

**Individual Troubles, Shared Troubles: The Multiplicative Effect of Individual and
Country-level Unemployment on Life Satisfaction in 95 Nations (1981-2009)**

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Acknowledgments:

This is the pre-peer review version of an article accepted for publication at Social Forces. The authors would like to thank Ariel Azar, Maureen Berho, Meagan Colvin, Catalina Figueroa, Amelia del Villar, Macarena Vivent, and three anonymous reviewers for their comments and other forms of help in connection to this article. Esteban Calvo acknowledges partial financial support from CONICYT/FONDECYT/REGULAR/N°1140107. 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, Boston College, or CONICYT.

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 influences, or a combination of both. Drawing data from the World and European Values Surveys, National Accounts Official Country Data, Social Security Programs Throughout the World Reports, World Development Indicators, and World Income Inequality databases for 398,533 individuals in 95 nations (1981-2009), we use three-level 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 other individuals, and when unemployment rates rise, their satisfaction drops even further below students, homemakers, and employed individuals; retirees, however, become more similar to the unemployed. We discuss these findings in light of previous theoretical models to argue for a model where individual unemployment is understood in the context of diverse labor force statuses and national unemployment rates. We conclude with suggestions for public policy to address the negative consequences of unemployment through individualized and contextualized plans.

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 begun to dissect the specific processes through which unemployment endangers subjective well-being, be it via individual experiences, contextual conditions, or a combination of both (Paul and Moser 2009). Further, theoretical and empirical explanations regarding the ways in which individual unemployment status and contextual unemployment rates shape life satisfaction are varied, disjointed, and based primarily on high-income nations, which results in competing hypotheses and mixed findings.

A majority of previous studies examine the *individual* and *contextual* experiences of unemployment separately. At the individual-level, unemployment is characterized as a stressful life event (Lucas et al. 2004) that can deprive individuals of the latent functions of employment, such as social interaction, identity, and status (Clark and Oswald 1994; Jahoda 1988). The contextual experience of unemployment, however, is theorized to operate through different processes. Living in a nation with high unemployment may be detrimental to all individuals, regardless of work status (Stewart 2005). Children, spouses (Jalovaara 2003; Rege, Telle and Votruba 2011), and former coworkers of the unemployed may experience lower well-being (Brockner et al. 1997) through network strain and perceived risk of job loss.

Separate examinations of individual and aggregate unemployment, however, may be overly simplistic. It is unclear to what extent individual and contextual experiences of unemployment may combine and have a joint effect. A small, but growing body of literature has explored two types of joint effects. The first type of joint effect, *additive*, assumes that the separate negative effects of individual and aggregate unemployment on well-being combine to create a type of

“double jeopardy” (Ferraro and Farmer 1996): Unemployed individuals in areas with high unemployment have especially low levels of well-being (Blanchflower 2008; Di Tella, MacCulloch and Oswald 2001; Dooley, Catalano and Rook 1988; Stavrou, Schlosser and Fetchenhauer 2011). The second type of joint effect, *multiplicative*, posits that unemployment rates moderate the effect of individual unemployment in a non-additive manner (Clark, Knabe and Rätzel 2010). For example, high unemployment rates may de-stigmatize the individual experience of unemployment and actually dampen its negative well-being effects (Clark 2003; Shields and Price 2005). Thus, prior theorizing on joint effects is contradictory. Empirical tests of joint effects are often performed on samples of high-income nations and therefore offer a limited scope of contextual unemployment. Further, most of these studies compare unemployed and employed individuals without considering a more diverse set of labor force statuses.

We seek to improve on previous studies of joint effects by proposing and empirically testing a new model that combines the strengths of individual, contextual, additive, and multiplicative approaches for a diverse set of labor force statuses in a total of 95 low-, middle-, and high-income nations. Specifically, we conceptualize a multiplicative model called “contextual adaptation to life events” (Figure 1) postulating that unemployment operates as a stressful life event at multiple levels (as an individual experience and contextual influence). Moreover, it hypothesizes that unemployment rate as a contextual influence yields unique well-being outcomes depending on the labor force status used as a comparison, including unemployed, worker, student, homemaker, and retiree. We argue that under high unemployment, working is a *survival* strategy, studying is a *delaying and avoiding* strategy, homemaking is an *insecure survival* strategy, and retiring is a *disguising* strategy.

We begin by reviewing literature on the four competing theoretical frameworks on

unemployment and well-being. Next, we describe the longitudinal and multilevel data structure and methods. The study utilizes on a comprehensive sample of 398,533 individuals living in 95 low-, middle-, and high-income countries, observed between 1981 and 2009. We use life satisfaction as a measure of subjective well-being. Next, 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 that collectively capture individual, contextual, additive, and multiplicative effects. Finally, we discuss the meaning of our findings for the models of unemployment and subjective well-being and reflect on the policy implications of these results.

[FIGURE 1 ABOUT HERE]

Literature Review

Figure 1 summarizes four competing frameworks regarding the link between unemployment and 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 operating on both levels (double jeopardy), or a multiplicative effect of both levels due to social norms and contextual adaptation to stressful life events. We review the literature on these competing frameworks and propose a new model for understanding the multiplicative effects of unemployment on well-being.

Individual Framework: Stressful Life Events and Latent Deprivation

At the individual-level, social strain theorists hypothesize that stressful life events, such as

experiencing unemployment (Lucas et al. 2004), get “under the skin” to create poorer well-being (Dupre et al. 2012; Ferraro, Shippee and Schafer 2009). Yet, scholars are not in agreement about the long-term detrimental effects of stressful events. The dynamic equilibrium/set point theory, for example, proposes that individuals have a personal baseline or set point of well-being and tend to return to this level following a stressful event (Headey 2006). While evidence supports this conclusion for numerous life events, unemployment seems to be a uniquely taxing event. Nationally representative longitudinal studies of Americans (Young 2012) and Germans (Clark et al. 2008; 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 for 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 2008; Carroll 2007; Ervasti and Venetoklis 2010).

In order to understand why the experience of unemployment has a uniquely detrimental effect compared to other stressful events, we consider the unique meaning and function of employment in individuals’ lives. The latent deprivation model (Jahoda 1988) assumes employment provides unintended—or latent—benefits for an individual’s subjective well-being, such as a time-structured day, contact with peers, social status, identity, and activity engagement. Therefore, loss of employment implies loss of non-material benefits. Such deprivation 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 individual unemployment and life satisfaction is explained not solely by income loss, but also by loss of non-material functions of work (Blanchflower and Oswald 2008; Ervasti and Venetoklis 2010).

Although the loss of the latent functions of employment is detrimental for the unemployed, this framework typically overlooks additional labor force statuses that may also provide latent functions. For example, being a student or homemaker may allow individuals to detach from work and create identities and activities to serve the same functions as employment's latent functions would. A few studies have explored this possibility. Lin and Leung (2010) find that detaching from the role of unemployed leads to mental health improvements. Strandh (2000) reports similar mental health benefits among those who exit unemployment in favor of studying, though he found no positive effect of exiting to retirement. Brereton et al. (2008) find a life satisfaction advantage for respondents engaged in household activities, as compared to the full-time employed. Studies of older Americans and Europeans report that transitions to retirement predict lower subjective well-being, particularly if the transition was early and involuntary (Alavinia and Burdorf 2008; Stolzenberg 2011).

Contextual Framework: Social Network Strain and Perceived Risk

Despite the relative complexity of these individual-level explanations, they do not address the role of aggregate unemployment on well-being. An emerging group of studies report that contextual unemployment may have detrimental effects on subjective well-being regardless of an individual's labor force status. For example, numerous cross-national studies report that high unemployment rates are linked to lower life satisfaction and other well-being indicators (Fenwick and Tausig 1994; Luechinger, Meier and Stutzer 2010; Novo, Hammarstrom and Janlert 2001; Stewart 2005). This contextual effect of unemployment rates on individual well-being is theorized to operate primarily through individuals' social network strain and perceived labor market risk.

First, generalized social strain models posit that interactions with individuals experiencing strain may be negative, which has the potential to cause a rippling effect throughout the troubled individual's social network (Lincoln 2000). This process may apply to the social networks of unemployed individuals. Indeed, there is evidence that relatives of unemployed individuals experience a reduction in subjective well-being (Jalovaara 2003; Rege et al. 2011). Children and spouses of the unemployed are at particular risk for social network strain, as indicated by poorer academic performance and higher divorce risk, respectively (Jalovaara 2003; Rege et al. 2011). As the aggregate unemployment rate rises, the number of social network members affected increases, potentially harming many individuals, regardless of whether they are individually unemployed.

Second, the perceived labor market risk model complements the social network strain model by arguing that regardless of their own unemployment status, individuals 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 work-related distress, labor market anxiety, and ultimately to a decrease in subjective well-being (Brockner et al. 1997). Clark et al. (2010:53) summarize the perceived risk model as follows: "the anticipation of redundancy is at least as distressing as the experience of unemployment itself." Not surprisingly, studies of contextual unemployment tend to emphasize macro-level processes and implications over individual-level ones. More recent studies, however, have begun to draw on individual- and aggregate-level explanations to explore how the unemployment-related processes on these two levels may affect subjective well-being jointly via additive or multiplicative effects.

Additive Framework: Stressful Life Events and Double Jeopardy

To conceptualize joint effects of unemployment as it shapes subjective well-being at the individual and country levels simultaneously, we draw on the concept of “double jeopardy,” which proposes that experiencing multiple stressful conditions simultaneously can reduce well-being (Ferraro and Farmer 1996). From this perspective, being unemployed in a nation with high aggregate unemployment may be a form of overlapping stressful conditions, or 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, but add up to create heightened risk overall. Empirical assessments of additive effects, however, are limited and inconclusive. Using multilevel data for 28 OECD European countries (1999-2009), Stavrova and colleagues (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 (1992-2002), Pittau, Zelli, and Gelman (2010) find that unemployment rates in 70 sub-national 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 non-existent additive effect for East Germany. Finally, Dooley, Fielding and Levi (1996) find that both individual- and regional-level unemployment are significant predictors of poorer psychological well-being in California.

Other authors explore additive effects indirectly through alternative measurements and methods. In a cross-national sample, Blanchflower (2008) finds negative effects of both individuals’ unemployment status and their perceptions that the unemployment rate is increasing on life satisfaction. Bockerman and Ilmakunnas (2006) find no aggregate correlation between Finland’s increasing national unemployment rate in the 1990s and national average declines in

subjective well-being, but do find that unemployed individuals have lower life satisfaction (but not lower happiness) across three waves of the World Values Survey. Kapuvari (2011) argues that despite the limited evidence of additive effects of unemployment in Western nations, it is unknown how these joint effects operate in more 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 further examination cross-nationally.

Multiplicative Framework: Contextual Adaptation to Life Events

As an alternative to the additive joint effect, it is possible that the main effect of individual unemployment is moderated by aggregate unemployment rates. In other words, the effects of individual unemployment status and contextual unemployment rates may vary depending on each other’s values, yielding a multiplicative effect. In this section, we first outline previously tested multiplicative models of individual and contextual unemployment. Next, we propose our own multiplicative model—the “contextual adaptation to life events” model—that integrates previous models and theorizes some previously unexplored strategies that people of diverse labor force statuses use during times of high unemployment.

One previous multiplicative model, the “social norm of unemployment” model, posits that high and prolonged unemployment may create an environment where being unemployed is more normative and less stigmatized. In direct contrast to the proposed additive effects, this model suggests that unemployed individuals in nations with high unemployment do not suffer a “double jeopardy.” Rather, as Clark (2003:326) states, “unemployment hurts less the more there is of it around.” In other words, the negative effects of being unemployed are dampened in a context

with high aggregate unemployment. In addition, as unemployment rates climb or persist over time, employed individuals may experience intensified labor market anxiety. Therefore, the multiplicative “social norm of unemployment” hypothesis posits that the well-being gap between the employed and the unemployed narrows in the context of high unemployment.

Empirical tests of this hypothesis yield conflicting results, perhaps due to debate over the mechanisms that could drive this multiplicative process, as well as limited samples used in studies that conducted these tests. First, a few studies conducted in high-income nations indicate that high or long-term unemployment rates can be beneficial or less harmful for the unemployed (Ochsen 2011; Clark and Oswald 1994; Clark 2003; Shields and Price 2005; Shields, Price and Wooden 2009). Other studies in high-income nations, however, find no support for the social norm of unemployment as they find no differences in the impact of unemployment on well-being between places with diverging local unemployment rate (Brereton et al. 2008; Pittau et al. 2010). A third and final set of studies argues that unemployment rates are poor indicators of social norms and suggests alternative indicators. Clark et al. (2010) suggest that individual job market prospects, or labor market attachment, is the primary driving force and find some evidence of this process in Germany. Stavrova et al. (2011) examine individual-level attitudes towards work in Europe and find that “unemployment hurts less in societies with more tolerant attitudes towards being out of work” (160).

Overall, studies exploring the social norm of unemployment use limited samples of high-income nations (Paul and Moser 2009)—the only study in a middle-income country (South Africa) found a weak social norm effect (Powdthavee 2007). In addition, these studies do not report on data from the last decade—a period with unemployment on the rise (US Census Bureau 2012). Finally, current literature on the multiplicative effects of unemployment does not address

other labor force statuses, such as students, homemakers, or retirees, that are frequently explored in studies of individual-level effects (Dooley et al. 1996; Lin and Leung 2010; Strandh 2000). Therefore, we propose a new multiplicative model that we call the “contextual adaptation to life events” model. This model draws on the strengths of previous models, incorporates a consideration of diverse labor force statuses, and postulates divergent strategies that people may choose to pursue when aggregate unemployment rates are elevated. The core proposition of this new model is that the individual experience of unemployment should be situated within a broader national context and understood in relationship to experiences of those in other labor force statuses.

Our theorization draws directly upon current theories of individual (social strain and latent deprivation) and contextual (social network strain and perceived labor market risk) effects of unemployment, combined with an emphasis on life events, risk, and context. Consistent with previous research, we propose, first, that the unemployed are less satisfied than any other labor force group. Second, we expect that increases in country-level unemployment rates are likely to further reduce the life satisfaction of the unemployed because of their long-term unemployment and poor job prospects. However, third, we also propose that when country-level unemployment rates increase, the life satisfaction gap between the unemployed and individuals in other labor force statuses does not simply stay in the same (which would be the case if the effects are additive) or decrease due to a multiplicative effect of social norms. Rather, the effect of an increase in unemployment rates on the gap between the unemployed and others differs depending on whether the comparison is to workers, students, homemakers, or retirees.

Part of the complexity is due to the fact that when national unemployment rates rise, individuals invariably shift among these labor force statuses. Given the normative undesirability

of the unemployed status, most individuals strive to escape it. Their preferred escape is most often to find a job, but that route often fails under conditions of high unemployment. Therefore, many individuals resort to shifting to one of the other labor force statuses: go back to school, become a homemaker, or retire. Thus, changes in unemployment rates are closely tied to changes in composition of each of the labor force statuses. Changes in unemployment rates also have an effect on the reasons why a given individual might occupy a specific labor force status. That is, low unemployment rates usually mean that a person has more of choice, while high unemployment rates often mean that many people are unable to be in their preferred labor force status. These processes, of course, have important implications for life satisfaction.

First, in contexts of high unemployment rates, the life satisfaction gap may widen for unemployed individuals compared to those holding a job. This is because working fulfills latent functions and maintains life satisfaction, perhaps offsetting stress associated with national unemployment. Working in a high unemployment context, however, can also be a source of stress as one fears losing one's job and witnesses job losses of coworkers.

Another very attractive option in the context of high unemployment—and one that also can protect life satisfaction—is studying: Attending school can help escape actual unemployment, circumvent (or at least delay) potential unemployment, and fulfill latent functions similar to those that paid work does. It can also help avoid (for the time being) the detrimental effects of perceived labor market risk that come with holding a job in a context of high national unemployment. In addition, going to school is often associated with forming new networks, so it often removes individuals from networks of those who can potentially lose jobs and protects from the corresponding ripple effects. Nevertheless, potential future unemployment can be a source of stress even for students. Still, it would appear that being a student during the time of

high unemployment rates would have a protective effect as high, or perhaps higher, than that of being a worker.

Third, for some subgroups of individuals facing unemployment, especially for those with minor children and employed partners, homemaking may become a strategy to escape unemployment. Homemaking provides a purpose and comes with a range of activities that can fulfill some of the same latent functions that employment does. Nevertheless, in a context of high unemployment, homemaker is a precarious status as it often depends on the continuity of one's partner's employment—something homemakers cannot control. Moreover, as previous models suggest, homemakers in nations with high aggregate unemployment rates are likely at greater risk of having an unemployed partner and therefore experiencing social network strain and poorer well-being. Thus, we would expect that homemaking is not as good of a protective strategy as either employment or studying.

Finally, while studying may be the most prevalent option at younger ages when education is normative, and while homemaking may be a typical option for women with minor children, older adults may consider retirement as a normatively acceptable escape from unemployment. But retirements occurring in contexts of high unemployment are more likely to be a constrained or forced choice that disguises an otherwise unavoidable experience of unemployment, thus resulting in poorer well-being. Moreover, retirement does not come with predefined activities that could fulfill the same roles as paid work does, although retirees certainly can seek and find such roles by volunteering or taking care of grandchildren. Still, forced retirements are expected in contexts of high unemployment and likely to decrease life satisfaction much more than forced school attendance or involuntary homemaking.

In sum, we argue that the detrimental effects of unemployment status on life satisfaction vary

in complex ways, depending on comparison group and country-level unemployment rates. Specifically, when country-level unemployment is high, working becomes a *survival* strategy, studying becomes a *delaying and avoiding* strategy, being a homemaker becomes an *insecure survival* strategy, and retiring becomes a *disguising* strategy. Each of these strategies likely has implications for life satisfaction. Thus, based on the contextual adaptation theory that we developed here, we expect that as unemployment rates rise, the unemployed get hit the hardest, followed by retirees, homemakers, workers, and students.

Research Hypotheses

Based on all of 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, but national unemployment rates are not linked to life satisfaction (Figure 1A).
2. Only the social context matters: Higher national unemployment rates are associated with lower life satisfaction, but individual labor status is not linked to life satisfaction (Figure 1B).
3. Additive combination of the individual experience and the social context: Both individual-level employment 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 employment status and country-level unemployment rate on life satisfaction is different than the sum of their independent effects (Figure 1D).

Specifically, we expect that country-level unemployment makes the negative effect of individual-level unemployment more pronounced; we also expect that the joint detrimental effect is strongest for unemployed individuals, followed by retirees, homemakers, workers, and students.

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 from the National Accounts Official Country Data (UNSTATS 2013), the Social Security Programs Throughout the World reports (SSA 2013), the World Development Indicators (World Bank 2012), and the World Income Inequality Database (UNU-WIDER 2012), and created a single dataset with multilevel scope and longitudinal dimension. In the resulting dataset, countries are observed repeatedly between 1981 and 2009, on average 3 times, including different individuals each time. These data are hierarchically clustered, including a sample of 398,533 individuals at level 1; 277 country×year observations at level 2; and 95 countries at level 3. For countries that split or merged throughout this time period, we dropped country×year observations that occurred 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 1=*completely dissatisfied* to 10=*completely satisfied*. Life satisfaction is a commonly used measure of subjective well-being in cross-national studies (Diener, Inglehart, and Tay 2013). Although respondents may consider different life domains when answering this question, empirical evidence indicates that answers do not appear to tap immediate or situational influences. Rather, respondents tend to focus on more macro life influences, yielding an appropriately flexible and generalizable global measure of subjective well-being (Diener et al. 2013). Differences in culture and life circumstances may influence life satisfaction measures, but without a significant detriment to their reliability and validity. Social desirability can induce respondents to inflate their answers, but this is not very problematic as long as all respondents inflate in a similar proportion. Survey question order, however, may introduce some bias, as preceding questions can inadvertently prime respondents to focus on specific life domains.

Despite these limitations, there is considerable evidence of the validity, reliability, and overall adequacy of measures of life satisfaction, including single-item measures that have moderate to strong validity and reliability cross-nationally (Blanchflower and Oswald 2008; Diener 2012; Diener et al. 2013; Lucas and Donnellan 2012). Moreover, poor life satisfaction is linked to declines in mental and physical health over time (Diener 2012; Siahpush, Spittal and Singh 2008), indicating its utility for assessing well-being.

Key Independent Variables

Individual-level labor force status is measured at level 1 using four dichotomies indicating worker, student, homemaker, and retiree (reference category=unemployed). If individuals reported paid employment status, the survey classified them as full time employees, part-time

employees, or self-employed, all of which we consider workers. If individuals reported no paid employment, the survey classified them as students, retired, homemakers, or unemployed. Therefore, the questionnaire gave priority to paid employment and treated all categories as mutually exclusive. Despite this limitation, we contribute to previous literature by comparing the unemployed to multiple labor force status groups, rather than restricting the analysis to the employed versus unemployed comparison.

Country-level unemployment rate is measured at level 2 using the number of those without work but available for and seeking employment as a percentage of the total labor force of the country (World Bank 2012). This variable is logarithmically transformed to improve its distributional properties and mean-centered.

Control Variables

To isolate the effect of unemployment on life satisfaction, we control for a number of possible confounding factors, including both individual and country-level characteristics. Table 1 presents definitions for all controls. Individual characteristics are measured at level 1 and include gender, education, income, age and age squared, health, marital status, and number of children. Because aggregate life satisfaction and unemployment rates vary over time and may be both associated with other changes at the country level (Clark et al. 2008), on level 2, we control for time-varying country characteristics including time and time squared, gross domestic product, availability of an unemployment program, public expenditures by function, income inequality, battle-related deaths, and intentional homicides. Finally, country characteristics that remain constant over time, such as longstanding cultural values, influential past historical events, and regional location, may also confound the relationship between unemployment and life

satisfaction. Therefore, we also adjust for time invariant country characteristics (measured at level 3); these include postmaterialist values, past USSR membership, and dichotomies indicating region of the world.

Table 2 presents descriptive statistics for life satisfaction, individual-level labor force status, country-level unemployment rate, and individual- and country-level control variables.

[TABLES 1 AND 2 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 analyses, however, raise serious concerns about individualistic and ecologic fallacies. 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 complex nature of our data by employing three-level hierarchical linear modeling (HLM) 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 as well as time-varying and time-invariant country characteristics (Raudenbush and Bryk 2002).

A null model including only random indicated that all three levels are unique sources of variance in life satisfaction. The following equation provides a formal description of the final model:

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

Here, the subscripts i , t , and c denote individuals, country×year observations, and countries, respectively. LSAT_{itc} is the life satisfaction of individual i in year t and country c . The intercept γ_{000} indicates the adjusted grand mean of life satisfaction for an individual scoring zero on all variables. As documented in Table 1, we center all continuous predictors to facilitate interpretation. 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, homemakers, and retirees are captured by the coefficients corresponding to dichotomous variables with subscripts itc (e.g., WORKER_{itc} , STUDENT_{itc} , HOMEMAKER_{itc} , and RETIREE_{itc}). The effect of country-level unemployment on life satisfaction is captured by the term UNEMPR_{tc} and the corresponding parameter γ_{010} . INDIVIDUAL_{itc} is a vector of individual-level control variables and γ_{500} is the corresponding vector of regression coefficients. The term $\gamma_{020} \times \text{TVCOUNTRY}_{tc}$ reflects the effects of time-varying country-level controls, and $\gamma_{001} \times \text{TICOUNTRY}_c$ captures the effect of time-invariant country-level controls. Finally, there are three residuals or random effects, allowing for correct estimates of standard errors at each level: e_{itc} indicates deviation of individual itc 's life satisfaction from the country-year mean, r_{0tc} indicates deviation of country-year tc 's mean life satisfaction from the country mean, and u_{00c} indicates deviation of country j 's mean life satisfaction from the grand mean.

Cross-level interactions between individual labor force status and country-level unemployment are also included in the model.

In addition to the three-level HLM model, we also estimated a model including country fixed effects along with a random effect of time (results are available from authors). This model was used to evaluate whether any of the observed effects of unemployment may be due to unobserved differences across countries. The results for key variables of interest—that is, individual-level labor force statuses and country-level unemployment rate, as well as their interactions—were largely the same. Thus, we can be sure that stable unobserved differences across countries are not responsible for our findings.

Prior to estimating regression models, we examined the data for normality, outliers, and linearity, and employed corrective transformations when necessary and possible (these are documented in Table 1). To handle 9.76% of total data points that were missing, we first performed a linear interpolation at the country-year level using two valid observations at an average of ± 1.7 years, and then completed a single stochastic imputation with chained equations using variables measured at all three levels (Royston 2004).

Results

Table 3 reports results of the three-level HLM model predicting life satisfaction. Positive coefficients for workers, students, homemakers, and retirees show that individual-level unemployment has a detrimental effect on life satisfaction. That is, when the log of country-level unemployment is at its mean (corresponding to 7.8% unemployment rate), there is an approximately half a point (.41 to .53) gap between the unemployed and those in other labor force statuses. By comparing the relative size of the four coefficients, we can conclude that when

the unemployment rate is average, the largest gap is the one between the unemployed and the homemakers (which is consistent with Brereton et al.'s (2008) finding of high levels of life satisfaction among homemakers). This gap is followed by similar (i.e., not significantly different from each other) gaps between the unemployed and both students and retirees. Interestingly, the smallest gap is the one between unemployed individuals and workers.

Country-level unemployment rate has a further detrimental effect on unemployed individuals' life satisfaction, as indicated by its negative main effect. 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, compared to unemployed individuals living in a context of low unemployment rates, the unemployed living in countries with higher unemployment have larger life satisfaction gaps vis-à-vis workers, students, and homemakers, but smaller gaps vis-à-vis retirees.

[TABLE 3 ABOUT HERE]

To better illustrate these interaction effects, we examine predicted values of life satisfaction (Figure 2), calculated for a hypothetical average individual (that is, an individual who has mean values on all the controls) of a given labor status group and presented along with their 95% confidence intervals. Each panel compares predicted values of life satisfaction for the unemployed to those for another group, and shows how each gap changes depending on unemployment rates.

[FIGURE 2 ABOUT HERE]

As Figure 2 illustrates, compared to other labor force statuses, the unemployed have lower life satisfaction. These life satisfaction gaps for the unemployed hold both in contexts of low and

high unemployment. Earlier we discussed that at average levels of logged unemployment (represented by a vertical line in each plot), the life satisfaction gap is the largest for homemakers. This figure shows that in contrast, in contexts of high unemployment rates, students have the greatest life satisfaction advantage over the unemployed, followed by homemakers, workers, and retirees. In fact, as additional significance tests show, students experience no significant declines in their life satisfaction with increases in national unemployment rates, confirming our expectation that being in school may shelter individuals from the negative effects of national unemployment most effectively. Next, both workers and homemakers do experience moderate declines in life satisfaction, and their rates of decline are not significantly different from each other. Thus, contrary to our expectation, being a homemaker and being a worker provide equal degree of protective effect under conditions of high unemployment. Finally, retirees experience the largest decline in life satisfaction as unemployment rates soar. This reduces the gap between the unemployed and retirees—the only gap that declines at higher levels of unemployment.

Overall, this figure demonstrates the importance of multiplicative effects relative to the effects of individual-level labor force status—for workers, homemakers, and retirees, proportionally, gap sizes are much larger than the changes in these gaps, while for students, the gap approximately doubles in size over the range of the unemployment rate variable.

To summarize, these results clearly support the fourth hypothesis of a multiplicative combination of individual and contextual effects of unemployment, and specifically the contextual adaptation to life events model. In contrast, the life satisfaction gap between the employed and the unemployed does not decrease with increases in unemployment rates, which contradicts the social norm of unemployment model.

Control variables largely show effects consistent with previous literature (Table 2). Females are slightly more satisfied than males. Education, higher income, better health, marriage, and more numerous children are beneficial for life satisfaction. Age and life satisfaction have a U-shaped relationship, with life satisfaction decreasing until age 37 and then increasing. At the country level, results show a decrease in life satisfaction over time until late 1990s and a slight increase after that. GDP per capita is associated with greater life satisfaction. Unexpectedly, increased inequality (as measured by GINI index) boosts average life satisfaction; none of the government generosity measures exhibit a significant relationship to life satisfaction, and neither does the unemployment program availability. Not surprisingly, the number of battle-related deaths is negatively linked to life satisfaction; however, the homicide rate is not. Finally, among the time-invariant country-level controls, postmaterialist values and lack of USSR past are associated with greater life satisfaction. Finally, African countries tend to have lower while Latin American countries tend to have higher life satisfaction than European countries, USA, and Canada.

Discussion

This article 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. 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. Using longitudinal and multilevel data from 95 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. Moreover, this effect is best understood in the context of individuals' adaptations to diverse labor force statuses.

We find that unemployed individuals have lower life satisfaction compared to any other labor force status group examined, including workers, students, homemakers, and retirees. 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 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 (with the exception of students) and individual-level and country-level controls, those living in nations with unemployment rates on the rise report lower life satisfaction. Thus, consistently with prior literature (Brockner et al. 1997; Jalovaara 2003; Lincoln 2000; Rege et al. 2011), we find that the stressful experience of living in a country with high unemployment affects the population as a whole

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 vary depending on the national unemployment context. Therefore, our findings do not support an additive effect and instead suggest a type of multiplicative effect.

Life Satisfaction and Contextual Adaptation to Life Events

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 unemployed does not weaken when unemployment is high and presumably more normative. Further, while the social norm of unemployment model neglects diverse labor force statuses, we find that, consistent with individual-level studies (Dooley et al. 1996), such statuses are key to understanding the complex relationship between unemployment and well-being. We find that unemployed individuals have consistently lower life satisfaction than workers, students, homemakers, and retirees, but these life satisfaction gaps vary in complex ways depending on a nation's unemployment rate. Higher unemployment rates are associated with greater disadvantages for the unemployed as compared to workers, students, and homemakers, but smaller disadvantages when compared to retirees. Therefore, our findings support a different, and more comprehensive, multiplicative model that incorporates the strengths of previous models—our contextual adaptation to life events model.

Our model suggested that in contexts of high unemployment rates, students, workers, and homemakers have greater advantages over unemployed individuals, as studying becomes a delaying and avoiding strategy that help to circumvent unemployment and escape its negative

effects, working becomes a survival strategy, and homemaking becomes an insecure survival strategy. Our results offer preliminary support for this proposition, albeit with some modifications. All groups consistently fare better than the unemployed, but when national unemployment rates are high, this effect is particularly pronounced for students. This finding complements Strandh's (2000) research, which suggests that unemployed individuals who transition to studying gain mental health benefits. Students are followed by workers and homemakers, whose advantage over the unemployed also rises with increases in unemployment rates. Therefore, working, studying, and homemaking may represent methods of circumventing and limiting the negative effects of high unemployment rates on life satisfaction. Working and attending school likely provide similar latent functions such as a time-structured day, social contacts, status, and identity (Jahoda 1988; Ervasti and Venetoklis 2010).

Our model also suggested that being a homemaker is an insecure survival strategy when aggregate unemployment is high. In contrast to these expectations, we find that homemakers fare as well as workers in terms of life satisfaction under conditions of high unemployment, and both groups fare much better than the unemployed. In other words, perhaps due to economic dependence on a working partner, homemakers are unlikely to experience a more profound aggravation of social strain than the workers during contextual economic instability associated with high unemployment rates. Selection effect may partly explain these results, as those with high-earning partners are more likely to take on the homemaker status. In light of these findings, we could consider working and homemaking in the context of high unemployment rates as equivalent insecure survival strategies.

Our model also suggests that in contexts of high unemployment rates, retirees have increasingly shrinking advantages over unemployed individuals as retirement becomes a strategy

of disguising an otherwise unemployed status for an increasing fraction of retiree population. 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. 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 probably 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 well-being following involuntary or early retirement (Alavinia and Burdorf 2008).

In sum, whereas being a worker, student, or homemaker in the context of high unemployment becomes a particular advantage compared to being unemployed, being a retiree is less advantageous.

Contextualizing and Individualizing Social Policies

With our multiplicative framework in mind, future policy aiming to promote 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 exposure to coworker unemployment, offering services to support family members of the unemployed, and on job creation and economy stimulation efforts. Most importantly, 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.

Current policy debates are sometimes narrowly focused on national unemployment programs as a potential solution that addresses multiple levels at once (Sjoberg 2010). National unemployment programs may benefit the unemployed by offering resources during a stressful life event, can help prevent involuntary retirement in contexts of high unemployment rates, and may also help reduce strain in the unemployed individuals' network and buffer the perceived risk. However, based on our findings, it could be recommended to also consider alternative and perhaps unorthodox policy solutions, such as fellowships and education programs for both working and retirement age individuals. Promoting enrollment in formal education could be a fertile avenue to protecting subjective well-being when unemployment rates are high. Offering older adults some alternatives to retirement other than education could also prove useful: For example, older individuals providing care could benefit from paid caregiving programs. What all these policy options share is the understanding that when countries face high unemployment rates, the well-being of the population as a whole is at risk, not just the unemployed. In other words, individual troubles are shared troubles.

Limitations and Future Research

Limitations of our analyses point to directions for future research. First, this study has clear implications for policy discussions on national unemployment programs, but it only includes a broad measure encompassing the availability of any type of unemployment program, without taking into account specific characteristics such as universality or generosity. Future studies should harmonize cross-national unemployment insurance data to directly assess the extent to which specific policy designs would benefit people from diverse labor force statuses. 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. Future studies should also include measures of employment quality, which could moderate the life satisfaction gap between the employed and unemployed.

Next, future studies should adjust for stable inter-individual differences (e.g., personality traits) that are known to explain substantial variation in life satisfaction. In our analyses, these traits are unobserved and cannot be addressed through fixed effects as repeated intra-individual observations are not available. Future research should also include more in-depth consideration of characteristics such as age, gender, and cultural differences in the effects of unemployment. Although we control for 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 affect scales to social relationship and physical health indicators. Studies including health indicators, however, are more prone to selection effects and reverse causality going from poor health to unemployment and thus should combine multilevel methods with quasi-experimental 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. Future studies should continue to incorporate multiplicative frameworks and multilevel data. This may not only clarify the processes 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, homemakers, or retirees are included in the comparison group. Thus, we conclude that the individual experience of unemployment should be understood within the broader context of national unemployment and should be examined in contrast to other labor force statuses.

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Table 1. Descriptions of Control Variables

Variable	Source	Coding	Definition
<i>Level 1: Individual-level controls (N=398,533)</i>			
Gender	VSU	Female=1, male=0	Dichotomous measure indicating females.
Education	VSU	Four dichotomies, yes=1, no=0	Categorical variable measured through a series of dichotomies for no education or incomplete primary school, primary school completed but less than high school, and high school completed. The reference category is more than high school completed. Higher levels of education are grouped because the frequency of respondents with a graduate education is very low in numerous low-income countries.
Income	VSU	Range 1 to 10	Ordinal variable ranging from one (“lowest step”) to 10 (“highest step”), and centered at four.
Age	VSU	Range 14 to 100	Measured in years with a cap of 100, logged to improve the distribution, and mean-centered. We also include a squared term of age to test for curvilinear effects.
Health	VSU	1=fair/poor health, 0=good health	Dichotomous self-rated measure indicating fair/poor health (1=“fair,” “poor,” or “very poor”) as compared to good health (0=“very good” or “good”).
Marital status	VSU	Two dichotomies, yes=1, no=0	Categorical measure of three types of marital status coded as two dichotomies: one for divorced, separated, or widowed, another one for single, never married. The reference category is married or partnered.
Number of children	VSU	Range 0 to 8	Total number of children (minor or adult) an individual has, logged and mean-centered.
<i>Level 2: Time-variant country-level controls (N=277)</i>			
Time	AIF	Range 1981 to 2009	Measured in years, centered at 2000. We also included a squared term of time to test for curvilinear effects.
Gross domestic product (GDP) per capita	WDI	Range 690 to 84,393	Measured in \$1,000 units, adjusted by PPP to 2005 constant United States dollars, transformed using the square root transformation, and mean-centered.
Availability of unemployment program	SSW	Yes=1, no=0	Dichotomous measure indicating the presence of any type of unemployment insurance or assistance program.
Generosity of gov. exp. on social protection	NAC	Range 0 to 24.82	Measured as a percentage of GDP, logarithmically transformed and mean-centered.
Generosity of gov. exp. on health	NAC	Range 0.26 to 9.35	Measured as a percentage of GDP, mean-centered.
Generosity of gov. exp. on education	NAC	Range 1.23 to 9.90	Measured as a percentage of GDP, transformed using the square root transformation and mean-centered.
Income inequality	WDI-WII	Range 7.42 to 65.98	Measured using the GINI index, supplementing WDI with WII, and mean-centering. Raw 0 indicates perfect equality (everybody has the same income) and 100 perfect inequality (one person concentrates all income), but the actual range is much smaller.
Battle-related deaths	WDI	Range 0 to 5,832	Includes both military and civilian deaths in conflicts that usually involve armed forces, and is measured as a mean-centered count variable in 1,000 units.

Intentional homicides	WDI	Range 0 to 67,185	Indicates the prevalence per 100,000 people of unlawful killings purposely inflicted, without including international killings in armed conflicts that are typically committed by fairly organized groups of up to several hundred members. This variable was top-coded at 50, logarithmically transformed to improve its distribution, and mean-centered.
<i>Level 3: Time-invariant country-level controls (N=95)</i>			
Postmaterialist values	VSU	Range 0.46 to 1.13	Scale, mean centered, where 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).
Ex-USSR	AIF	1=ex-USSR, 0=other	Indicates countries that were members of the Union of Soviet Socialist Republics (USSR).
Region	AIF	Four dichotomies, yes=1, no=0	Categorical measure of four regions coded in dummy variables for Africa, Asia Pacific, Latin America. The reference category is Europe, USA, and Canada.

Notes: VSU=World and European Values Surveys, AIF=Author's Identification File, WDI=World Development Indicators, SSR=Social Security throughout the World, NCA=National Accounts Official Country Data, and WII=World Income Inequality Database.

Table 2. Descriptive Statistics

Variable	Mean	SD	Min.	Max.
<i>Dependent variable</i>				
Adjusted mean life satisfaction (intercept)	6.70	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
Homemaker	0.14	0.34	0.00	1.00
Retiree	0.15	0.35	0.00	1.00
<i>Country-level unemployment rate</i>				
Unemployment rate (% total labor force)	9.12	6.67	0.00	47.50
<i>Individual-level controls</i>				
Female	0.52	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	4.63	2.47	1.00	10.00
Age	41.97	16.73	14.00	100.00
Very poor to fair health	0.37	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
Number of children	1.82	1.70	0.00	8.00
<i>Time-variant country-level controls</i>				
Time	1999.13	7.74	1981	2009
GDP per capita (in \$1,000s)	14.43	12.29	0.69	84.39
Availability of unemployment program	0.81	0.39	0.00	1.00
Generosity of gov. exp. on social protection (% of GDP)	1.99	4.44	0.00	24.82
Generosity of gov. exp. on health (% of GDP)	4.49	2.07	0.26	9.35
Generosity of gov. exp. on education (% of GDP)	4.58	1.49	1.23	9.90
GINI index	35.67	9.41	7.42	65.98
Battle-related deaths (in 1,000 units)	0.15	0.63	0.00	5.83
Intentional homicides (per 100,000 people)	6.19	10.78	0.00	67.18
<i>Time-invariant country-level controls</i>				
Postmaterialist values	0.78	0.17	0.46	1.13
Ex-USSR	0.12	0.32	0.00	1.00
Africa	0.15	0.36	0.00	1.00
Asia Pacific	0.25	0.44	0.00	1.00
Latin America	0.13	0.33	0.00	1.00
Europe, USA, and Canada	0.47	0.50	0.00	1.00

Notes: N=398,533 for individual characteristics measured at level 1; N=277 for time-varying country characteristics measured at level 2; and N=95 for time-invariant country characteristics measured at level 3.

Table 3. Three-Level Hierarchical Linear Model Predicting Life Satisfaction

	Coefficient	Std. Error
<i>Dependent variable</i>		
Adjusted mean life satisfaction (intercept)	6.424***	0.133
<i>Individual-level labor force status</i>		
Unemployed (omitted)	—	—
Worker	0.413***	0.012
Student	0.458***	0.018
Homemaker	0.526***	0.015
Retiree	0.450***	0.017
<i>Country-level unemployment rate</i>		
Unemployment rate (% total labor force, log)	-0.214***	0.062
<i>Cross-level interactions</i>		
Worker*Unemployment rate (log)	0.085***	0.018
Student*Unemployment rate (log)	0.160***	0.025
Homemaker*Unemployment rate (log)	0.058**	0.022
Retired*Unemployment rate (log)	-0.064**	0.024
<i>Individual-level controls</i>		
Female	0.099***	0.007
No education or less than primary	-0.221***	0.014
Primary completed, but less than high school	-0.097***	0.010
High school	-0.042***	0.010
More than high school (omitted)	—	—
Income scale	0.132***	0.002
Age (log)	0.083***	0.014
Age (log) squared	0.925***	0.026
Very poor to fair health	-1.014***	0.008
Divorced, separated, or widowed	-0.471***	0.011
Single, never married	-0.295***	0.012
Married (omitted)	—	—
Number of children (log)	0.029***	0.008
<i>Time-variant country-level controls</i>		
Time	0.006	0.007
Time squared	0.002***	0.000
GDP per capita (in \$1,000s, square root)	0.183***	0.049
Availability of unemployment program	0.141	0.131
Generosity of gov. exp. on social protection (log)	0.004	0.013
Generosity of gov. exp. on health	0.005	0.031
Generosity of gov. exp. on education (square root)	-0.076	0.122
GINI index	0.011*	0.005
Battle-related deaths (in 1,000 units)	-0.138*	0.058

Intentional homicides (per 100,000 people, log)	0.047	0.039
<i>Time-invariant country-level controls</i>		
Postmaterialist values	0.873*	0.380
Ex-USSR	-0.652***	0.163
Africa	-0.590**	0.208
Asia Pacific	0.028	0.138
Latin America	0.574**	0.198
Europe, USA, and Canada (omitted)	—	—
	Random Unexplained	% Variance
<i>Variance components</i>	Variance	Explained
Level 1: Individual characteristics	4.45***	8.90%
Level 2: Time-varying country characteristics	0.20***	11.47%
Level 3: Time-invariant country characteristics	0.10***	88.02%

Notes: N=398,533 for individual characteristics measured at level 1; N=277 for time-varying country characteristics measured at level 2; and N=95 for time-invariant country characteristics measured at level 3. 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

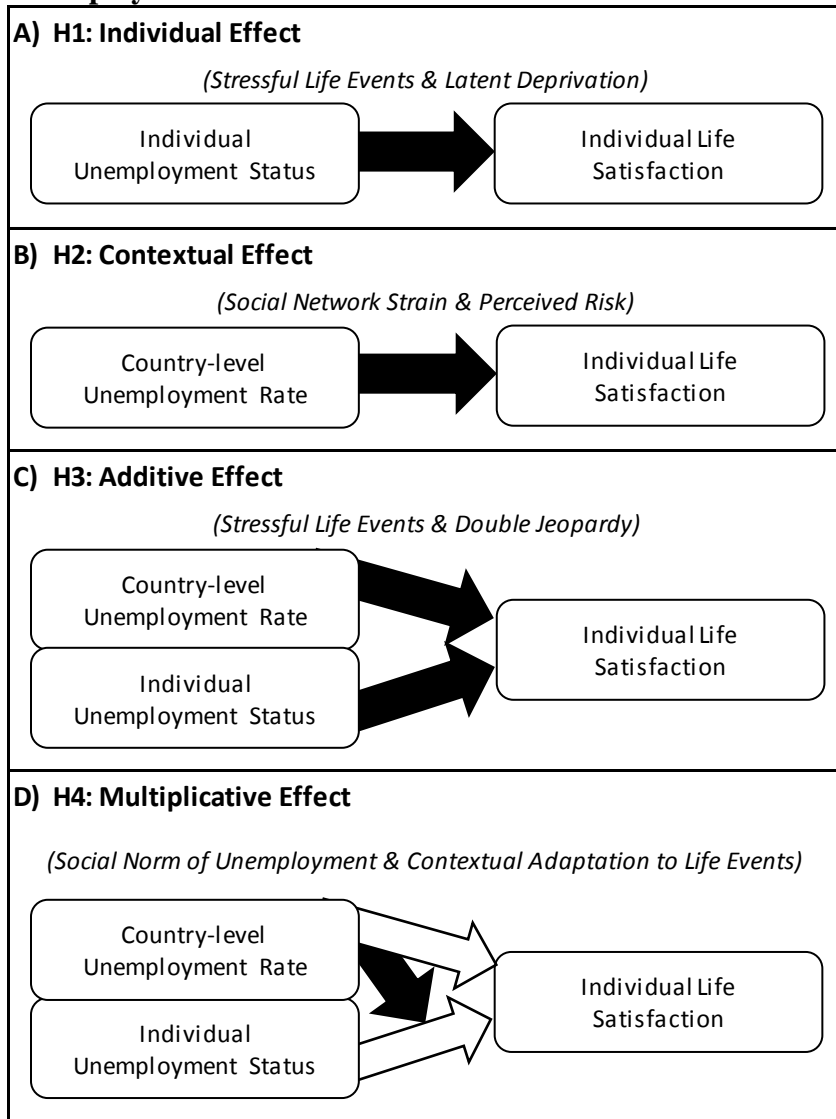
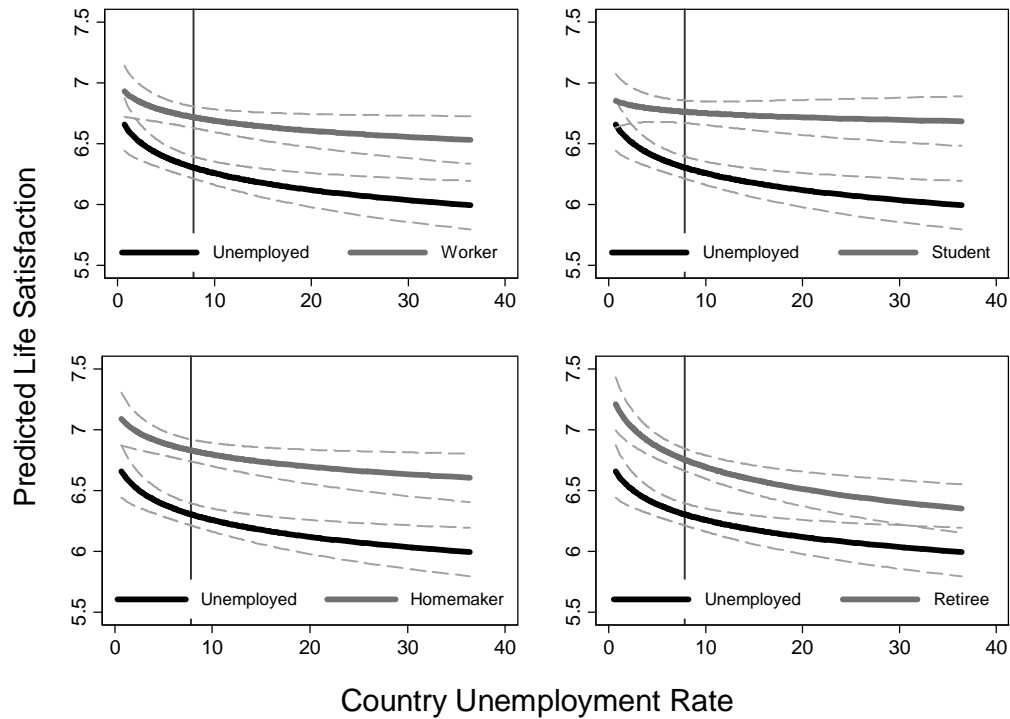


Figure 2. Multiplicative Effects of Unemployment on Life Satisfaction



Notes: Predicted values are based on the random effects regression model; they are calculated holding all controls at their grand mean. 95% confidence intervals are represented with dashed lines. The vertical lines indicate where mean of (log) unemployment rate is located; that is where main effects are observed. As there are few countries with extremely low and high unemployment rates, the confidence intervals become wider in the extremes.