	1.47***	0.43

Notes: N=400,917 for individual characteristics measured at level 1; N=280 for time-varying country characteristics measured at level 2 (time and GDP); and N=97 for time-invariant country characteristics measured at level 3 (postmaterialist values). Statistically significant coefficients are indicated as follows: ***p<.001; **p<.01; *p<.05 (two tailed tests).

Table 3. Hierarchical Linear Model Results for the Effects of Individual- and Country-level Unemployment on Life Satisfaction, Random Effects and Fit Statistics

	Variance components	Std. Deviation	Variance Distribution
<i>Random unexplained variance</i>			
Level 1: Individual characteristics	4.47	2.11	89.61%
Level 2: Time-varying country characteristics	0.21***	0.46	4.97%
Level 3: Time-invariant country characteristics	0.19***	0.44	5.42%
<i>Explained variance</i>			
Level 1: Individual characteristics			8.78%
Level 2: Time-varying country characteristics			14.90%
Level 3: Time-invariant country characteristics			67.58%
<i>Model fit</i>			
Deviance	1,739,010.59		
χ^2 statistic	36945.42***		
Number of estimated parameters	27		

Notes: Level 1 N=400,917, level 2 N=280, and level 3 N=97. Statistically significant coefficients are indicated as follows: ***p<.001; **p<.01; *p<.05 (two tailed tests).

Figure 1. Competing Hypotheses of the Effects of Individual- and Country-level Unemployment on Life Satisfaction

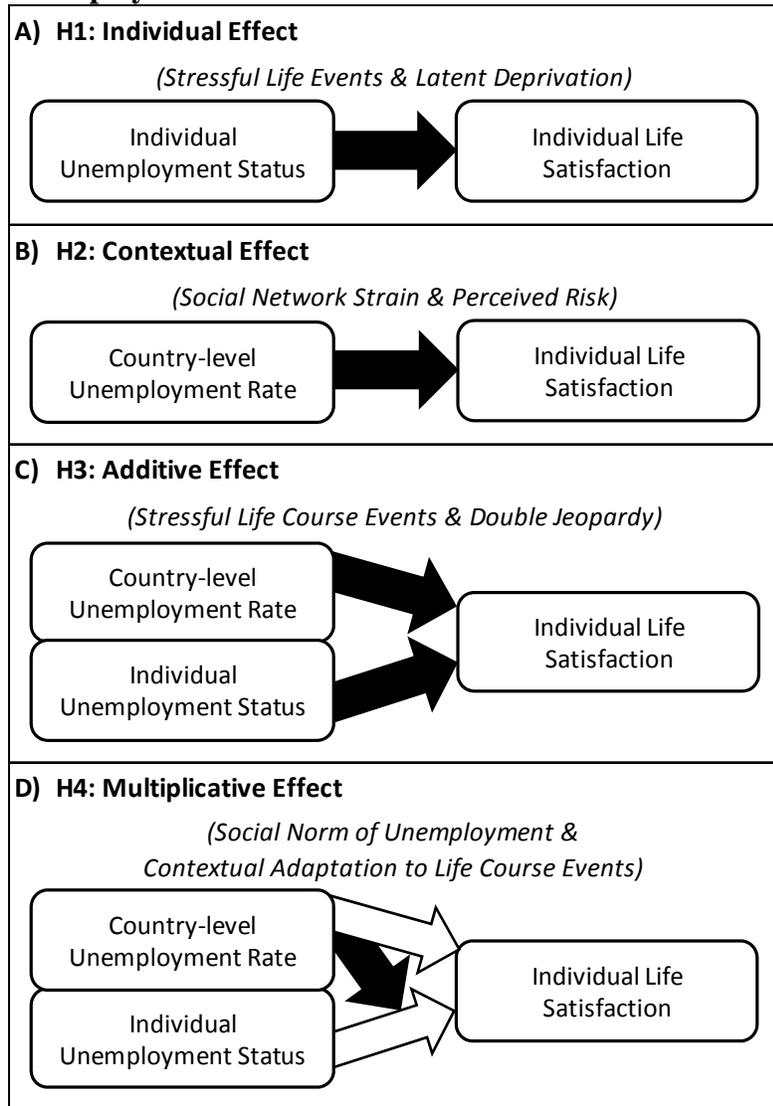


Figure 2. Predicted Difference in Life Satisfaction by Country-level Unemployment Rate



Notes: Predicted difference in life satisfaction for workers, students, retirees, and homemakers compared to unemployed individuals.