

Well-being Across Changing Social Landscapes

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Dissertation submitted in partial fulfillment of  
the requirements for the degree of Doctor  
of Philosophy in the Department of  
Sociology in the Graduate School  
of Duke University

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ABSTRACT

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## **Abstract**

Low subjective well-being arises from differences between experiences and expectations, often identified through social comparisons. Many studies have investigated how individual exposures to a recessive period associates with contemporaneous changes in subjective well-being, finding inconsistent results. The studies collected here expand prior research by (1) examining contemporaneous associations between subjective well-being and unemployment rates before, during, and after a recession and by (2) investigating whether recessions influence subjective well-being in a more persistent manner through Cohort Socialization. This mechanism predicts first that exposure to recessions in young adulthood changes individual outlooks. Second, it predicts that these differences in outlooks correlate with differences in subjective well-being.

I use the General Social Survey (GSS) repeated cross-sections (1994-2014) and three GSS three-wave panels (2006-2014) to investigate this conceptual model. I analyze these data with various logistic regression models, including hierarchical models for panel data. These studies find a negative association between subjective well-being and contemporaneous unemployment rates across the study period. In addition, these studies find a persistent effect (exceeding five years) of exposure to recessive periods during young adulthood. First, those who experienced a recession in young adulthood

have different average levels of subjective well-being from those who did not. Second, exposure to a short recession (near 6 months) in young adulthood (ages 18-22) is associated with higher subjective well-being, while exposure to a long recession (over 16 months) is associated with lower subjective well-being. Third, differences in intergenerational comparative expectations—how people compare their own standard of living to that of their parents and children—is a difference in outlook that partially mediates the observed differences in subjective well-being.

## **Dedication**

To Julianne and Ethan, with gratitude for your sacrifices.

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# 1. Introduction

Studies of subjective well-being and mental health have focused primarily on individual-level mechanisms and explanations for differences in outcomes among groups of interest. Recent advances in methods have broadened the ability to analyze differences over time, along the dimensions of age, period, and cohort simultaneously. However, studies often assume static social contexts and have not yet specified how dynamic changes across periods and cohorts might impact population-level mental health or subjective well-being over time (George 2014). The few age-period-cohort studies of mental health conducted to date find significant and sometimes large-scale changes across periods and cohorts, but these studies have been descriptive and theoretical mechanisms are often less specific (*e.g.*, Yang and Lee 2009).

Drawing on several theories, and primarily from Social Comparisons and Sensitive Periods using Life Course perspectives, I propose a way to identify conditions under which the economic environment has contemporaneous (period) associations with subjective well-being, and the conditions where it has persisting (cohort) associations with subjective well-being. The mechanism I use to theoretically distinguish between these sorts of effects is Cohort Socialization. Specifically, I predict that when a group of individuals (1) experiences an event of sufficient intensity, which (2) occurs during a sensitive period, these individuals will have persistent differences in their outlooks and well-being relative to those who did not experience the event during a

sensitive period. These two conditions must be satisfied for a persisting effect. If there is an intense event, but it does not occur during a sensitive period, the associations should be contemporaneous and not persistent. In other words, exposure to intense events during sensitive periods imprint, or socialize individuals, and they take the effects of the event with them. Exposure outside of a sensitive period, even if it is an intense event, only has a contemporaneous effect; the effects end with the event. To test this proposed mechanism, I examine subjective well-being in the context of exogenous exposures to changing economic environments, examining both recessions and changes in unemployment rates.

### ***1.1 Theoretical Background***

Life course research is uniquely suited to help investigate differences in subjective well-being and attitudes across cohorts, because it gives special attention to the effects of time. Though not a theory itself, life course principles emphasize attention to a number of factors: temporal patterns, including duration dependence and sensitive periods, the intersection of biography and history, the interconnectedness of individuals, and personal agency (George 2013). Bringing the life course lens to bear on the related social theories of Cohort Replacement and Structural Lag provides a helpful framework for understanding changing correlates of subjective well-being over time.

### **1.1.1 Cohort Replacement and Young Adult Socialization**

Decades ago, Ryder hypothesized that social change occurred primarily as a process of cohort replacement. A cohort is simply a group “who experienced the same event within the same time interval” (Ryder 1965). Young adulthood is a sensitive period for formulating attitudes and worldview, and shared experiences during this time frame are associated with outlooks that persist even as individuals age (Schuman and Scott 1989). Under these conditions, changes in attitudes or meanings occur primarily as individuals in older cohorts die and are replaced with new cohorts comprised of different individuals, sometimes called “cohort flow” (Riley 1994). This perspective provides a cogent explanation of cultural change supported by empirical findings, including changes in gender egalitarianism (Pampel 2011), attitudes on environmental protection (Pampel and Hunter 2012), and dozens of other attitudes (Vaisey and Lizardo 2016). From this research, it appears that population-level changes in attitudes occur through cohort replacement.

### **1.1.2 Cohort Socialization, Inertia, and Social Comparisons**

The persistence of effects within cohorts over time has been identified variously in terms of “inertia” (Moen 2016), a “lag” between culturally adopted outlooks and structural conditions (Riley et. al 1994), or “hysteresis” (Bourdieu 1984). Whatever the term, the key observation is that once socialized in young adulthood, cohorts carry some attitudes, outlooks, and perhaps even behaviors with them. The relatively fixed outlook

of cohorts, combined with repeated, but exogenous experience of recessions provides a useful context to study whether meanings, outlooks, and social references have persisting impacts, or merely contemporaneous associations. Economic downturns are both periodic and random, at least from the perspective of the individual—no one selects into a recession. Under these conditions, these studies can examine whether the timing of exposure to recessions has any special association with subjective well-being.

## ***1.2 Testing Cohort Socialization Effects for Subjective Well-Being as a Result of Exposure to Recessions as a Young Adult***

Testing the theoretical mechanism of cohort socialization in the context of subjective well-being requires a theoretical basis for understanding differences in subjective well-being. At the individual level, researchers have proposed several theories to explain associations with subjective well-being, including Social Comparisons, Self-discrepancy, Identity, Adaptive Resilience, Crisis Theory, and so on (Firebaugh and Schroeder 2009; Reynolds and Baird 2010). Drawing on the importance of the family, I use Social Comparison theory to connect recession exposure to subjective well-being.

In Chapter 2, I outline the contours of Cohort Socialization as a mechanism related to well-being. I analyze the difference between the anticipated contemporaneous effects of unemployment rates, and persisting effects from recession exposure as a young adult. Chapter 2 uses pooled cross-sections of the General Social Survey (GSS) from 1994-2014 and three-wave panels from the GSS (2006-2014). Because of data



limitations I do not analyze exposures to the Great Depression or prior recessive periods, limiting analyses to young adults who were exposed to recessions (or not) between 1934 and 2006. Appendix A uses the Health and Retirement Study (HRS) to validate the findings of Chapter 2, but uses depressive symptoms instead of subjective well-being as the outcome. These supplementary analyses also show that the same pattern applies in longer historical time, and across more extreme recessions (using recession exposure for recessions between 1908-1986).

Chapter 3 proposes a mechanism to explain the differences in subjective well-being identified in Chapter 2. Specifically, Chapter 3 examines whether (1) social comparisons with family members vary with recession exposure for young adults, and (2) whether this difference in comparisons partially mediates differences in subjective well-being for different levels of exposure to recessions as young adults. Chapter 3 uses the same GSS data, and does find a persisting association between intergenerational comparisons and exposure to recessions as a young adult. These associations track very closely the patterns of subjective well-being, and are particularly strong for individuals' comparisons to their parents. Chapter 3 also finds that intergenerational comparisons partially mediates the association between exposure to recessions as a young adult and subjective well-being.

## **2. Inoculation or Scar? Economic Environment and Subjective Well-Being: Contemporaneous or Persisting Associations**

Researchers have advanced various theories to explain individual differences in mental health and subjective well-being (Johnson and Hitlin 2017; Firebaugh and Schroeder 2009; Schittker 2008). These theories generally propose that subjective well-being arises out of a comparison between what a person has and some other reference. For some theories, such as Relative Deprivation, the reference is a social comparison with neighbors, or peers, or parents and children (Firebaugh and Schroeder 2009). Other theories point to a more general and imprecise reference group composed of some set of subjective expectations. Prominent theories in this tradition, such as Adaptation, highlight that these expectations are changeable over the life course. Studies suggest that increasing levels of happiness at later ages are related to a lowering (*i.e.*, adaptation) of these expectations (George 2010). In both cases, subjective well-being is fundamentally described as a gap between an individual's experience and some reference.

Many studies have looked at the contemporaneous implications of recessive periods on health, mental health, and even subjective well-being, although most of those studies arose from economics and public health (Burgard and Kalusova 2015). Studies have shown, at least for some workers, recessive periods have had negative impacts on mental health and well-being (Lam, Fan, and Moen 2014; Tausig and Fenwick 1999). Other studies have shown that recessive periods have had positive impacts on mental

health and well-being, however (McInerney et al. 2013). Studies about recessions and economic downturns have generally catalogued contemporaneous associations, and outlined short-term mechanisms that might explain these associations.

Prominent gaps in the literature include the failure to consider persisting versus contemporaneous associations, examination of a single recessive period, and the lack of measures to identify differences in changing economic environments. Studies have generally considered each recession individually, as a unitary period effect. They often have not included direct measures of the economic environment (such as unemployment rates or length of recessive periods), and they have not compared recessive periods to one another. It has also been rare for studies to look at more persistent impacts from recessive periods or economic downturns. This study begins to address these gaps by (1) asking whether a common and simple contemporaneous measure of economic activity, differences in the regional unemployment rate, is associated with differences in subjective well-being, (2) theorizing about conditions under which the effects of recessions can persist, and (3) comparing recessions to one another by contrasting associations between the length of recessions and persistent differences in subjective well-being.

The relative absence of studies on the potentially persistent impact of recessive periods on well-being is surprising, given that the origin of life course studies finds deep roots in Elder's ([1999] 1974) influential book, *Children of the Great Depression*, where he

reported persistent effects of a major economic downturn. Theories developed in aging and life course research are well-suited for framing expectations about the conditions under which persisting effects from economic downturns might occur. Specifically, ideas related to sensitive periods, timing, and the importance of history (Moen 2014) together with more general ideas about cohort replacement (Ryder 1965) and structural lag (Riley and Riley Jr. 1994) provide a solid theoretical background for understanding contemporaneous versus persisting associations between the economic environment and subjective well-being.

From these larger principles I outline a mechanism for understanding long-term impacts: cohort socialization. This proposed mechanism predicts that large scale historical events produce persistent (*i.e.*, cohort) effects on subjective well-being if they occur (1) during the sensitive period of young adulthood, and (2) are sufficiently intense. Under these conditions, significant macro-level events impact cultural attitudes, including social comparisons, which in turn impact subjective well-being. In terms of recessions, Cohort Socialization describes a three-stage process. First, young adults experience a recessive period. Second, because of this impactful experience during a sensitive period, they think differently about the world. Third, these attitudes affect their evaluation of the gap between experiences and expectations, which persist for some time.

In this chapter, I use a subset of the General Social Surveys (GSS) (1994-2014) to address three things. First, I test whether unemployment rates have contemporaneous associations with subjective well-being. Second, I test whether young adulthood (between the ages of 18-22) is a sensitive period with respect to recessions. Third, using the duration of a recession as a measure of intensity, I test whether exposure to recessions of different intensity has persistent associations with subjective well-being. I contrast this persisting effect related to sensitive period exposure with the predicted short-term effect related to changes in unemployment rates occurring outside of a sensitive period.

## ***2.1 Background***

Individuals are nested in history and historical circumstances matter for subjective well-being. Indeed, some work has shown that large-scale events, such as recessions, do have significant impacts; although, it is not clear how long many of these impacts last (Burgard and Kalousova 2015). Examining social theories using a life course lens will help to identify the conditions under which recessions may have a persistent association with subjective well-being or a contemporaneous association with subjective well-being.

### **2.1.1 Unemployment Rates as a Contemporaneous, Period Effect**

Whether changes in economic conditions can affect aggregate-level well-being has not been regularly studied by sociologists for decades.<sup>1</sup> Most of the work occurred at the time of some large recessions in 1973 and 1981 (e.g., Catalano and Dooley 1977). Even more recent work has still focused on these recessions (Tausig 2013; Tausig and Fenwick 1999), although some studies have examined the effects of the Great Recession, which began in 2007 (Lam, Fan and Moen 2014). Burgard and Kalousova (2015) have summarized an even broader scope of studies on recessions, noting that “most contemporary research” about the associations of economic downturns and health has been situated in economics and health sciences, but not sociology.

Importantly, this work has found positive and negative impacts of recessions through different pathways, including changes in time-use, consumption, and stress exposure. For example, some studies have shown that reduced working hours may allow for better sleep, lower work-related stress, and increased educational attainment (Aguiar et al. 2013; Brochu et al. 2012). However, other studies have suggested that increases in financial stress related to large drops in the value of stock holdings were

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<sup>1</sup> Economists have studied this (Wolfers 2003), often in the context of the “Easterlin Paradox,” which is focused on the association between income and happiness. These studies often look at cross-national comparisons. This study is consistent with finding in economics, but this study takes a life-course approach and implicitly tests a number of additional pathways (including labor market participation, number of children at home, and includes a component to assess individual change using the GSS panel data) .

associated with increased depressive symptoms (McInerney et al. 2013). In addition, during recessive periods, working conditions often become worse, leading to increasing job-related stress and the fear of job loss (Tausig and Fenwick 1999). These studies have focused on individual recessions, and have looked at the contemporaneous associations of a single recession on well-being through these various pathways.

Taking a broader view of both recessive and non-recessive periods together, this study asks whether unemployment rates have consistent impacts over time. Perhaps there are similar processes which are theoretically (though perhaps less significantly) applicable to smaller-scale changes in the economic environment. After all, one major feature of recessive periods is rising unemployment rates. The fundamental question is whether there are there similar effects for unemployment rates over time. Given the large body of literature which identifies contemporaneous impacts from recessions, but the inconsistency in associations, I present Hypothesis 1 as a set of alternative hypotheses:

*Hypothesis 1a.* Increases in unemployment rates are associated with decreases in subjective well-being.

*Hypothesis 1b.* Increases in unemployment rates are associated with increases in subjective well-being.

### **2.1.2 Persisting Associations from Recession Exposure During a Sensitive Period**

Persisting impacts of economic downturns, if any, are generally unknown (Burgard and Kalusova 2015). The remainder of this study uses life course principles to predict the conditions under which recessions can produce a persisting impact on well-being. Though not a theory itself, life course studies require attention to many factors, including temporal patterns and the intersection of biography and history (George 2013). A fundamental principle of life course studies lies at the intersection of biography and history. This principle is based on the observation that individuals are nested in cohorts, and each cohort shares a different set of experiences that shape its members (Ryder 1965; Riley 1994).

Cohort effects can range from the seemingly mundane to the profound. With respect to health behaviors such as smoking, it is clear that the 1930 birth cohort received different health messages as they transitioned to adulthood than the 1990 birth cohort. This has resulted in a change of popular beliefs regarding the effects of smoking, the social meaning of smoking, laws related to smoking, the incidence of smoking, and the demographic correlates of smoking (Link 2008). Beyond this one example, evidence has been growing to show that social change occurs as a process of cohort replacement (Pampel 2011). That is to say, once a cohort's attitudes are developed (usually in young adulthood), they are generally persistent and social change occurs as old cohorts are replaced by new ones.



Unsurprisingly, the intensity of exposure is an important life course principle (George 2014). It seems unlikely that the impact of a small recession would be equivalent to the impact of the Great Depression, for example. Unfortunately, few have studied the persisting impacts of economic downturns; however, the impact of exposure to low income on individual mental-health and subjective well-being trajectories has been well-studied (Strohschein 2005; McLeod and Shanahan 1996). While researchers are still working on the specific mechanisms through which poverty in childhood and young adulthood impact later health, it is now well-known that the intensity of exposure to poverty is important for subjective well-being (Garipey, et al. 2017). Extending these studies to a larger collective implies that the intensity of exposure to an economic downturn will also be important.

In this section, I use two life course principles: (1) sensitive period, and (2) intensity to hypothesize about persisting effects of recessions. A closer examination of these principles in the context of economic downturns will provide a theoretical basis to identify potential persisting impacts of economic downturns on individuals.

### 2.1.2.1 Exposure to a Recession as a Young Adult

A number of different temporal patterns<sup>2</sup> appear over the life course.

Underlying this concept is the observation that social structures are age-graded. There is a normative progression along a preset pattern of transitions. In recent history, researchers have observed an expectation for an orderly progression from education, to work, and then to retirement and eventually “old age” (Shanahan 2000). Despite the fact that this progression has become more variable over time, young adulthood maintains its critical importance in defining adult life (Benson 2014).

Across age-ranges, subjective well-being and measures of mental illness (such as depressive symptoms) are patterned across age. Subjective well-being starts low in young adulthood and increases linearly for most of adulthood (Bardo et al. 2017:346). Similarly, depressive symptoms and the risk of mental health issues peak in adolescence and young adulthood and decline through middle and later life (Adkins et al. 2009). Research on adolescence using stress process theory provides reasons for the timing of this peak in adolescence and young adulthood. The experience of stress is dependent on

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<sup>2</sup> While the concept is clear, discussions of this life course principle often use different terms. For example, George (2009) has referred to this as “temporal patterns.” Pearlin (2010) used “transitions,” and Elder (1998) used “timing in lives.” I adopt George’s terminology, as it implies a multiplicity of *patterns*, leaving open the possibility of non-standard “subcultural variation” in patterns (Dannefer 2003:651).

the meaning of events, subjective perceptions, and individual interactions among roles (McLeod 2012; Pearlin, Aneshensel, and Leblanc 1997).

Young adulthood is particularly marked by a series of stressful life events attending the development of worldviews and the transition to adult roles by adolescents (George 1993; Pearlin 2010). This socially structured change elevates exposure to stress for these age groups, increasing depressive symptoms, and perhaps the risk of other mental health issues. Adulthood is historically characterized by the adoption of new roles, including economic independence from parents through full time work, entry into marriage, and child bearing (Shanahan 2000; Benson 2014). Recessions' negative impact on young adult's ability to adopt these new roles suggests that the period of young adulthood is likely to stand as a sensitive period for recession exposure.

#### **2.1.2.2 Defining the Sensitive Period for Recession Exposure**

Identifying sensitive periods is no simple task. In fact, there are potentially different sensitive periods for different processes. In-utero exposure to hardship is a sensitive period when examining heart disease or diabetes (Hales and Barker 2001). For recession exposure and well-being, young adulthood seems to be the most probable time of a sensitive period. In part, this may be related to the fact that transitioning to adulthood usually involves adopting a career path (Shanahan 2000), something that recessive periods impact directly. In addition, it appears that young adulthood is a sensitive period for formulating attitudes and worldviews, some of which are likely to

impact comparisons and subjective references which are important for subjective well-being. After young adulthood, many attitudes are more rigid (Pampel 2011). There is also growing evidence that experiencing a recession in young adulthood is associated with different values and attitudes about work, which influence job satisfaction (Bianchi 2013; Johnson, Sage, and Mortimer 2012). There are many different possibilities for identifying age-ranges of “young adulthood.” Almost one hundred years ago, Mannheim (1927 [1994]) suggested that individuals between the ages of 17 and 25 represent emerging cohorts, and exposure to different events during this time-period would be impactful and persistent.

More recent empirical work in the United States has implied that the age-range of a sensitive period may depend on the event in question. Studies have identified that ages 18-22 were most salient for the Vietnam War (Schuman and Corning 2017; Schuman and Scott 1989), but ages 11-15 were more important relative to the 9/11 terrorist attacks (Schuman and Corning 2017). Few, if any, have analyzed young adulthood as a sensitive period for subjective well-being, but ages 18-22 appear to be a sensitive period for developing “collective memory” of economic downturns such as the Great Depression (Schuman and Scott 1989). Accordingly, in this Chapter I focus on this

empirically derived age-range.<sup>3</sup> Once again, the direction of the association between recession exposure during young adulthood and subjective well-being is not identified in the literature. For this reason, I present Hypothesis 2 as a set of differential expectations. Exposure to a recession in young adulthood may prove to be positively associated with subjective well-being (inoculation) or negatively associated with subjective well-being (scar).

*Hypothesis 2a.* Exposure to a recession as a young adult (18-22) is negatively associated with subjective well-being throughout life.

*Hypothesis 2b.* Exposure to a recession as a young adult (18-22) is positively associated with subjective well-being throughout life.

### **2.1.2.3 Identifying Intensity of Exposure: Cumulative Advantage or Sensitive Period?**

The impact of negative events often depends on their duration, intensity, and salience. Two theories suggest pathways whereby the length of a recessive period might matter. First, the theory of Cumulative Disadvantage suggests that disadvantageous exposures early in life compound and accumulate over time (Hale 2017). An important consideration is often the intensity of the exposure to the detrimental event or condition (Strohschein 2005).

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<sup>3</sup> Table 14 of Appendix B does report sensitivity analyses for differing measures of the sensitive period, however. These analyses suggest that ages 18-22 are the most salient ranges for recessive periods, at least as it relates to subjective well-being.

Another theory that is often offered as a counter-point to Cumulative Disadvantage Theory is Sensitive Period Theory. This theory does not posit accumulating advantage or disadvantage, but instead identifies a single, fixed point in the life course as uniquely important to some outcome. Even in this context, however, the intensity of the event may impact the probability that it affects individuals. For example, researchers have found that the intensity of the event is an important factor in the development of collective memory (Schuman and Corning 2017).

These approaches suggest slightly different processes through which intensity might affect subjective well-being. In each theory, intensity means something different. The contrast between the processes implied by cumulative disadvantage and sensitive period is perhaps best highlighted by adopting Mannheim's (1993 [1927]:296-297) succinct observation that individuals may either "personally acquire" or "appropriate" subjective expectations and reference groups. These social references and subjective experiences, in turn, will impact subjective well-being.

For accumulating disadvantage, carefully measuring individual-level exposures is the most important defining characteristic of intensity—an "acquisition" process. In this case, exposure to a recession for *part* of the sensitive period implies partial exposure (Strohschein 2005). This is not the case for a sensitive period perspective. Here, *any* exposure to a recession during the sensitive period implies full exposure—an "appropriation" process. Research on age-graded memories has pointed to a sensitive

period process for events of an important historical nature (Schuman and Corning 2017; Schuman and Scott 1989). In this case, the intensity measure is identical for all individuals exposed during the sensitive period, regardless of whether an individual spent several years exposed to a recession, or only one year. An example of the sensitive period process relative to the Great Depression is outlined in Table 11 of Appendix B.

While this “fuzzy” identification of intensity seems odd in some respects, it is similar to the phenomena of age-heaping and age-misreporting familiar in demography (Hill et. al 1997). These processes suggest that while age-grading is socially important, individuals’ representations of age—even their own age—are “fuzzy.” People often report contemporaneous age in five-year bins. Similarly, without formal institutions measuring the precise timing of events, individuals often report older or more convenient ages. In the same way, it is highly probable that individuals’ memories will not necessarily match objective measures of exposure to particular recessions. Instead, individuals rely on acquired historical understanding of these large-scale and widely reported events. For these reasons, along with the difficulty in specifying the transition to adulthood at an individual level, I incorporate a sensitive period approach, and I will outline and test hypotheses from this perspective. Appendix B, Table 13 and Figure 8 provide results for the accumulating exposure measure, however.

As noted above, the intensity of the recession individuals experience during a sensitive period is an important factor in understanding its potential effects. As before,

there is little to suggest a direction for these differential impacts. Because a recession implies declining or stagnant socioeconomic achievements, an obvious expectation is to anticipate lower aggregate well-being and higher stress for a long period. Deeper reflection suggests the opposite may be true, however. Because these collective events may provide benefits to individuals at or near transitions, perhaps the acknowledgment of a generalizable event may provide a collective reshuffling of ideal scripts and norms. For example, Bianchi (2013) found that job satisfaction for workers was higher when they entered the work force in times of recession because they were less likely to engage in “upward counterfactuals” and more likely to feel grateful for a job, a process also predicted by life course theorists (George 2011). This uncertainty in effects has been common in this context because hardship can have benefits under some conditions (Johnson and Hitlin 2007). Given these conflicting expectations, Hypothesis 3 once again identifies competing hypotheses, including an inoculation hypothesis (3b) and a scar hypothesis (3a):

*Hypothesis 3a.* Exposure to a more intense (*i.e.*, longer) recession as a young adult (ages 18-22) is negatively associated with subjective well-being throughout life.

*Hypothesis 3b.* Exposure to a more intense (*i.e.*, longer) recession as a young adult (ages 18-22) is positively associated with subjective well-being throughout life.



## **2.2 Data**

Testing the hypotheses outlined above requires a combination of data regarding individual attributes and aggregate data on economic recessions and unemployment rates. This study uses data from the General Social Surveys (GSS) spanning 1994-2014, combined with unemployment rates published by the Bureau of Labor Statistics Public Data Application Programming Interface (BLS-API). Information on recessions comes from the National Bureau of Economic Research (NBER) Business Cycle Dating Committee (NBER 2010).

The GSS is a long-running, probability sample of non-institutionalized, English-speaking United States adults (NORC 2012). The BLS is an independent Federal Government agency charged with collecting and publishing information regarding the economy and economic activity. Regional unemployment estimates are published by the BLS through its area unemployment statistics program. These data are available for 1976 to the present, and are modeled from information obtained by BLS using the Current Population Survey, Current Employment Statistics Survey, and data from state unemployment insurance systems (BLS 2016). Regional unemployment rates used in this study were downloaded from the BLS's public API using Python and then merged into the GSS (BLS 2015). The NBER's Business Cycle Dating Committee keeps measures on the length of U.S. recessions, from 1857 to the present, which is publicly available in a machine-readable format from their website (NBER 2010).

*Subjective well-being* is measured by the GSS item asking about respondent's happiness: "Taken all together, how would you say things are these days-would you say that you are very happy, pretty happy, or not too happy?" I construct a dummy variable out of this scale to distinguish "very happy" (1) from "pretty happy" and "not too happy" (0).

*Recession exposure* is measured as a dummy variable indicator identifying whether there was a recession when the respondent was between 18 and 22 years old. The NBER defines a recession as "a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales" (NBER 2010). I use the common peak-to-trough measure of recession duration, which measures the recession from the peak of economic activity, through contraction until there is a turnaround in economic activity. Substantively, ages 18 through 22 represents emergent adulthood, and the likely timeframe of first exposure to the labor market as a serious participant (whether attending college or not). Empirically, as summarized in Supplemental Table 12 of Appendix B, this age range does in fact represent the period individuals are most sensitive to recessive periods, when compared to younger age ranges (16-17) or older age ranges (23-26).

*Recession intensity* is a continuous measure identifying the duration of the recession experienced in young adulthood (ages 18-22) as measured by the length of the

recession experienced.<sup>4</sup> Individuals with no recession experience in young adulthood are assigned a value of 0; all others are assigned the length of the recession they experienced in years. Table 11 in Appendix B provides a specific example of the coding scheme. The minimum length for any recessive period recorded by the NBER is approximately 6 months, and apart from the Great Depression (54 months), the maximum is 24 months, although more recent recessions have not lasted longer than 18 months (NBER 2010). Because of the timeframe of the study, there are relatively few individuals who experienced the Great Depression in young adulthood and because it is such an extreme outlier in length, I exclude respondents who were 18 or older at any time during the Great Depression. I also exclude individuals age 22 or younger at any time during the Great Recession of 2007 as this study focuses on persisting impacts from prior exposures. Appendix A uses the Health and Retirement Study over the same

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<sup>4</sup> Unemployment rates would be a more accurate measure of intensity. Unfortunately, accurate regional unemployment rates are only available beginning in 1976 (BLS 2015), a data limitation which would exclude eight of the recessions in the sampling frame (Table 10). Accordingly, it is impossible to use regional unemployment rates for the measure of recession intensity. However, there is ample evidence that the magnitude of unemployment and the length of a recession are closely related. Economists have well-studied the trajectories of unemployment during and after recessions: unemployment rates rise rapidly during recessions, and fall slower after the recession ends (Proietti 2003). This suggests that the length of a recession is a good proxy for the magnitude of unemployment during the recessive period. In fact, the correlation between average regional unemployment rates and recession length is 0.44 for recessions between 1976 and 2014 (author's calculation from merged NBER and BLS data).

period (1994-2014) to analyze earlier recessions, finding similar patterns to those presented in this chapter, but using depressive symptoms as the outcome.<sup>5</sup>

*Contemporaneous regional unemployment rate.* I use the date of the respondent's interview recorded by the GSS to merge the prior month's unemployment rate recorded by the BLS. This is the unemployment rate for the nine-region census classification. Though this study does not analyze regional differences per se, the nine regions are as follows: *New England* (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), *Middle Atlantic* (New Jersey, New York, Pennsylvania), *East North Central* (Illinois, Indiana, Michigan, Ohio, Wisconsin), *West North Central*, (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota), *South Atlantic* (Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia), *East South Central* (Alabama, Kentucky, Mississippi, Tennessee), *West South Central* (Arkansas, Louisiana, Oklahoma, Texas), *Mountain* (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming), and *Pacific* (Alaska, California, Hawaii, Oregon, Washington).

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<sup>5</sup> While these outcomes are usually analyzed by different literature traditions, there is some evidence that they are closely, though not exactly, correlated (Ross and Mirowski 2003:25-27). More recent evidence also shows genetic similarities between subjective well-being and depressive symptoms which are important during stressful circumstances, such as the death of a spouse (Domingue et al. 2017).

All models control for variables found to be associated with subjective well-being. Controls include a dummy variable series for employment status, including employed (reference), not employed, and retired; marital status dichotomized to married or cohabitating, and a dummy variable for race/ethnicity (black=1; white=0). Other controls include education (years completed), age, and the number of children in the household, including babies (those under 7 years old) preteens (ages 7-12), and teens (ages 13-17). Finally, income is measured as a series of dummy variables reflecting the quartile in which the respondent's income falls for the year of the survey (Lam, Fan, and Moen 2014). For models using the 2006-2014 panel data, I use income categories defined by the GSS (this shorter period includes consistent coding and is less sensitive to inflation than the longer period).

### ***2.3 Analytic Strategy***

For the pooled cross-sectional data, I estimate a series of nested logistic regression models with year fixed effects for the 20-year period of 1994 to 2014. I estimate models with high subjective well-being as the outcome as follows: Model 1 presents the baseline case and tests contemporaneous associations between unemployment rates and subjective well-being. I evaluate Hypothesis 1 using the coefficient estimate for unemployment rates. Model 2 tests the cohort socialization mechanism by adding measures of recession exposure (Hypothesis 2) and recession intensity (Hypothesis 3).

The data design lends itself to identifying contemporaneous associations of unemployment rates with subjective well-being (since they are both measured contemporaneously). The design is also useful for identifying persisting effects of recessive periods on subjective well-being. Specifically, the age-range of the pooled cross-sections is implicitly truncated. As the GSS samples from all adults, it gets a cross section of adults with various lengths time between their response and recession exposure. In the span of the sample (1994-2014), there are two recessions, one in 2001 and one in 2007 (NBER 2010; Appendix A, Table 10). The sample does not observe exposure in young adulthood to either recession. The analytic sample excludes individuals 22 or younger during 2007, and the 2001 recession both begins and ends between GSS data collection years. The pooled cross sections contain a small portion of individuals who experienced a recession (either the 1994 or 2001 recession) sooner than five years ago (approximately 4% of the sample). In contrast, the panel begins in 2006, five years after the 2001 recession, so the panel contains no one who experienced a recession less than five years ago. In the panel, 76% of individuals experiencing recessions in young adulthood were exposed 14 years ago or longer.

The cross-sectional models address the broader associations among the variables, but cannot distinguish within-person from between-person effects. Accordingly, I also test these hypotheses using the subset of the GSS which contains pooled three-year panels. I estimate hybrid random/fixed effects models, adjusting for individual-specific

effects (Allison 2009:41–42). I utilize this approach rather than an individual fixed effects approach for three reasons. First, the key variables of interest relating to recession exposure in young adulthood are constant individual effects which are not identified in individual fixed effects methods. Second, because the recessive experience is measured grossly, I anticipate small effects, making efficiency of the method an important consideration. Third, subjective well-being is relatively stable over the period, with fewer than half of individuals in the panel period reporting a change in subjective well-being. These individuals would be excluded from individual fixed effect regressions, but may be included in the hybrid model (Allison 2009).

Written as a two-level model, the panel models take the following form:

Level 1:

$$\ln\left(\frac{p_{it}}{1-p_{it}}\right) = \beta_i + \delta(x_{it} - \bar{x}_i.)$$

Level 2:

$$\beta_i = \lambda z_i + \gamma \bar{x}_i. + \epsilon_i$$

Where  $p_{it}$  is the probability that individual  $i$ 's subjective well-being is “very happy” at time  $t$ .  $x$  is a matrix of time-varying variables, including regional unemployment rate, employment status, and children at home.  $z$  is a matrix of fixed individual characteristics including whether the individual experienced a recession in young adulthood or not, the intensity of the recession, gender, race, and age. This hybrid model identifies the *within-person* effects ( $\delta$ ), which indicate the predicted effect of a

change in the relevant variable on any individual  $i$  with respect to the log odds of high subjective well-being. It also identifies the *between-person* effects at level 2, including a vector of effects for constant individual characteristics along with a constant (intercept) effect ( $\lambda$ ) and the between-person effects of time-varying variables ( $\gamma$ ). The random errors of level two across individuals ( $\epsilon_i$ ) are assumed to be distributed normally with mean 0 and variance  $\tau^2$  (Raudenbush 2002). Missing data constitutes a little over 20% of the sample (mostly related to missing income values). For missing data, I use multiple imputation and delete observations with missing values on the dependent variable (Von Hippel 2007). The results presented below are robust to alternative approaches as well, including different specifications for exposure to a recessive period, treating the dependent variable as continuous or ordinal, various APC models (Yang and Land 2013), and a multistate life table approach (Lynch and Brown 2005).

## **2.4 Results**

Table 1 presents descriptive statistics for the pooled GSS from 1994-2014, separated into three groups: (1) those who did not experience a recession in young adulthood; (2) those who experienced recessions shorter than one year while in young adulthood; and (3) those who experienced a recessive period greater than or equal to one year while in young adulthood.



**Table 1. Proportions and Means with Standard Deviations across Levels of Recession Exposure as Young Adult, Age 18-22 (1994-2014 GSS Cross-Sections).**

	Length of Recession Experienced as Young Adult		
	None	< 1 Year	≥ 1 Year
<b>Key Measures</b>			
High Subjective Well-being <sup>ac</sup>	0.305	0.324	0.297
Contemporaneous Regional Unemployment Rate	6.052 (0.064)	6.021 (0.056)	6.012 (0.055)
<b>Controls</b>			
Age <sup>abc</sup>	39.428 (0.322)	49.457 (0.264)	47.112 (0.226)
<i>Number of Children at Home</i>			
Age 6 and under <sup>abc</sup>	0.324 (0.013)	0.188 (0.007)	0.166 (0.008)
Age 7-12 <sup>ac</sup>	0.296 (0.013)	0.189 (0.007)	0.310 (0.011)
Age 13-17 <sup>abc</sup>	0.173 (0.010)	0.131 (0.005)	0.260 (0.009)
Education in years <sup>ac</sup>	13.497 (0.063)	13.331 (0.054)	13.548 (0.054)
<i>Work Status</i>			
Employed <sup>ac</sup>	0.750	0.605	0.739
Retired <sup>ac</sup>	0.083	0.213	0.077
Unemployed <sup>ab</sup>	0.212	0.182	0.184
<i>Income Quartiles</i>			
1 <sup>st</sup> Quartile <sup>bc</sup>	0.244	0.247	0.186
2 <sup>nd</sup> Quartile <sup>bc</sup>	0.278	0.285	0.242
3 <sup>rd</sup> Quartile <sup>bc</sup>	0.266	0.267	0.300
4 <sup>th</sup> Quartile <sup>bc</sup>	0.212	0.200	0.272
Female	0.547	0.548	0.547
Black	0.135	0.133	0.134
Married/Cohabiting <sup>abc</sup>	0.493	0.521	0.570
n	3,294	7,557	5,116

Note: Standard deviations of means in parenthesis. GSS Pooled cross-sections 1994-2014; limited to individuals born after 1915 and before 1985. Recession exposure indicates respondent was 18-22 years-old during recession recorded by NBER. Contemporaneous unemployment rate merged from BLS data by region and interview date.

**a** columns 1 and 2 different mean/proportion,  $p < 0.05$ ; **b** columns 1 and 3 different mean/proportion,  $p < 0.05$ ; **c** columns 2 and 3 different mean/proportion,  $p < 0.05$ .

These descriptive statistics provide preliminary evidence that subjective well-being may depend on recession exposure as a young adult. Differences in the proportion of these groups who choose “very happy” to describe their subjective well-being vary by recession exposure as displayed in row 1 of Table 1: those who experienced a short recession (less than a year) have the highest proportion of very happy respondents (32.4%), and the differences in proportions from those experiencing long recessions (29.7%) or no recession at all (30.5%) are statistically significant ( $p < 0.05$ ).

These differences in subjective well-being across groups of individuals, based on whether they experienced a recession in young adulthood, provide preliminary evidence of cohort socialization (Hypotheses 2 and 3): that exposure to a recession in young adulthood is associated with observable differences in subjective well-being. The differences in proportions are inconsistent with Hypothesis 3b, but consistent with Hypothesis 3a, because longer recessions are associated with lower levels of subjective well-being, a scar effect. In addition, these differences in proportions are consistent with Hypothesis 2b, because experience with short recessions is also associated with higher proportions of high subjective well-being than no experience of a recession, an inoculation effect.

Table 2 shows results of nested logistic regression models for the pooled GSS 1994-2014. Model 1 includes the contemporaneous regional unemployment rate and controls. Consistent with Hypothesis 1a, the regional unemployment rate is inversely

associated with high subjective well-being, with each 1% increase in the unemployment rate implies a 6% decrease ( $\exp(-0.063)-1$ ) in the odds ratio of high subjective well-being. Notably, the negative association between contemporaneous unemployment rates and subjective well-being is fairly consistent over time, even when the analytic sample is expanded to include 1976-2014 GSS pooled cross-sections (an identical model on the expanded dataset estimates approximately a 3.4% decrease in odds ratio of subjective well-being for each 1% increase in the regional unemployment rate). Additional models (available on request) using this larger analytic sample tests interactions between contemporaneous regional unemployment rates and a dummy indicator for a recessive period and interactions between these unemployment rates and employment status. Neither interaction is statistically significant.

Model 2 of Table 2 adds variables of recession exposure to test Hypothesis 2 and recession intensity to test Hypothesis 3. The effect of recession exposure is positive, which suggests an inoculation effect consistent with Hypothesis 2b. Oppositely, the effect of recession intensity is negative, which suggests a scar effect, consistent with Hypothesis 3a. Importantly, however, recession exposure and intensity covary together, so that the effect of recession exposure presented in Table 2 assumes an impossible measure for recession intensity at 0 years. Similarly, the effect of recession intensity in Table 2 shows the effect of a one-year change of recession intensity, when recession is exposure is assumed to be 0 (another impossibility).

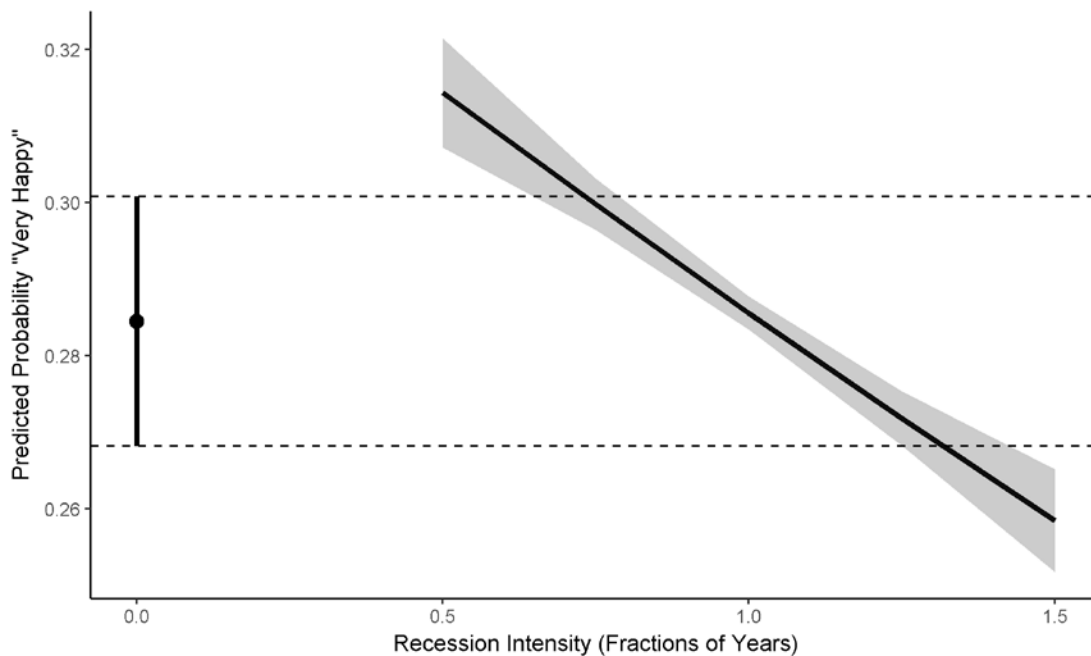
**Table 2. Logistic Regression Estimates for High Subjective Well-Being (1994-2014 GSS Cross-sections).**

	Model 1		Model 2	
	Estimate	SE	Estimate	SE
Contemporaneous Regional Unemployment Rate	-0.063**	(0.020)	-0.063**	(0.020)
<i>Experience of Recession as Young Adult</i>				
Experienced Recession when Age 18-22			0.177*	(0.083)
Length of Recession when Age 18-22			-0.274***	(0.071)
<i>Income Quartiles (ref=lowest quartile)</i>				
2 <sup>nd</sup> Quartile	0.092	(0.066)	0.097	(0.066)
3 <sup>rd</sup> Quartile	0.366***	(0.063)	0.379***	(0.064)
4 <sup>th</sup> Quartile	0.489***	(0.077)	0.508***	(0.078)
<i>Employment Status (ref=Employed)</i>				
Unemployed	-0.058	(0.051)	-0.065	(0.051)
Retired	0.296***	(0.066)	0.250***	(0.066)
Age	0.003	(0.002)	0.004*	(0.002)
Children Under Age 7 at Home	0.026	(0.036)	0.017	(0.036)
Children Aged 7-12 at Home	-0.035	(0.031)	-0.029	(0.031)
Children Aged 13-17 at Home	-0.144***	(0.040)	-0.130**	(0.040)
Education	0.022*	(0.007)	0.022**	(0.007)
Female	0.136***	(0.038)	0.134***	(0.038)
Married/Cohabiting	0.959***	(0.042)	0.962***	(0.042)
Black	-0.068	(0.057)	-0.065	(0.057)
<i>Year Fixed Effects (Ref=1994)</i>				
1996	0.049	(0.083)	0.041	(0.083)
1998	0.074	(0.090)	0.064	(0.090)
2000	0.049	(0.097)	0.037	(0.097)
2002	-0.038	(0.100)	-0.053	(0.100)
2004	-0.036	(0.103)	-0.053	(0.104)
2006	-0.073	(0.091)	-0.090	(0.091)
2008	-0.136	(0.096)	-0.155	(0.096)
2010	0.065	(0.108)	0.046	(0.108)
2012	0.049	(0.093)	0.025	(0.094)
2014	0.009	(0.086)	-0.013	(0.086)
Constant	-1.662***	(0.189)	-1.639***	(0.190)

Note: n=15,857. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . GSS Pooled cross-sections 1994-2014; limited to individuals born after 1915 and before 1985. Recession exposure from NBER data; length of recession measured in years. Contemporaneous unemployment rate merged from BLS data by region and interview date.

Because of the constrained scope across intensity and exposure, simplistic interpretations of the bare estimates for recession exposure and intensity reported in Table 2 fail to provide the whole story. In fact, the marginal effect at mean recession intensity (0.76) is not statistically different from 0 at  $p < 0.05$ . Fundamentally, constraints on the values of recession exposure and intensity operate as a regression discontinuity with an implicit interaction between exposure and intensity. Accordingly, to further evaluate the evidence for Hypotheses 2 and 3, I examine predicted probabilities across a range values for recession intensity.

Figure 1 plots predicted probabilities based upon the experience of a recession in young adulthood and across the intensity of recessions measured by duration on the x axis. To assist in comparison, the horizontal dashed lines of Figure 1 represent 95% confidence intervals for those who did not experience a recession as young adult (the reference group). The shading indicates adjusted confidence intervals to show statistically significant differences ( $p < 0.05$ ) between the reference group and estimated effects over recession intensity. When the shading is above or below the horizontal dashed lines, the difference in the predicted probabilities is statistically significant (Lynch and Bartlett n.d.; *see also* Goldstein and Healy 1995).



**Figure 1. Predicted Probabilities of High Subjective Well-Being (“Very Happy”) Over Values of Recession Intensity (1994-2014 GSS Cross-sections). Intensity measured by years of consecutive decline for recession experienced as a Young Adult (age 18-22). 95% C.I. for point; shading indicates dynamically adjusted C.I. calculated so that overlap with dashed lines represents statistically significant difference of predicted probabilities at  $p < 0.05$ . Derived from Model 2 of Table 2.**

The minimum observed length for any recessive period is 0.5 years, and the maximum is just under 1.5 years at 1.33 years. In Figure 1, continuous covariates are held at their means, while categorical variables are held at 0. Note that alternative specifications show similar patterns. As illustrated by the point identified in Figure 1, individuals who did not experience a recession as a young adult have a predicted probability of 0.28 for high subjective well-being. Individuals experiencing short recessions (6 months) have higher predicted probabilities (0.31), and those experiencing longer recessions (16 months) have lower probabilities (0.26)

Figure 1 does not alter the original interpretation of Hypothesis 3a: longer recessions represent a scar effect. But it does provide a more nuanced story that is consistent with *both* Hypotheses 2a and 2b. Experience of a recession in young adulthood can be beneficial or harmful, depending on the length of the recession. Short recessions are associated with better subjective well-being, or inoculation, but long recessions are associated with lower subjective well-being, or a scar.

Table 3 reports a statistically significant, and negative within-person association between contemporaneous unemployment rates and subjective well-being consistent with Hypothesis 1a. As with the cross-sectional model, this effect is negative, meaning that higher levels of unemployment rates are associated with lower levels of subjective well-being. The absence of a between-individual effect for the unemployment rate does not diminish this finding. In fact, it further supports the notion that changes in unemployment rates are contemporaneous effects. This effect suggests that the association between unemployment rates and subjective well-being is related to fluctuations in individual exposures over time, and not regional differences in exposure to unemployment rates for different individuals.

. With respect to Hypotheses 2 and 3 the panel model only includes individuals exposed to recessions 5 years ago or more, as the observation period began five years after the 2001 recession and individuals born before 1984 (who would have been 22 or younger for the recession of 2007) were excluded.

**Table 3. Hierarchical Logistic Regression Estimates for “Very Happy”  
(2006-2014 GSS Panels).**

	Model 1		Model 2	
	Estimate	SE	Estimate	SE
<b>Between-Person Difference</b>				
<i>Experience of Recession as Young Adult</i>				
Experienced Recession when Age 18-22			0.536**	(0.206)
Length of Recession when Age 18-22			-0.562**	(0.182)
Contemporaneous Regional Unemp. Rate	-0.042	(0.030)	-0.043	(0.030)
<i>Employment Status (ref=Employed)</i>				
Unemployed	-0.030	(0.168)	-0.037	(0.168)
Retired	0.428*	(0.183)	0.291	(0.189)
Income	0.055***	(0.011)	0.054***	(0.011)
Children Under Age 7 at Home	-0.100	(0.118)	-0.137	(0.118)
Children Aged 7-12 at Home	-0.169	(0.156)	-0.212	(0.156)
Children Aged 13-17 at Home	-0.330	(0.172)	-0.305	(0.172)
Married/Cohabiting	1.359***	(0.119)	1.375***	(0.119)
Female	0.320**	(0.098)	0.319**	(0.098)
Black	0.076	(0.141)	0.072	(0.141)
Age	-0.000	(0.004)	0.002	(0.004)
<b>Within-Individual Change</b>				
Contemporaneous Regional Unemp. Rate	-0.050**	(0.017)	-0.051**	(0.017)
<i>Employment Status (ref=Employed)</i>				
Unemployed	-0.057	(0.144)	-0.059	(0.144)
Retired	-0.036	(0.206)	-0.041	(0.206)
Income	0.031	(0.016)	0.031	(0.016)
Children Under Age 7 at Home	-0.134	(0.120)	-0.138	(0.120)
Children Aged 7-12 at Home	0.107	(0.107)	0.104	(0.107)
Children Aged 13-17 at Home	-0.073	(0.121)	-0.075	(0.121)
Married/Cohabiting	0.769***	(0.198)	0.761***	(0.198)
Constant	-3.007***	(0.360)	-3.051***	(0.366)
Individual Error	1.867		1.861	

Note: n=8,146. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Pooled GSS three-wave panels, 2006-2014; limited to individuals born after 1915 and before 1985. Recession exposure from NBER data; length of recession measured in years. Contemporaneous unemployment rate merged from BLS data by region and interview date.



Thus, the effects in Model 2 of Table 3 for recession intensity and exposure last at least 5 years, and are consistent with the interpretation of these associations as a persisting effect. The effects for these measures are completely consistent with the effects reported in the cross-sectional analysis: an initial benefit to sensitive period exposure, which declines as intensity increases.

## **2.5 Discussion**

This study presents two major findings. First, it shows that changes in unemployment rates are contemporaneously, and negatively, associated with subjective well-being. Second, unlike contemporaneous exposures to unemployment rates, exposure to a recession during young adulthood is associated with a persistent difference in subjective well-being. This finding is more nuanced, because short recessions are actually associated with higher subjective well-being, but long recessions are associated with lower subjective well-being. This means that exposure to similar economic conditions (rising unemployment rates) has different impacts whether it occurs during a sensitive period, or not.

More particularly, the study provides evidence to support Hypothesis 1a: generally, high subjective well-being is inversely associated with unemployment rates as shown in Tables 2 and 3. As the unemployment rate goes up, subjective well-being goes down. Second, there is no consistent association between well-being and exposure to a recession as a young adult, meaning that Hypothesis 2a and 2b are neither simply

confirmed nor rejected. Instead, consistent with Hypothesis 3a, there is a persistent association between the intensity of a recession experienced as a young adult and subjective well-being. These effects are consistent with the contextual impact of recessions in general (Burgard and Kalousova 2015).

While subjective well-being has been widely researched for decades, few studies have identified processes whereby macro-level historical events become enduring experiences that differentiate cohorts from one another—i.e., cohort effects. Building on theories predicting cohort effects in subjective well-being, and prior empirical findings of cohort effects (Riley 1994; Yang 2008), this study introduced the concept of *cohort socialization*. This process predicts that large scale historical events which (1) occur during a sensitive period, and (2) are of sufficient intensity, will have persistent impacts – that these kinds of events will be socialization experiences for the cohorts that live through them. This study finds evidence that economic recessions leave an imprint on individuals and have persistent associations with levels subjective well-being. This imprint is markedly different from the association with contemporaneous unemployment rates. Where increases in unemployment rates are generally associated with lower subjective well-being, exposure to higher unemployment rates during a recession can actually have a positive association with subjective well-being, as long as the recession occurred between the ages of 18 and 22, is short, and is over.

The beneficial effect of a recessive experience while a young adult falls rapidly when the recession in young adulthood is longer; particularly as it approaches 1.5 years. This pattern appears in both cross-sectional (Model 2 of Table 2) and panel analyses (Model 2 of Table 3). The differing imprint of a recession based on the duration of the recessive period connects theories in the subjective well-being literature. Specifically, some theories suggest that negative events are beneficial because they promote more beneficial counterfactual comparisons (Bianchi 2013; George 2011), while other theories suggest that negative events are harmful because individuals are more primed to remember bad times (Hagerty 2003; Schwarz and Strack 1999). These results suggest that *both* mechanisms might be accurate, but are only effective conditional on the severity of the exposure.

These findings also have significant implications for theory and policy. First, they extend understandings of the importance of the life course regarding the impact of history on health and well-being. Many studies have focused on how *individual* experiences during young adulthood or childhood impact health and well-being (Johnson and Hitlin 2017). By introducing the concept of Cohort Socialization and providing an example of its importance with respect to the business cycle, this study shows that *collective* experiences can also have important impacts on health and well-being.

This study establishes a more complicated relationship between subjective well-being and the business cycle. Recessions are generally viewed as a bad thing, making the “Great Moderation” — a period lacking in recessions — a policy goal, heralded as a significant success (Bernanke 2013). This may not be wholly good for population levels of subjective well-being, however. While increases in unemployment rates that go along with recessions decrease subjective well-being for everyone in the short term, they may actually increase long-term well-being for young adults who experience them. These findings show a persistent and long-term benefit to subjective well-being from periodic, but short recessions. This means that avoiding recessions may not prove to be as important as mitigating the negative effects of a recession to those directly affected or making interventions to halt long recessions. This does present a complicated trade-off because recessions are known to correlate with poorer jobs and lower income (Bianchi 2013).

There are a few limitations to the study. First, it covers only a few recessions, and there are very few long recessions. Second, the test of persistence is limited to approximately five years based on the sampling frame. Subsequent studies can do more to test the length of this persistence, and whether it decays over time. Third, measures of exposure to recessions are imprecise, both because of imprecisions regarding birthdates and recession measures, and because of known variations in the timing of the transition from young adulthood to adulthood. Despite these limitations, this study highlights the

importance of cohort socialization in changing population distributions of well-being over time.

These findings show that individual expectations for subjective well-being can be imprinted by the historical conditions individuals faced during young adulthood. In this sense, socialization is paramount in understanding social change. Finally, these results also have methodological implications. Researchers should be cognizant of the historical context and include available information which describes the state of the world during young adulthood. This is not the only study to find insights using this approach (Altman, Hook, and Hillemeier 2016), but its findings confirm that combining available information on historical conditions with survey responses opens the possibility of uncovering mechanisms driving social change. In fact, this process should apply to all sorts of historically meaningful events, such as the terrorist attacks on 9/11 or the failure of the Equal Rights Amendment in the 1970s. The theoretical process is also applicable to identify cohort effects for specific groups, perhaps the impact of the Black Lives Matter movement on young adult African Americans (which may have more salience for this group than for whites).

### **3. Cohort Socialization: Mechanisms Related to Experience of Recessions in Young Adulthood and Subjective Well-Being**

For decades, social scientists have explored and theorized about the existence of cohort effects. Much of the recent work in this area has focused on methodological advances for identifying age, period, and cohort associations in the face of significant modelling and design difficulties (Yang and Land 2003). The theoretical underpinnings have remained relatively unchanged since Ryder's (1965) influential article. In this article, he suggested that patterned differences observed in numerous characteristics across different birth cohorts are likely to be based on the experiences individuals from certain birth cohorts share that those in other birth cohorts do not.

In Chapter 2, I used life course principles to introduce a proposed theoretical mechanism that produces cohort effects: Cohort Socialization. Instead of reflexively relying on birth years to identify cohorts, the Cohort Socialization mechanism is grounded in Life Course principles and requires researchers to identify historical events that may prove important in explaining cohort effects *ex ante*. This mechanism anticipates the appearance of persistent effects when (1) a historical event occurs during a sensitive period, and (2) it is sufficiently intense. Importantly, there is no expectation for a uniform sensitive period across contexts. Instead, sensitive periods are different for different processes. For example, in-utero exposure to hardship is a sensitive period when examining heart disease or diabetes (Hales and Barker 2001), and the time of

immigration is a sensitive period for disability growth and progression in migrant cohorts (Mueller and Bartlett 2017).

In Chapter 2, I presented evidence of cohort socialization in the context of subjective well-being and recessive periods. There I found that exposure to recessions of varying intensities during a sensitive period of young adulthood (ages 18-22) was associated with different levels of subjective well-being decades later. In particular, short recessions were associated with higher subjective well-being, but long recessions were associated with lower subjective-well-being. In this study, I look more closely at mechanisms related to subjective well-being and ask more specific questions about *why* this pattern may be the case.

There are several theories to explain how subjective well-being arises. One prominent theory is Social Comparisons Theory (Firebaugh and Schroeder 2009). In this framework, an individuals' subjective well-being depends upon what they have relative to someone else. Unfortunately, there is little agreement regarding the appropriate reference group, with some arguing for neighbors (Firebaugh and Schroeder 2009), others for intergenerational comparisons (Hagerty 2003), and some for a weighted average of multiple reference groups (Hauret and Williams 2017). Seizing on the importance of intergenerational processes outlined in life course studies through linked lives (Elder 1985) and the importance of family experiences during young adulthood

(Johnson and Hitlin 2017; Henderson 2016), in this study I focus on intergenerational comparative expectations.

Intergenerational comparative expectations are a comparison between a respondents' own standard of living and the standard of living of their parents or children. Prior studies have shown that intergenerational comparative expectations correlate with differences in psychological and subjective well-being, as well as a number of other health indicators (Johnson and Hitlin 2017). Intergenerational comparative expectations echo life course studies that identify the "long arm of childhood," because they are anchored in experiences of younger life (Hayward and Gorman 2004). Dozens, if not hundreds, of studies have examined how deprivation when young impacts health in the future. Deprivation during childhood is often measured using parents' socioeconomic status and other household characteristics comprising structural advantage or disadvantage, which are an *absolute* measure of deprivation.

In contrast, intergenerational comparative expectations provide a *relative* measure of deprivation to a predetermined reference group: family. In other words, it measures the distance between current status and an elusive subjective expectation. This provides a framework to understand circumstances where individuals with lower socioeconomic status can be happier than those with higher socioeconomic status: it depends on their expectations (Johnson and Hitlin 2017). This study asks (1) whether



individuals experiencing a recession in young adulthood (age 18-22) have different levels of intergenerational expectations from those who did not, (2) to what extent this mediates observed differences in happiness found in Chapter 2, and (3) to what extent this is a persisting versus a contemporaneous effect.

### **3.1 Background**

Proponents of Social Comparison Theory argue that subjective well-being arises from the difference between the level an individual has of some desirable attribute (usually income) and the perceived level of the attribute for some reference group (Firebaugh and Schroeder 2009; Schnittker 2008). The relative difference is more important than the absolute difference in influencing subjective well-being (Firebaugh and Schroeder 2009) While there is plenty of evidence that reference groups matter for levels of subjective well-being (Firebaugh and Schroeder 2009), it is unclear exactly how reference groups develop.

Work in psychology has identified reference groups including family and friends, work colleagues, neighbors, and many others (Hauret and Williams 2017). Some studies have suggested that reference groups are imposed on individuals (forced comparison approach) and other studies have suggested that individuals choose with whom they compare themselves (coping approach) (Deiner and Fujita 1997). Despite decades of work, it is still unclear how individuals identify which groups to compare themselves with for purposes of evaluating subjective well-being (Hauret and Williams

2017). Even though studies have established heterogeneity in reference groups across individuals, they have also found that individual evaluations over different reference groups are often correlated. People that tend to evaluate themselves positively in comparison to their neighbors are also more likely to compare themselves positively to their family (Hauret and Williams 2017). Researchers have often limited their work to a single set of reference groups (Firebaugh and Schroeder 2009).

In this study, I focus on family members as references. Even though it may not prove the strongest or most important comparison group, looking to this reference group has several beneficial properties. First, because it specifies a uniform reference group (parents and children), it provides a consistent representation over time and applies across life stages.<sup>6</sup> This increases certainty that panel models are comparing similar references over time and between people (Hagerty 2003). Second, this sort of reference has many well-understood theoretical constructs from the life course perspective that allow for predictions about how families might operate as a reference group over time.

The idea that family members can impact one another's health status falls under the life course principal of linked lives. As Elder (1998:6) describes it, "[s]ocial ties to

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<sup>6</sup> While intergenerational comparative expectations regarding children are not strictly applicable to those without children, comparative expectation measures often include childlessness as an alternative status as discussed in the Data section below.

significant others become forms of social control and constraint.” This leads to an oft-repeated call to use households as the unit of analysis, along with the refrain that individuals are nested in households (Moen 2016; Elder 1985). Using this concept as its starting point, the next section first outlines how a “family” reference group could be operationalized in a structural way (as a household) or in a cultural way (as a family). Second, this section reviews prior work on the impact of household socioeconomic status on children’s future subjective well-being (known as “the long arm of childhood”). Third, it outlines the cultural content of the idea of a “family” and its expected impact on subjective well-being. Finally, the section concludes by identifying why family expectations should have a persistent association with subjective well-being.

### **3.1.1 Structural and Cultural Comparisons: Households and Families**

Social context has two components: one that is easier to observe, such as patterns of behavior, and one that is harder to observe, such as the subjective meanings of these patterns to individuals (Bachrach 2014; Hoelter et al. 2011; McLeod 2012). Following Moen (2014), I will refer to these as structural and cultural features, respectively. Many examples at both individual and macro levels illustrate these features. Individual-level structural features include role entries and exits, such as labor force entry and retirement, as well as material resources, including income and wealth. Macro-level structural features include policies, laws, and temporal patterns regarding retirement

age. Individual-level cultural features include individual attitudes, aspirations, and expectations. Macro-level cultural features include norms and traditions.

Following the cultural/structural distinction outlined above, a household is a structural component that changes over time as parents, children, partners, and others move in and out. In addition to households, individuals are also nested in families, which influence actions and attitudes across both space and time. The family is the cultural counterpart to the household, and families are one important component of social comparisons that should be relevant to well-being. The importance of family suggests that comparisons individuals make between themselves and their parents or children will be a salient to subjective well-being.

#### **3.1.1.1 Linked Lives: Households and Well-Being.**

While many researchers have analyzed associations between household circumstances and subjective well-being or mental health, they have usually limited their analysis to household resources in childhood. Very often, these studies have used concepts from Cumulative Disadvantage, or Weathering, and sometimes have used the moniker “the long arm of childhood” (Hayward and Gorman 2004). This work has found that exposure to disadvantage in childhood is usually associated with disadvantages for the fully-grown adult. These studies have found, for example, that childhood deprivation structures exposure to stress (Adkins et al. 2009) and impacts well-being (Fomby and Cherlin 2007; Johnson and Mollborn 2009).

Father's education has often been used to measure household structure for individuals as children and young adults (Johnson and Hitlin 2017; Reynolds and Ross 1998). While much of the impact of father's education operates through individual attainment (Reynolds and Ross 1998), there is often an additional, unexplained effect of fathers' education. Researchers have proposed various explanations, including the development of self-concept or the important psychological buffering mechanisms of mastery and self-esteem (Henderson 2016). Whatever its source, these theories suggest that advantages of high paternal education are transferred to individuals to carry with them into the future.

#### **3.1.1.2 Linked Lives: Cultural Associations with Well-Being.**

Unlike the proposed structural effect, where the household confers an advantage that the individual takes with him or her, the comparative expectations concept envisions the family as a source of comparison *across time*. In other words, while household structure has generally changed, individuals still compare themselves to their parents and compare their children to themselves. Theoretically, this comparison can occur after a child leaves home and resides in a completely different household and even after parents have died. Unfortunately, cross-temporal comparisons have been little studied, but there has also been a growing set of empirical studies on cross-temporal evaluations and comparisons (Johnson and Hitlin 2017; Hitlin and Johnson 2015). Exposure to recessions in young adulthood may very well influence the way people

think about themselves in relation to their family, even after circumstances have changed.

Two features are important to determine exactly how exposure to a recession in young adulthood might impact intergenerational comparative expectations. First, the transition to adulthood and early adulthood marks a change from relative dependence to relative independence, usually including employment, independent living, partnership, and parenthood (Benson 2014; Arnett 2004). Under these circumstances, the length of the transition and the process of adultification are in a very real sense dependent on the availability of household resources (Elder [1974] 1999:29–31). Life course principles include a concept called “cycles of control,” which predicts declining control over structural circumstances when family/household needs increase or resources are strained (Elder 1985). Such periods often arise in response to exogenous shocks such as economic downturns (Elder [1994] 1974). Family strain during this sensitive period may directly impact the resources available to a young adult transitioning to adulthood.

Second, even when family resources are not directly restricted because of a recession, recessive periods occurring during young adulthood are certain to color the transition to adulthood process. Recessive periods make it more difficult and uncertain to achieve traditional markers of adulthood. Studies of the Great Recession have shown very low rates of employment among 18-24 year-olds, extended living with parents, and

delay of partnership and/or childbirth. (Benson 2014: 60). These same patterns have also been found in studies about the Great Depression (Shanahan 2000:672). Perhaps more importantly, for the past several decades, the transition to adulthood is increasingly an identity project. Young adults develop their own meanings and understanding for what it means to grow up, but these are often contextual and situationally dependent (Benson 2014; Silva 2012).

Recessions form an important background to this context. There is growing empirical evidence that young adults who experienced economic downturns think about things differently. For example, Bianchi (2013) showed that young adults during the Great Recession had lower expectations for employment and higher levels of satisfaction for objectively similar employment than young adults who got jobs just a few years earlier. Giuliano and Spilimbergo (2014) found an association between unemployment rates in adolescence and attitudes toward economic redistribution. Other work has shown that exposure to recessive periods of varying intensities have long-lasting impacts on subjective well-being. In fact, Chapter 2 looked at exposure to recessions earlier in life and found that differences in these exposures associated with persistent differences in subjective well-being over a period of at least five years. Individuals who experienced short recessions (around six months) as a young adult had higher average levels of subjective well-being; whereas, those who experienced long recessions (around sixteen months) as a young adult had lower average levels of subjective well-being.

Given the importance of subjective meanings to subjective well-being as outlined in Chapter 2, I anticipate that similar patterns will hold for intergenerational comparative expectations, leading to the following hypotheses:

*Hypothesis 1a.* Exposure to a short recession is associated with more optimistic intergenerational comparisons (*i.e.*, more likely to assess current life as better than parents; believe children will be better off).

*Hypothesis 1b.* Exposure to a long recession is associated with more pessimistic intergenerational comparisons (*i.e.*, less likely to assess current life as better than parents; believe children will be worse off).

As noted above, this is a similar pattern as empirically observed with subjective well-being (Chapter 2). In fact, because family members are a natural reference group under Social Comparison Theory, patterned differences in comparisons with family members should result in similar patterns of subjective well-being. Given this, associations between recession exposure and intergenerational comparative expectations should mediate some of the association between recessions and subjective well-being as outlined in Hypothesis 2 below.

*Hypothesis 2.* The associations between recession exposure and intensity and subjective well-being are mediated by differences in intergenerational comparative expectations.



### **3.1.2 Cohort Socialization as Social Inertia and Persistent (Between-Person) Associations between Exposure and Outlooks**

Researchers have hypothesized for decades that social change occurs primarily as a process of cohort replacement. Generally, individual attitudes and outlooks become rigid in early adulthood and changes in attitudes and beliefs occur through cohort replacement (Pampel and Hunter 2012; Pampel 2011). This study defines cohorts in terms of recession exposure as a young adult. These general outlines from life course principles are further fleshed-out by theories such as Riley's structural lag (Riley 1994), which echoes Bourdieu's (1984) concept of *habitus*. Both concepts describe a situation of inertia (e.g. Moen 2016) where attitudes, practices, or norms continue to influence social outcomes and practices. This rigidity contrasts with more reflexive changes in subjective well-being in other contexts, for example, the contemporaneous fluctuations in unemployment rates. Research has identified a reflexive and short-term association between economic contexts and subjective well-being (Tausig 2013:439).

The predicted rigidity in intergenerational comparative expectations associated with exposure to recessions as a young adult is testable using panel data. Certain panel models can distinguish "within-person" effects, which exist when relatively short-term changes in some independent variable are contemporaneously associated with changes in a dependent variable, and "between-individual" effects, which are more rigid, and are more like the fixed individual characteristics of race and gender. In this framework, exposure to more extreme unemployment rates in young adulthood influences outlooks

and social comparisons with family members, or intergenerational comparative expectations. These outlooks are more rigid than the fluctuating attitudes related to unemployment changes which occur later in life. In essence, these become individual characteristics that only change slowly, if at all. Restated in statistical terms, this contrast outlines the following hypothesis:

*Hypothesis 3.* In panel models, the association of intergenerational comparative expectations on subjective well-being is primarily a between-person effect.

### **3.2 Data**

This study uses three data sets: pooled General Social Survey (GSS) data, regional unemployment rates from the Bureau of Labor Statistics, and information on recessive periods provided by the National Bureau for Economic Research (NBER). The GSS is a long-running, full probability sample of non-institutionalized, English-speaking United States adults (NORC 2012). The analytic frame is limited from 1994 to 2014, which is the period over which questions about intergenerational comparative expectations were asked. In addition, since these questions were only asked to a random subsample of the GSS; respondents who were not in the ballots related to intergenerational comparative expectations were also excluded from the analytic sample. Beginning in 2006 and ending in 2014, the GSS also included longitudinal follow up surveys for a subset of the GSS. for three rotating panels of three waves each including approximately 2,000 respondents for each panel. Panel surveys were collected

in 2006, 2008, and 2010; 2008, 2010, and 2012; and 2010, 2012, and 2014. Panel attrition was 20-25% (Smith and Son 2010). The analytic sample for the GSS panels are restricted using identical criterion to the cross-sectional analysis.

The BLS estimates unemployment rates through its area unemployment statistics program using the Current Population Survey, Current Employment Statistics Survey, and data from state unemployment insurance systems (BLS 2016). The NBER's Business Cycle Dating Committee keeps detailed data on U.S. recessions from 1857 to the present (NBER 2010).

*Subjective well-being* is measured by happiness: "Taken all together, how would you say things are these days-would you say that you are very happy, pretty happy, or not too happy?" I recode the GSS's three-item scale to construct a dummy variable indicating "very happy" (1) relative to "pretty happy" and "not too happy" (0).

*Intergenerational comparative expectations* are measured using use two variables related to standard of living: *children's predicted standard of living* and *comparison to parents' standard of living*. Children's predicted standard of living is a dummy variable series based on a question which asked respondents with children up to and including 30 years old to predict their children's standard of living when their children reach the respondent's age. Responses range on a Likert scale from much better (1) to much worse (5). Because the evaluation is not applicable to respondents with no children or children who are older than 30, I construct a dummy variable series consisting of respondents

with no children, those who believe their children will be worse off, those who believe their children will be better off, and those who believe their children will be about the same (reference category).

The *comparison to parent standard of living* is based on a question which asks each respondent to rate his/her standard of living “[c]ompared to your parents when they were the age you are now.” Responses are reported on a Likert scale as above, ranging from a respondent reporting that his/her standard of living is “much better” (1) than his/her parents to “much worse” (5). This question was asked of all respondents and is analyzed with the values 1-5 such that higher values indicate less favorable comparisons with respondents’ parents.

*Recession exposure* is a dummy variable indicator identifying whether the United States was experiencing a recession when the respondent was between 18 and 22 years old. A recession is “a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales,” (NBER 2010).

*Recession intensity* is a continuous measure identifying the intensity of the recession experienced in young adulthood measured by the length of the recession. Individuals with no recession experience in young adulthood have a value of 0; all others take values indicating how long the recession they experienced as a young adult lasted in years (*see* Table 10 for an example). Because of small cell sizes, I exclude

individuals who were young adults or older during the Great Depression. I also exclude individuals aged 18-22 during the Great Recession of 2007-2009 as this study is focused on the persisting impacts (or not) from prior recessions, and the process of first exposure to a recession during a recessive period may be different from subsequent exposure.

*Control variables.* I use a number of controls for the models outlined above. The *contemporaneous unemployment rate* is the regional unemployment rate for the month prior to respondents' GSS interview date (BLS 2015). *Employment status* is a dummy variable series for employed (reference), not employed, and retired. *Marital status* is dichotomized to married or cohabitating (1) or not (0). Race is measured as a dummy variable (black=1, white=0). Other controls are *education* (years completed), *age*, and the number of children in the household, including *babies* (those under 7 years old) *preteens* (ages 7-12), and *teens* (ages 13-17). I measure *income* using a dummy variable as in described in Lam, Fan, and Moen (2014), which reflects the quartile in which the respondent's income falls for the survey year (lowest quartile is reference). However, for 2006-2014 panel models, I use income categories defined by the GSS.

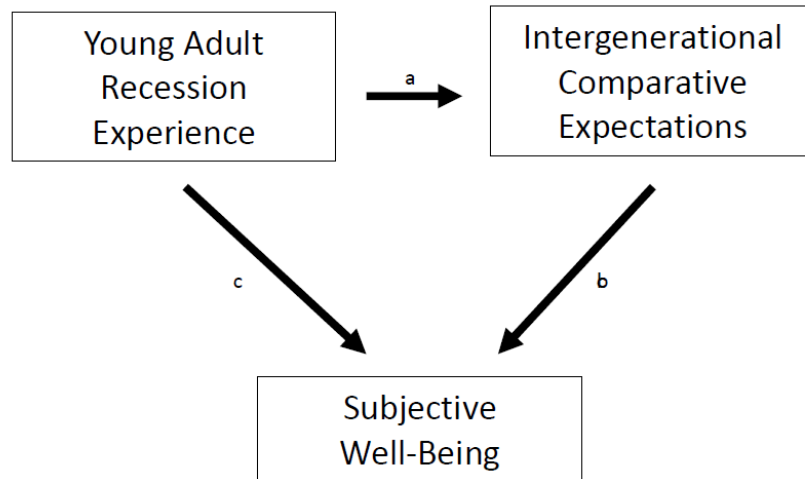
### **3.3 Analytic Strategy**

For the pooled cross-sectional data, I estimate a series of nested models with year fixed effects for the 20-year period of 1994 to 2014. Depending on the outcome, I provide estimates for either a linear or logistic regression model. Models where comparisons to parents' standard of living is the outcome uses a linear specification. Models where high

subjective well-being or comparisons to children's standard of living are outcomes use logistic regression models. Whether intergenerational comparative expectations are associated with the exposure to recessions of various intensities during young adulthood (Hypothesis 1a and 1b) is evaluated using coefficients for recession exposure and intensity, respectively.

Whether the associations between subjective well-being and intergenerational comparative expectations mediates the association between recession exposure and subjective well-being (Hypothesis 2) is evaluated in two ways: first by a set of nested logistic regression models where intergenerational comparative expectations are added to a model and changes to the statistical significance of exposure and intensity across models are noted. Second, by using a classic mediation analysis in a structural equation modelling framework (I use Stata's full information maximum likelihood estimator for these models, and so do not use the multiply imputed datasets for this model).

Figure 2 outlines a path diagram for the mediation analysis. In a structural equation framework, I estimate the paths outlined in Figure 2. The indirect effect is calculated as the sums of the products for all of the mediated pathways ( $a$  times  $b$ ). The direct effect is the sum of each pathway represented by  $c$  (recession exposure and intensity), and the sum of all indirect and direct pathways is the total effect. The proportion mediated is calculated as the total indirect effects divided by the total effects. For all paths, I adjust for all controls.



**Figure 2. Diagram for Classical Mediation Analysis. Boxes include multiple observed measures; diagram is a conceptual framework and not meant to fully detail of the structural equation model design.**

For the panel data, I use a hybrid logistic panel model (Allison 2009). This model allows me to distinguish within-person from between-person effects. Written as a two-level model, this model takes the following form:

Level 1, Within-person:

$$\ln\left(\frac{p_{it}}{1-p_{it}}\right) = \beta_i + \delta(x_{it} - \bar{x}_i.)$$

Level 2, Between-person:

$$\beta_i = \lambda z_i + \gamma \bar{x}_i. + \epsilon_i$$

Where  $p_{it}$  is the probability that individual  $i$ 's subjective well-being is "very happy" at time  $t$ .  $x$  is a matrix of time-varying variables, including regional unemployment rate, child and parent comparisons, employment status, and children at home.  $z$  is a matrix of fixed individual characteristics including whether the individual

experienced a recession in young adulthood or not, the intensity of the recession, gender, race, and age. This hybrid model identifies the *within-person* effects ( $\delta$ ), which indicate the predicted effect of a change in the relevant variable  $x$  on any individual  $i$  with respect to the log odds of very high subjective well-being. It also identifies the *between-person* effects at level 2, including a vector of effects for constant individual characteristics along with a constant (intercept) effect ( $\lambda$ ) and the between-person effects of time-varying variables ( $\gamma$ ). The random errors of level two across individuals ( $\epsilon_i$ ) are assumed to be distributed normally with mean 0 and variance  $\tau^2$  (Raudenbush 2002).

Missing data in the cross-section represents a little over 20% of the sample (mostly related to missing income values). For missing data, I use multiple imputation and delete observations with missing values on the dependent variable (Von Hippel 2007). Panel data is imputed in “wide” format and transformed to “long” for the hierarchical models, which were estimated using the R package lme4.

### **3.4 Results**

Table 4 presents descriptive statistics for the pooled GSS from 1994-2014, across recession exposure as a young adult. This includes (1) those who had no experience with recessions in young adulthood; (2) those who experienced recessions shorter than one year while in young adulthood; and (3) those who experienced a recessive period greater than or equal to one year while in young adulthood. Consistent with Hypotheses



1a and 1b, experience with a recession is associated with different levels of intergenerational comparative expectations.

**Table 4. Proportions and Means with Standard Deviations across Levels of Recession Exposure as Young Adult, Age 18-22 (1994-2014 GSS Pooled Cross-Sections).**

	Length of Recession Experienced as Young Adult		
	None	< 1 Year	≥ 1 Year
Subjective Well-being (Very Happy) <sup>ac</sup>	0.305	0.324	0.297
Contemporaneous Regional Unemployment Rate	6.052 (0.064)	6.021 (0.056)	6.012 (0.055)
<i>Children's Projected Standard of Living (when they are the age respondent is now)</i>			
Better Off <sup>abc</sup>	0.576	0.543	0.509
Worse Off <sup>b</sup>	0.155	0.168	0.180
About the Same <sup>b</sup>	0.175	0.193	0.201
No Children	0.093	0.097	0.111
Comparison with Parent Standard of Living <sup>abc</sup> (when parents were the respondent's age)	2.248 (0.022)	2.134 (0.015)	2.305 (0.018)
N	3,294	7,557	5,116

Notes: Standard deviations of means in parenthesis. GSS Pooled cross-sections 1994-2014; limited to individuals born after 1915 and before 1985. Recession exposure indicates respondent was 18-22 years-old during recession recorded by NBER. Contemporaneous unemployment rate merged from BLS data by region and interview date. Proportions and means for controls are found in Table 1. **a** columns 1 and 2 different mean/proportion,  $p < 0.05$ ; **b** columns 1 and 3 different mean/proportion,  $p < 0.05$ ; **c** columns 2 and 3 different mean/proportion,  $p < 0.05$ .

Mean levels of parent comparisons are statistically different in the same pattern as proportions of happiness. Those who experienced a short recession compare themselves most favorably (2.134) to their parents and those who experienced a long recession compare themselves least favorably (2.305). Similarly, fewer respondents who experienced a recession in young adulthood believe their children will be better off, but

instead believe their children will be worse off.<sup>7</sup> There is no statistically significant difference in proportions of couples without children younger than 30 across length of recession exposure.

### **3.4.1 Pooled Cross-Sectional Models**

As outlined above, I estimate a number of models with different outcomes. I use linear models for the five-point outcome regarding comparisons with parents' standard for living. I use logistic regression models to estimate disaggregated outcomes for intergenerational expectations about children and whether individuals have high subjective well-being.

#### **3.4.1.1 Associations between Intergenerational Comparative Expectations and Recession Exposure.**

Table 5 reports estimates for models with comparative intergenerational comparative expectations as the outcome. Table 5 provides support for Hypothesis 1. For comparison with parent's standard of living (Model 1 of Table 5), effects for recession exposure are negative and statistically significant, though the estimate represents a fairly small effect

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<sup>7</sup> This is the inverse of the association with parent comparisons, and indeed, the inverse of most social comparisons. In general, parents and children are both happier when children expect (or have) a higher standard of living than their parents. The direction of this association is more evidence that social comparisons are highly contextual indicators of attitudes and norms.

size (Column 1, line 1). This is consistent with Hypothesis 1a, as lower values indicate positive comparisons, and larger values represent negative comparisons.

**Table 5. Linear and Logistic Regression Estimates of Recession Exposure/Intensity on Intergenerational Comparative Expectations (1994-2014 GSS Cross-Section).**

	Model 1		Model 2		Model 3	
	Parent Standard of Living Comparison (OLS)		Children Worse (Logistic)		Children Better (Logistic)	
	Estimate	SE	Estimate	SE	Estimate	SE
Exposed to Recession as Young Adult	-0.072*	(0.032)	0.030	(0.072)	0.056	(0.051)
Length of Recession as Young Adult	0.106***	(0.000)	0.021	(0.049)	-0.081*	(0.040)

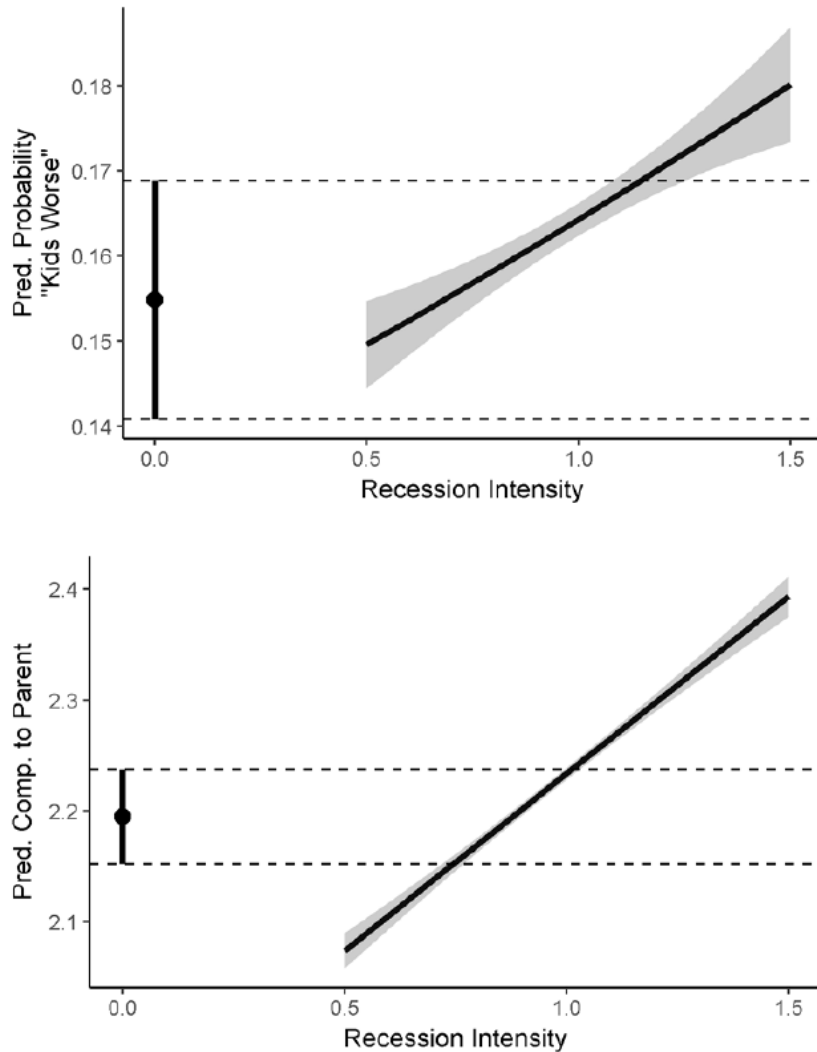
Note: N=15,857. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Standard errors in parentheses. GSS Pooled cross-sections 1994-2014; limited to individuals born after 1915 and before 1985. Recessions obtained from NBER data; exposure determined when respondent was a young adult (between 18-22 years old) during recession. Length of recession is measured in years. Lower values for parent comparison indicate more optimistic comparisons. Effects for race, gender, marital status, children at home, employment status, regional unemployment rate, income quartile, education, and year fixed effects not reported.

Model 1 also supports Hypothesis 1b, longer recessions have a highly statistically significant negative association with comparisons to parents. Exposure to longer recessions in young adulthood is associated with more negative comparisons of a respondents' standard of living than their parents. A similar association between recession length and negative evaluation of child's predicted standard of living is also statistically significant in Model 3 of Table 5 for a 7% predicted decrease ( $\exp(-0.081)-1$ ) in the odds ratio that a parent will expect their children will have a better standard of

living than themselves. Evaluation of Table 5 alone might suggest partial or weak support for Hypothesis 1 as only three of the six estimates show statistically significant associations. These effects are highly correlated and work together, however, so a full evaluation of Hypothesis 1 is easier to evaluate using predicted values and predicted probabilities.

Figure 3 visualizes the association of recession exposure with mean levels of intergenerational comparative expectations (with all dummy variables held to zero, or marginal effects at the mean). These panels show the 95% confidence intervals for no recession exposure, which is indicated by horizontal dashed lines. The shaded confidence intervals are adjusted such that intervals falling outside the dashed line indicate that the values are statistically different from no recession exposure (the reference category) at  $p < 0.05$  (Lynch and Bartlett, n.d.).

Figure 3 also shows that exposure to increasingly longer recessions increases the probability that an individual will have a pessimistic view of their children's prospects and compare themselves less favorably to their parents. Though not pictured here, a similar pattern appears with predicted probabilities that a child will be better off (though the gradient is reversed). Generally, Figure 3 illustrates that Hypothesis 1 is generally supported. There is a strong gradient and effect regarding intergenerational comparisons with parents, but a weaker and noisier gradient for children's predicted future standard of living, though the pattern is similar.



**Figure 3. Predicted Probabilities and Values for “Children Worse” and Parent Standard of Living Comparison. (1994-2014 GSS Cross-sections). Intensity measured by years of consecutive decline for recession experienced as a Young Adult (age 18-22). 95% C.I. for point; shading indicates dynamically adjusted C.I. calculated so that overlap with dashed lines represents statistically significant difference of predicted probabilities or predicted parent comparison at  $p < 0.05$ . “Children Worse” is binary; Lower values for parent comparisons indicate more favorable comparisons. Derived from Models 1 and 2 reported in Table 5.**

### **3.4.1.2 Do Intergenerational Expectations Mediate the Association Between Recession Exposure and Happiness?**

Table 6 shows the results of nested logistic regression models to test Hypothesis 2, that intergenerational comparative expectations mediate the associations observed between recession exposure and subjective well-being. These models provide partial support for that hypothesis. First, there is a direct relationship between the odds of high subjective well-being and intergenerational comparative expectations. Table 6 shows that respondents with a one-unit increase in unfavorable comparisons of their standard of living relative to their parents (higher values represent more pessimistic comparisons) have a predicted decline of 15.5% in the odds ratio of high subjective well-being as reported in row 8 of Model 2 in Table 6. Similarly, individuals who are pessimistic about their children's future have a predicted decline of 18.8% in the odds ratio of high subjective well-being (row 7 of Model 2 in Table 2). Moreover, as predicted, inclusion of these variables reduces the significance of the recession exposure variables. The relative advantage of recessive exposure disappears altogether as a statistically significant effect and the recession exposure measure diminishes in statistical significance, although it still shows a statistically significant negative effect, but with a lower p-value than shown in Model 1.

**Table 6. Logistic Regression Estimates for “Very Happy” (1994-2014 GSS Cross-section).**

	Model 1		Model 2	
	Estimate	SE	Estimate	SE
Contemporaneous Regional Unemployment Rate	-0.063**	(0.020)	-0.059**	(0.020)
<i>Experience of Recession as Young Adult</i>				
Experienced Recession when age 18-22	0.177*	(0.083)	0.129	(0.083)
Length of Recession when age 18-22	-0.274***	(0.071)	-0.220**	(0.072)
<i>Comparison with Children’s Future Standard of Living</i>				
Better Off			-0.001	(0.047)
Worse Off			-0.208***	(0.060)
No Children			0.026	(0.072)
Comparison with Parent’s Past Standard of Living			-0.168***	(0.019)

Note: N=15,857. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Standard errors in parentheses. GSS Pooled cross-sections 1994-2014; limited to individuals born after 1915 and before 1985. Recessions obtained from NBER data; exposure determined when respondent was a young adult (between 18-22 years old) during recession. Length of recession is measured in years. Certain effects not reported: race, gender marital status, children at home, employment status, income quartile, education, and year fixed effects.

Classical mediation analysis using structural equation models also supports Hypothesis 2, showing that 15.8% of the association between recession exposure and subjective well-being is mediated by intergenerational comparative expectations. Indirect effects are small, but statistically significant ( $p < 0.05$ ). Direct effects from recession exposure and intensity are larger effect sizes, but they do not quite reach classical cut offs of statistical significance ( $p < 0.10$ ). This suggests that most of the difference in recession exposure on subjective well-being is described by the variables identified in Table 6.

### 3.4.2 Panel Models: Between-Person (Persistent) vs. Within-Individual (Contemporaneous)

Table 7 reports estimates from logistic regression models of the GSS panel data 2006-2014 to disaggregate panel effects into between-person and within-person associations in order to test Hypothesis 3. Although the panel period spans eight years instead of twenty, the results are fully consistent with the cross-sectional data presented in Table 6. First, there is an identical pattern with respect to recession exposure and intensity as reported in rows one and two of Table 7, where an initial benefit to recessive exposure declines with increases in recession intensity. Second, this relationship is partially mediated by intergenerational comparative expectations, as measured by comparisons of standard of living between children and parents (Model 2 of Table 7).

The panel model shows that the effects of intergenerational comparative expectations on well-being adhere primarily to differences across *persons*. In particular, individuals holding consistently pessimistic views about children's future standard of living, or with consistently less favorable comparisons with parents' standard of living (rows 6 and 8 of Model 2 in Table 7) are less likely to have high subjective well-being. In contrast, an individual change in these attitudes over time has smaller or statistically insignificant effects (rows 11-15 of Model 2 in Table 7).



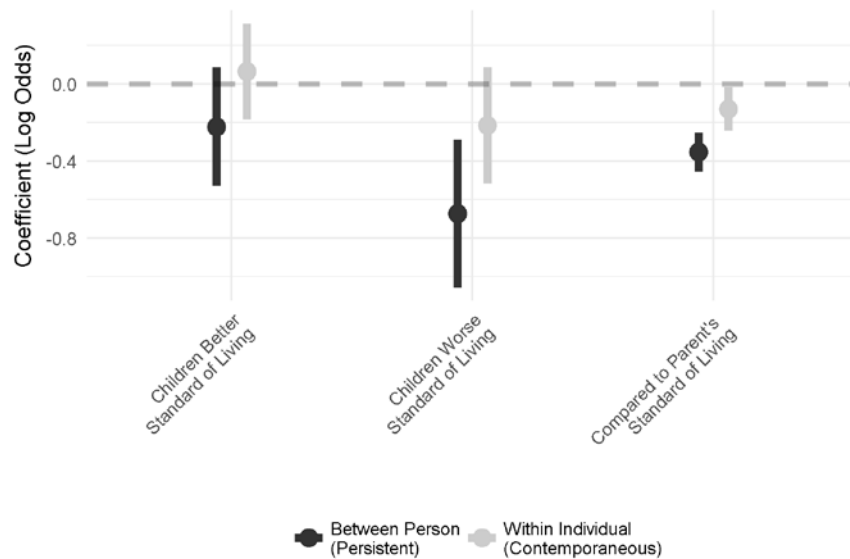
**Table 7. Hierarchical Logistic Regression Estimates for “Very Happy” (2006-2014 GSS Panels).**

	Model 1		Model 2	
	Estimate	SE	Estimate	SE
<b>Between Person Difference</b>				
<i>Experience of Recession as Young Adult</i>				
Experienced Recession when age 18-22	0.536**	(0.206)	0.441*	(0.204)
Length of Recession when age 18-22	-0.562**	(0.182)	-0.456*	(0.180)
<i>Comparison with Children’s Future Standard of Living</i>				
Better Off			-0.223	(0.157)
Worse Off			-0.647***	(0.196)
No Children			-0.333	(0.221)
Comparison with Parents’ Past Standard of Living			-0.354***	(0.052)
Contemporaneous Regional Unemp. Rate	-0.043	(0.030)	-0.016	(0.030)
<b>Within Individual Change</b>				
<i>Comparison with Children’s Future Standard of Living</i>				
Better Off			0.064	(0.127)
Worse Off			-0.216	(0.154)
No Children			0.195	(0.238)
Comparison with Parents’ Past Standard of Living			-0.130*	(0.057)
Contemporaneous Regional Unemp. Rate	-0.051**	(0.017)	-0.049**	(0.017)
Individual Error	1.861		1.820	

Note: N=8,146. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Pooled GSS three-wave panels, 2006-2014; limited to individuals born after 1915 and before 1985. Recession exposure from NBER data; length of recession measured in years. Contemporaneous unemployment rate merged from BLS data by region and interview date. Effects for race, gender marital status, children at home, employment status, income quartile, education, and year fixed effects not reported.

The relative importance of these more persistent between-person effects is better evaluated when visualized next to the contemporaneous (or within-individual) effects, which are graphically represented in Figure 4.

Figure 4 illustrates the differences in effects of intergenerational comparative expectations across two dimensions: (1) coefficients for within-individual differences (light gray) representing a contemporaneous effect, and (2) coefficients for between-person differences (black), representing more persistent associations.



**Figure 4. Estimates for Between Person and Within Individual Effects on Happiness for Intergenerational Comparisons (2006-2014 GSS Panels). 95% confidence intervals are reported. For Comparison to Parent’s Standard of Living, lower values indicate more optimistic evaluations. “Children Have Same Standard of Living” is the reference category for dichotomous predictors of comparison with children (results for “No Children” omitted). Derived from Model 2 of Table 7.**

For intergenerational comparative expectations, the between-person differences have larger effect sizes. This is not the case for other variables. Though not pictured in Figure 4, Table 7 reports effects for contemporaneously reported unemployment rates. For this variable, effect sizes are larger and statistically significant for within-individual

changes, but not for between-person effects, suggesting a less persistent effect that varies over time.

The results described in Figure 4 and Table 7 are consistent with Hypothesis 3 that differences in intergenerational comparative expectations represent differences between individuals, such as an imprint of recessive experience. In fact, there is a great deal of stability in intergenerational comparative expectations across individuals over time (less than 33% of individuals experience a change in intergenerational comparative expectations over the 6 years of observation in the GSS panels). Notably, this persistence maintains over the period—which includes the Great Recession. Taken together, this supports the notion that the experience of a recessive period as a young adult imprints an individual, influencing his or her inter-temporal judgments, measured by intergenerational comparative expectations. In turn, these differences in intergenerational comparisons are associated with different levels of subjective well-being, even years later.

### ***3.5 Discussion***

These findings suggest that at least some cohort effects are theoretically identifiable when the conditions for cohort socialization are met: (1) it occurs during a sensitive period; and (2) the exposure is sufficiently intense. The results above are consistent with the expectations of cohort socialization in three ways. First, the study finds consistent patterns whereby recessions of short duration are associated with more

optimistic attitudes and higher subjective well-being, but longer recessions are associated with more pessimistic attitudes and worse subjective well-being.

Second, this study finds that differences in relative comparisons with family members are one pathway whereby recession exposure influences subjective well-being. Three different types of models suggest this partial mediation. In both cross-sectional (Model 2, Table 6) and longitudinal (Model 2, Table 7) models, the inclusion of inter-temporal judgments reduces statistical significance of recession experience on subjective well-being. Moreover, classical mediation analysis in a structural equation model framework finds that 15.8% of the observed difference in subjective well-being across recession exposure and intensity measures is mediated by differences in intergenerational expectations.

While the level of mediation is modest, it is suggestive of a larger scale pattern. In fact, it would be odd if levels of mediation were extremely high. Full mediation of happiness by intergenerational comparative expectations would imply that happiness is *solely* related to intergenerational comparisons. Empirically, reference groups are never so monolithic. In fact, it is reasonable to expect individuals to engage in comparisons across multiple social dimensions, and perhaps even dozens (Hauret and Williams 2017). What the partial mediation shows is that intergenerational and family expectations do make up a portion of that difference, though not all. Finally, while Figure 4 does show mostly persisting associations, it is important to note that these

effects are based on a panel spanning only six years. If changes to intergenerational expectations are a slow-moving process, mediation would slowly decline over time, but the process would be difficult to observe given the limited follow up for the GSS panels.

Third, this study does show that exposure to recessions in young adulthood represents a relatively persistent impact, or an imprint, on a cohort which influences their attitudes and well-being over time. Panel models confirm that the differences related to exposures to recessive periods as a young adult are relatively persistent impacts. This contrasts to general changes in regional unemployment rates which have primarily contemporaneous associations with well-being. The hybrid fixed/random model of the GSS panel data (Model 3, Table 7) suggests that associations between intergenerational comparative expectations and subjective well-being is more likely the result of persistent differences between people than by contemporaneous fluctuations in these comparisons.

A key limitation of this study is the relatively narrow measure of attitudes and outlooks, which is restricted to intergenerational comparative expectations. This is an oversimplification because these sorts of cultural imprints are composed of complicated webs connecting various ideas (Bachrach 2014). Many additional characteristics and outlooks are potentially applicable in affecting subjective well-being in general, and many different options have been proposed for social comparisons. (Hauret and Williams 2017). It is possible that the relatively modest mediation effect is related to data

limitations in measuring differences across potential reference groups for social comparisons. More work may uncover other salient outlooks that vary across exposure to historical events.

Despite these limitations, the cohort socialization approach suggests a promising model for studying the contours of both social change and social inertia, which resists change. In particular, it provides a vehicle for identifying the importance of history in lives, and points to a methodology for matching events of historical importance to future life chances, attitudes, and outlooks.

## 4. Conclusion

In this work, I proposed and tested a theoretical mechanism to identify cohort differences that persist through time: the process of cohort socialization. Drawing on several theories using a life course lens, the mechanism of Cohort Socialization identifies cohort emergence when two conditions are met: (1) individuals in the cohort are exposed to a historical event during a sensitive period, and (2) this historical event is intense, or salient for most individuals in the cohort. These studies find evidence of this proposed mechanism in the context of repeated recessive periods and find observable, differences in subjective well-being that persist. First, the studies show that that exposure to recessions in young adulthood changes cultural outlooks. These changes in outlook consist of differences in levels of pessimism for intergenerational comparative expectations, which are comparisons of an individuals' standard of living to their parents and children. Second, these differences in intergenerational comparative expectations correlate with differences in subjective well-being in part, through exposure to recessions of differing intensity during young adulthood. These findings contrast with the contemporaneous association between changes in unemployment rates and subjective which appears after the sensitive period has passed.

These studies find evidence of cohort socialization as follows: (1) experience with a recession in young adulthood is associated with different levels of subjective well-being; (2) experience with a short recession (approaching six months) in young

adulthood is correlated with better subjective well-being (an inoculation effect), while experiencing a long recession (sixteen months or more) is associated with lower subjective well-being (a scar effect); and (3) differences in intergenerational comparative expectations partially mediate these differences in subjective well-being.



## Appendix A. Replication of Pattern in the Health and Retirement Study Using Depressive Symptoms.

This appendix uses the same approach as Chapter 2, but uses the Health and Retirement Study (HRS) (University of Michigan and Rand Corp. 2016), and a different dependent variable: depressive symptoms. A few years ago, researchers documented their inability to replicate most important psychological studies (Collaboration 2015). Some argue that this is related to the publication processes and is of particular concern where there are small effects with relatively high variance tested on small samples (Gelman and Carlin 2014: 644-645). While the GSS sample is reasonably large, the theory outlined in Chapter 2 together with difficulties in measurement predict small effects with high variance. To minimize the possibility that the recession exposure effects outlined in Chapter 2 are a false positive, this appendix presents results of a similarly designed study over the same sample period (1994-2014), but using a different longitudinal dataset, and a closely related, but different outcome: depressive symptoms.

Chapter 2 produces two findings relevant to recessive periods. First, that recession exposure for young adults has a persisting impact on future well-being. Second, that the direction of the association depends on the recession intensity (measured by the duration of the recession). Short recessions (approaching six months) have an “inoculation” effect, and are associated with better subjective well-being than no exposure to a recession. In contrast, long recessions (approaching eighteen months) have

a “scar” effect, and are associated with worse subjective well-being than no exposure to a recession.

I anticipate an identical pattern in the HRS. I expect that short recessions will be beneficial, *i.e.*, experiencing a shorter recession is associated with lower average levels of depressive symptoms. I expect that experiencing a longer recession is associated with higher average levels of depressive symptoms. The HRS has many more individuals and observations than the GSS making it possible to (1) analyze recession exposure as a dummy variable series instead of as a continuous measure, and (2) extend the analysis to additional economic downturns which occurred further in the past (including the Great Depression and back to 1908 as identified in Table 11 of Appendix B). In both of these circumstances, the pattern still holds.

Finally, this replication will confirm how persistent recession exposure effects may be. As discussed in Chapter 2, the sampling frame of the GSS cross-section includes a few individuals who experienced a recession as a young adult (18-22) in the past year (for cross-sectional analyses) or as long as five years ago (for the panel analyses). Because the HRS includes individuals who are 50 at enrollment in the study, the minimum time since exposure to a recession as a young adult is 28 years earlier, almost 6 times longer than the minimum time since exposure identified in the GSS.

## ***A.1 Data and Analytic Strategy***

The HRS is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and is conducted by the University of Michigan. It is a probability-based sample of non-institutionalized adults 50 years and older. The HRS started in 1992 and collects data every two years. As older cohorts age, the HRS refreshes the panel with samples of younger cohorts. I do not use the 1992 wave because some of the items are different in that first wave from subsequent waves.

The outcome variable is *depressive symptoms*, measured using the Center for Epidemiological Studies Depression 8 item scale (CESD-8). This scale is a sum of the following dichotomous measures: felt depressed; felt everything was an effort; sleep was restless; could not get going; felt lonely; enjoyed life (reverse coded); felt sad; was happy (reverse coded). While depressive symptoms and subjective well-being are generally inversely correlated, they are not perfectly correlated, and often relate to slightly different constructs (Ross and Mirowski 2003:25-27). The differences are not directly salient to the theory outlined in Chapter 2, however, and both variables should show similar patterns, because the mechanism should operate similarly to that outlined in Chapter 2.

In this study, I operationalize the same controls in the same way as in the models predicting subjective well-being, with a handful of exceptions. I control for age, gender, race and ethnicity, education, marital status (including cohabitation), household income,

and household wealth. I do not include the number of children living at home, however. For wealth and income, I use imputations for wealth and income which were calculated and supplied by Rand, and I transform the variables by taking their natural log (Pantoja et al. 2016). Before taking the natural log of wealth, I add the maximum value plus 1 (so all values are non-negative). To preserve information related to negative net worth, I include a dummy indicator of 1 for respondents with negative net worth (0 otherwise).

I employ the same analytic strategy used for panel models in both Chapters 2 and 3 of the GSS; a “hybrid” random effects model (pp.24-27), but I assume the outcome is linear. Individual trajectories are relatively flat, and do not show statistically different individual growth curves. For most of the analyses I use similar restrictions on the sample by excluding individuals who experienced the Great Depression when they were 18-22 years old or younger by limiting the sample to those who were born after 1915. (Individuals who were 18-22 during the Great Recession of 2007 do not fall within the sampling frame of the HRS).

In addition to replicating the models as described, I also conduct sensitivity analyses: (1) by modeling recession exposure as a dummy variable series (a seven-level nominal variable identifying the intensity of the recession experienced as a young adult); and (2) dropping the birth cohort restriction from the HRS altogether (resulting in a 13-level nominal variable for recession intensity). In all models treating recession intensity and exposure together as a factor, the failure to experience a recession is the reference

category. Unlike the GSS, when RAND imputations for income and wealth are included, missing data is relatively low in the HRS (the bulk of the missing data on the dependent variable; otherwise missing proportions are less than 1%). Accordingly, I use list-wise deletion instead of multiple imputation.

## ***A.2 Results and Discussion***

Table 8 reports descriptive statistics from the relevant variables. Table 8 shows a similar pattern for depressive symptoms that was described in Table 1 for high subjective well-being. Those who experienced a recession of less than one year as a young adult have fewer average depressive symptoms than anyone else, and those who experienced a long recession as a young adult have the highest average number of depressive symptoms. In part, because this is a larger longitudinal sample, average levels of nearly all variables show statistical differences.

There are a few more differences across recession exposure as well. Most notable is potentially differential mortality, where those experiencing no recessions have higher proportions of observed deaths than the other two exposure categories. In addition, there are relatively few individuals who did not experience a recession as a young adult (2,965). More than four times this number (19,899) experienced a short recession, and more than twice as many experienced a long recession (10,918). In addition, some of these differences, while statistically significant, are substantively very small, such as the differences in average ages, which in no case exceeds 2 years.

**Table 8. Proportions and Means with Standard Deviations across Levels of Recession Exposure as Young Adult, Age 18-22 (1994-2014 HRS).**

	Length of Recession Experienced as Young Adult						Miss.
	None		< 1 Year		≥ 1 Year		
	Mean	SD	Mean	SD	Mean	SD	
Depressive Symptoms <sup>abc</sup>	1.468	(1.919)	1.428	(1.947)	1.708	(2.112)	0.074
<i>Work Status</i>							
Retired <sup>abc</sup>	0.556		0.599		0.433		0.009
Unemp <sup>abc</sup>	0.129		0.123		0.156		0.009
Age <sup>abc</sup>	67.822	(10.741)	67.412	(8.397)	66.174	(13.376)	0.000
U/E Rate <sup>abc</sup>	5.791	(1.753)	5.847	(1.747)	6.627	(1.950)	0.004
<i>Wealth</i>							
Log <sup>bc</sup>	15.368	(0.122)	15.369	(0.143)	15.351	(0.124)	0.000
Negative <sup>bc</sup>	0.036		0.040		0.079		0.000
Log Inc <sup>ac</sup>	10.397	(1.378)	10.376	(1.348)	10.218	(2.100)	0.000
Year <sup>abc</sup>	2003.653	(5.998)	2003.870	(6.186)	2006.590	(3.033)	0.000
Male <sup>abc</sup>	0.402		0.439		0.404		0.000
Married <sup>bc</sup>	0.627		0.661		0.544		0.001
<i>Race/Ethnicity</i>							
White <sup>bc</sup>	0.812		0.807		0.716		0.001
Black <sup>bc</sup>	0.144		0.150		0.196		0.001
Other <sup>abc</sup>	0.045		0.043		0.088		0.001
Mortality <sup>abc</sup>	0.367		0.267		0.243		0.000
Waves Obs. <sup>abc</sup>	6.784	(3.127)	6.950	(3.397)	4.183	(2.369)	0.000
Observations	19,585		136,837		38,981		
Individuals	2,965		19,899		10,198		

**Note:** Sample limited to those born after 1915. Summary statistics for *mortality* and *waves observed* are measured at individual level; all other variables measured at observation (person-wave) level. Recession exposure indicates respondent was 18-22 years old during recession recorded by NBER. Contemporaneous unemployment rate (U/E rate) merged from BLS data by region and interview date. **a** columns 1 and 3 different mean/proportion,  $p < 0.05$ ; **b** columns 1 and 6 different mean/proportion,  $p < 0.05$ ; **c** columns 3 and 6 different mean/proportion,  $p < 0.05$ .

Table 9 presents estimates of the hybrid regression of the same form described in Chapter 2.

**Table 9. Hierarchical Linear Regression Estimates for Count of Depressive Symptoms (1994-2014 HRS).**

	Estimate	Std. Error
<b>Between Person Difference</b>		
Intercept	3.250***	(1.305)
<i>Experience of Recession as Young Adult (18-22)</i>		
Exposure to Recession (dummy)	-0.208***	(0.052)
Intensity as Measured by Recession Length	0.219***	(0.045)
Contemporaneous Unemployment Rate	-0.034***	(0.009)
<i>Work Status</i>		
Retired	0.814***	(0.031)
Unemployed	1.414***	(0.038)
Log Wealth	-1.260***	(0.087)
Negative Wealth	1.067***	(0.052)
Income	-0.173***	(0.008)
Male	-0.105***	(0.018)
Age	-0.018***	(0.001)
Married	-0.451***	(0.013)
<i>Race/Ethnicity</i>		
Black	0.049*	(0.023)
Other	0.257***	(0.035)
<b>Within Individual Change</b>		
Contemporaneous Unemployment Rate	0.016**	(0.006)
<i>Employment Status</i>		
Retired	0.078***	(0.013)
Unemployed	0.235***	(0.017)
Log Wealth	-0.041	(0.043)
Negative Net Worth	0.187***	(0.020)
Income	-0.026***	(0.003)
Individual Error	1.380	

Note: N=171,210. Sample limited to those born after 1915. Standard errors in parentheses. Recession exposure from NBER data; length of recession measured in years. Contemporaneous unemployment rate merged from BLS data by region and interview date. Year fixed effects not reported.

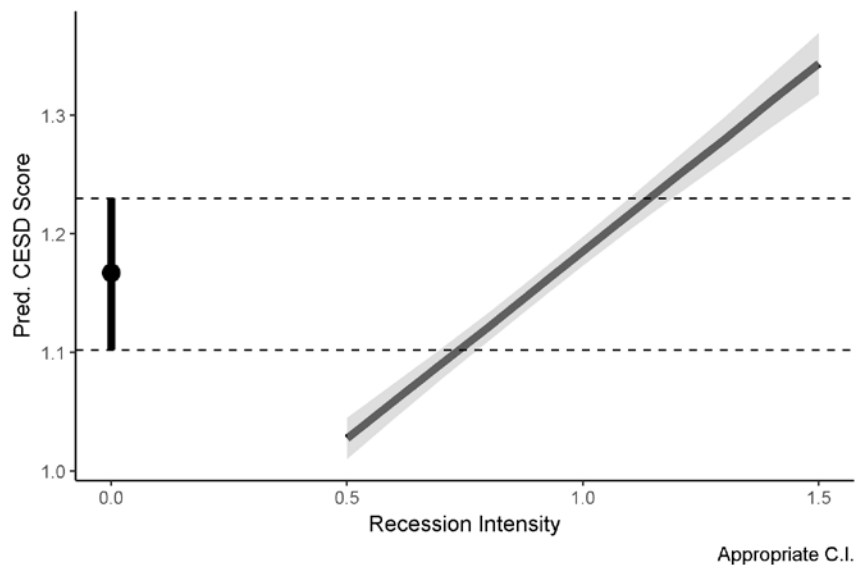
\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

As with effects reported in Chapter 2, Table 9 shows similar first-order associations between recession exposure depressive symptoms in the HRS as was described for as subjective well-being in the GSS.

Exposure to recessions as a young adult is associated with fewer depressive symptoms. Recessions of longer length are associated with higher average counts of depressive symptoms. These effects are of roughly similar magnitude, providing a similar interaction effect that is difficult to visualize from the table alone. Interestingly, despite the similar long-term associations with recession exposure as identified in Chapter 2, the association with the contemporaneous unemployment rate is opposite: higher unemployment rates are associated with fewer depressive symptoms (the within-individual coefficient).

Figure 5 depicts predicted levels of depressive symptoms based on the model reported in Table 9. In Figure 5, continuous variables are held at their means, and dummy variables are set to 0. Figure 5 shows a consistent gradient where individuals who experienced a short recession in young adulthood have fewer depressive symptoms on average, in parallel with Figure 1. This benefit disappears with the length of the recession. Similarly, results reported in Figure 5 are generally consistent with analyses reported in Chapter 2.

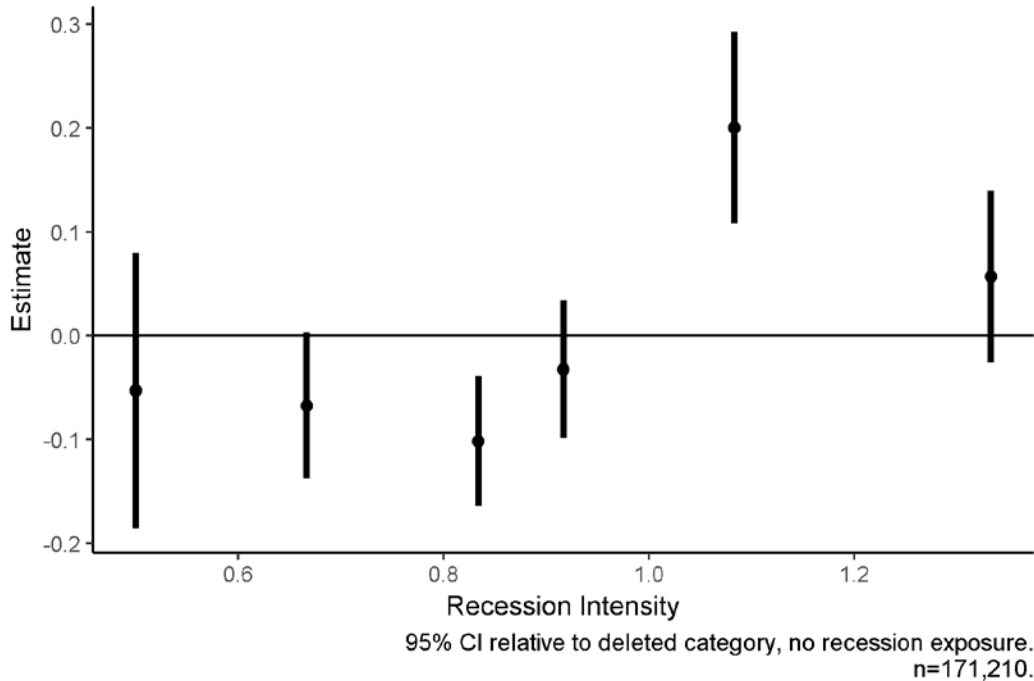




**Figure 5. Predicted Depressive Symptoms (CESD) Across Levels of Recession Intensity (1994-2014 HRS; born after 1915). Estimates derived from mod Table 9. Intensity measured by years of consecutive decline for recession experienced as a Young Adult (age 18-22). 95% C.I. for point; shading indicates dynamically adjusted C.I. calculated so that overlap with dashed lines represents statistically significant difference of predicted probabilities at  $p < 0.05$ .**

Some suggest controlling for mortality selection by including (1) a dummy indicator for whether the individual died during the observation period, and (2) a count for the number of waves observed (Warner and Brown 2011). Inclusion of these variables diminishes the gradient in Figure 5, suggesting that some of the difference in depressive symptoms may be related to differential mortality across exposure to length of recessions.

Unlike the GSS, the HRS has sufficient observations to investigate the impact of the length of recession exposure in more detail.



**Figure 6. Hierarchical Regression Estimates (Between-Person) for Recession Exposure (Modeled as Dummy Variable Series) on Depression (1994-2014 HRS). Intensity measured by years of consecutive decline for recession experienced as a Young Adult (age 18-22). Based on GSS Analytic Sampling Frame, *i.e.*, excludes individuals born after 1915. 95% CI reported; n=171,210. Model not reported; includes all controls.**

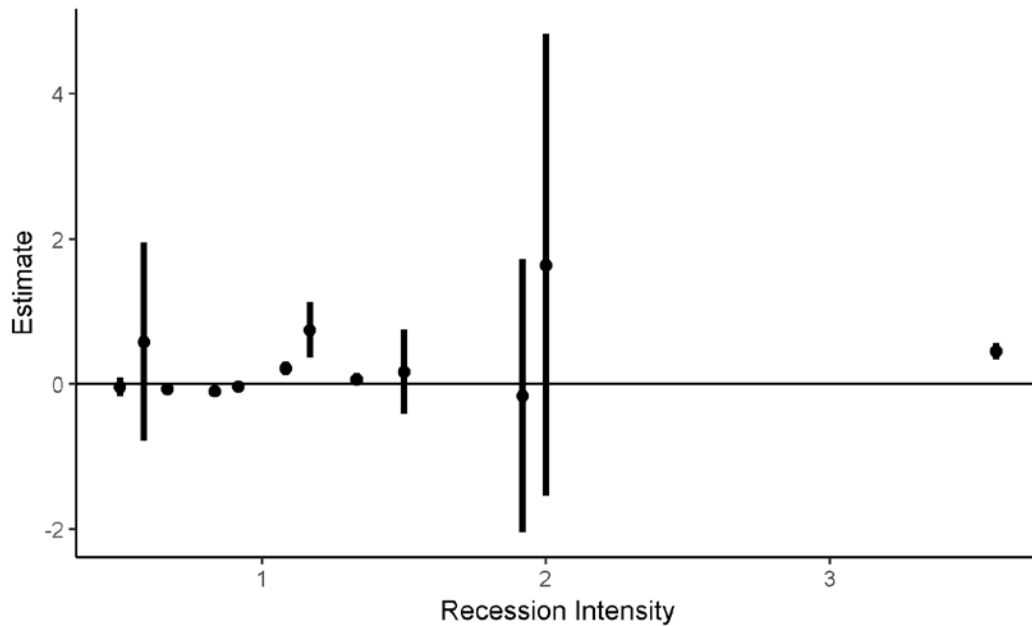
Figure 6 treats the length of the recession as a nominal variable, with no recession exposure as a young adult serving as the reference. As before, there is a general pattern where short recessions are beneficial, and long-recessions are not. However, there are not very many long recessions when the sample is limited to exclude economic downturns from the Great Depression and before.

As identified in Table 10 of the Appendix B, most of the recessive periods longer than one year occurred prior to the Great Depression (1929-1933). With the sampling frame limited to those born too late to even experience the Great Depression, the ability to statistically identify the effect of long recessions is greatly reduced. For the analyses in the GSS and reported above, there were only three recessions lasting longer than a year (1937, 1973, and 1981; Table 10) between 1934 and 2006 (though 31% of the analytic sample was exposed to these three long recessions as a young adult).

Importantly, the period of the Great Moderation began in the early 1980s, which was characterized by less frequent and less intense recessive periods (Bernanke 2013). Expanding the analytic frame of the HRS to include decades more of recession exposure adds only one recession shorter than a year, but adds eight recessions longer than one year to the analytic dataset as summarized in Table 10. Using the same dummy variable series for Figure 6, but using the expanded analytic frame, Figure 7 shows a similar pattern as displayed in Figure 6, with a difference between recessions lasting more than a year and those lasting less than a year.<sup>8</sup>

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<sup>8</sup> Models similar to those producing effects estimated in Figures 6 and 7, but including variables for mortality selection and attrition as described in the text, suggest that mortality and attrition diminish the strength of the effects, but do not eliminate them.



**Figure 7. Estimates for Recession Exposure (Modeled as Dummy Variable Series) on Depression (1994-2014 HRS). No limit on sampling frame. Intensity measured by years of consecutive decline for recession experienced as a Young Adult (age 18-22). 95% CI reported; n=185,636. Model not reported; includes all controls.**

In virtually every case, exposure to short recessions (under one year) represents a benefit. Recessions longer than a year represent a persistent scar as average levels of depressive symptoms are higher. Thus, the small, but persistent effect of recession exposure on well-being is observable in two different datasets and across different cohorts, using two different measures of well-being. As such, the findings presented in Chapter 2 are less likely to simply arise out of random sampling from the GSS. In addition, utilization of the HRS, where minimum exposure to the recessive period

occurred nearly thirty years ago, provides more evidence that this exposure is a persisting effect.

## Appendix B. Supplemental Tables and Figures

Table 10. United States Recessions 1908 to 2006.

Recession Start Date	Length		Exposure Unobservable	
	Months	Years	GSS	HRS
	<i>Less than one year</i>			
January 1980	6	0.50		
August 1918	7	0.58	X	
February 1945	8	0.67		
August 1957				
July 1990				X
March 2001				X
July 1953	10	0.83		
April 1960				
November 1948	11	0.92		
December 1969				
	<i>Greater than one year</i>			
October 1926	13	1.08	X	
May 1937				
May 1923	14	1.17	X	
November 1973	16	1.33		
July 1981				
January 1920	18	1.50	X	
January 1913	23	1.92	X	
January 1910	24	2	X	
August 1929	42	3.5	X	

Note: Minimum observed birth year in HRS panel is 1890, making 1910 the first observed recession exposure when some respondents were between 18 and 22 at the time. Maximum observed birth year in HRS panel is 1964. Birth year constrained after 1915 and before 1985 for the GSS as described in Chapter 2.

**Table 11. Example of Coding for Recession Exposure and Intensity.**

Birth Year	Age During Year Depression Began	Age During Year		Exposed as Young Adult?	Intensity Measure
		Depression Ended			
1906	23	27		No	0
1907	22	26		Yes	3.5
1908	21	25		Yes	3.5
1909	20	24		Yes	3.5
1910	19	23		Yes	3.5
1911	18	22		Yes	3.5
1912	17	21		Yes	3.5
1913	16	20		Yes	3.5
1914	15	19		Yes	3.5
1915	14	18		Yes	3.5
1916	13	17		No	0
1917	12	16		No	0
1918	11	15		No	0

Note: Table shows exposure to Great Depression (August 1929 to January 1933). Boxes indicate critical ages 18-22.

**Table 12. Logistic Regression Estimates for “Very Happy” (1994-2014 GSS Cross-section): Multiple Measures of Young Adulthood.**

	Estimate	SE
<i>Experience of Recession as Young Adult</i>		
Length of Recession Age 16-17	0.003	(0.094)
Exposed to Recession Age 16-17	0.066	(0.069)
Length of Recession Age 18-22	-0.362 ***	(0.082)
Exposed to Recession Age 18-22	0.317 **	(0.097)
Length of Recession Age 23-26	-0.276 *	(0.114)
Exposed to Recession Age 23-26	0.094	(0.070)
<b>Controls</b>		
Intercept	-1.895 ***	(0.223)
Female	0.121 **	(0.041)
Contemporaneous Regional Unemp. Rate	-0.061 **	(0.022)
<i>Labor Status (Ref=Employed)</i>		
Unemployed	-0.106	(0.057)
Retired	0.184 *	(0.074)
Education	0.020 **	(0.007)
Black	-0.048	(0.064)
Married	0.970 ***	(0.046)
<i>Income Quartile (Ref = Lowest)</i>		
2 <sup>nd</sup> Quartile	0.091	(0.062)
3 <sup>rd</sup> Quartile	0.392 ***	(0.064)
4 <sup>th</sup> Quartile	0.528 ***	(0.072)
Children Under Age 7 at Home	0.030	(0.039)
Children Aged 7-12 at Home	-0.124 **	(0.042)
Children Aged 13-17 at Home	-0.016	(0.033)
Age	0.006 **	(0.002)
<i>Year Fixed Effects (ref=1994)</i>		
1996	0.051	(0.089)
1998	0.043	(0.099)
2000	0.060	(0.106)
2002	-0.069	(0.108)
2004	-0.033	(0.114)
2006	-0.088	(0.101)
2008	-0.155	(0.106)
2010	-0.010	(0.121)



2012	0.035	(0.104)
2014	-0.080	(0.096)

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Note: N=15,857. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Estimates and standard errors (SE) calculated using multiple imputation. GSS Pooled cross-sections 1994-2014; limited to individuals born after 1915 and before 1985. Recession exposure from NBER data; length of recession measured in years. Contemporaneous unemployment rate merged from BLS data by region and interview date.

**Table 13 Logistic Regression Estimates for “Very Happy” (1994-2014 GSS Cross-section): Alternative Intensity Operationalizations.**

	Model 1		Model 2	
	Estimate	SE	Estimate	SE
Regional Unemployment Rate	-0.053 **	(0.016)	-0.054 **	(0.016)
<i>Exposure to Recession as Young Adult (age 18-22)</i>				
Exposure (dummy)	0.096 +	(0.052)	0.074 +	(0.043)
Intensity: Sum of Years Individual Exposed	-0.839 *	(0.304)		
Intensity: Average of Recession Lengths			-0.232 **	(0.073)
<i>Income Quartiles (ref=lowest)</i>				
2 <sup>nd</sup> Quartile	0.108	(0.058)	0.108	(0.058)
3 <sup>rd</sup> Quartile	0.379 ***	(0.060)	0.381 ***	(0.060)
4 <sup>th</sup> Quartile	0.501 ***	(0.074)	0.506 ***	(0.074)
<i>Employment Status (ref=employed)</i>				
Unemployed	0.288 ***	(0.066)	0.275 ***	(0.066)
Retired	-0.052	(0.051)	-0.054	(0.051)
Age	0.004 *	(0.002)	0.004 *	(0.002)
Children Under Age 7 at Home	0.026	(0.037)	0.024	(0.037)
Children Aged 7-12 at Home	-0.030	(0.031)	-0.028	(0.031)
Children Aged 13-17 at Home	-0.142 ***	(0.040)	-0.137 ***	(0.040)
Education in years	0.022 **	(0.007)	0.021 **	(0.007)
Female	0.133 ***	(0.038)	0.133 ***	(0.038)
Married/Cohabiting	0.962 ***	(0.042)	0.962 ***	(0.042)
Black	-0.065	(0.057)	-0.065	(0.057)
<i>Year Fixed Effects (ref=1994)</i>				
1996	0.045	(0.083)	0.044	(0.083)
1998	0.071	(0.091)	0.071	(0.091)
2000	0.048	(0.098)	0.047	(0.098)
2002	-0.038	(0.100)	-0.040	(0.100)
2004	-0.044	(0.104)	-0.046	(0.104)
2006	-0.088	(0.092)	-0.090	(0.092)
2008	-0.159	(0.096)	-0.162	(0.096)
2010	0.036	(0.109)	0.032	(0.109)
2012	0.026	(0.094)	0.021	(0.094)
2014	-0.015	(0.087)	-0.019	(0.087)
Constant	-1.748 ***	(0.198)	-1.753 ***	(0.198)

Note: +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . N=15,857. Standard errors in parentheses. *Exposure* measures recession exposure as described in Chapter 2. *Exposure Count* sums the number of years between 18 and 22 an individual experienced a recession, and the *Average Exposure* averages the length of exposure for those individuals exposed to two recessions between 18 and 22 (constituting approximately 13% of the sample). Measure in Chapter 2 and 3 for Recession Intensity measures the intensity using the duration of the last recession exposure only.



84% Intervals

**Figure 8. Predicted Probabilites for Measured Exposure to a Recessive Period (1994-2014 GSS Cross-sections). *Recession Exposure* as a young adult (ages 18-22) sums the number of years between 18 and 22 that an individual actually experienced a recessive period). Calculated from Model 2 of Table 13.**

## Works Cited

- Adkins, Daniel, Victor Wang, Matt Dupre, Edwin van den Oord, and Glenn Elder. 2009. "Structure and Stress: Trajectories of Depressive Symptoms across Adolescence and Young Adulthood." *Social Forces* 88(1):31–60.
- Aguiar, Mark, Erik Hurst, and Loukas Karabarbounis. 2013. "Time Use during the Great Recession." *American Economic Review* 103(5):1664–96.
- Allison, Paul David. 2009. *Fixed Effects Regression Models*. Los Angeles: SAGE.
- Arnett, Jeffrey Jensen. 2004. *Emerging Adulthood: The Winding Road from the Late Teens through the Twenties*. Oxford University Press.
- Bachrach, Christine A. 2014. "Culture and Demography: From Reluctant Bedfellows to Committed Partners." *Demography* 51(1):3–25.
- Bardo, Anthony R., Scott M. Lynch, and Kenneth C. Land. 2017. "The Importance of the Baby Boom Cohort and the Great Recession in Understanding Age, Period, and Cohort Patterns in Happiness." *Social Psychological and Personality Science* 8(3):341–50.
- Benson, Janel E. 2014. "Transition to Adulthood." Pp. 1763–83 in *Handbook of Child Well-Being*, edited by A. Ben-Arieh, F. Casas, I. Frønes, and J. E. Korbin. Dordrecht: Springer Netherlands.
- Bernanke, Ben. 2013. "The Great Moderation." Pp. 145–62 in *The Taylor Rule and the Transformation of Monetary Policy*, edited by E. Koenig, R. Leeson, and G. Kahn. Hoover Press.
- Bianchi, Emily C. 2013. "The Bright Side of Bad Times: The Affective Advantages of Entering the Workforce in a Recession." *Administrative Science Quarterly* 58(4):587–623.
- BLS. 2015. "BLS Public Data API." *BLS Public Data API*. Retrieved February 23, 2015 (<http://www.bls.gov/developers/home.htm>).
- BLS. 2016. "Local Area Unemployment Statistics Overview." *Local Area Unemployment Statistics Overview*. Retrieved May 3, 2016 (<http://www.bls.gov/lau/lauov.htm>).
- Bourdieu, Pierre. 1984. *Distinction: A Social Critique of the Judgment of Taste*. Harvard University Press.

- Braveman, Paula. 2014. "What Is Health Equity: And How Does a Life-Course Approach Take Us Further Toward It?" *Maternal and Child Health Journal* 18(2):366–72.
- Brochu, Pierre, Catherine Deri Armstrong, and Louis-Philippe Morin. 2012. "The 'Trendiness' of Sleep: An Empirical Investigation into the Cyclical Nature of Sleep Time." *Empirical Economics* 43(2):891–913.
- Burgard, Sarah A. and Lucie Kalousova. 2015. "Effects of the Great Recession: Health and Well-Being." *Annual Review of Sociology* 41(1):181–201.
- Catalano, Ralph and C. David Dooley. 1977. "Economic Predictors of Depressed Mood and Stressful Life Events in a Metropolitan Community." *Journal of Health and Social Behavior* 18(3):292–307.
- Collaboration, Open Science. 2015. "Estimating the Reproducibility of Psychological Science." *Science* 349(6251):aac4716.
- Deiner, Ed and Frank Fujita. 1997. "Social Comparisons and Subjective Well-Being." Pp. 329–57 in *Health, coping, and well-being: Perspectives from social comparison theory*. Nahwah, NJ, US: Erlbaum Associates Publishers.
- Domingue, Ben W., Hexuan Liu, Aysu Okbay, and Daniel W. Belsky. 2016. "Genetic Heterogeneity in Depressive Symptoms Following the Death of a Spouse: Polygenic Score Analysis of the US Health and Retirement Study." *bioRxiv* 065847.
- Elder, Glen H. Jr. [1974] 1999. *Children of the Great Depression: Social Change in Life Experience*. 25th anniversary ed. Boulder, Colo: Westview Press.
- Elder, Glen H. Jr. 1985. *Life Course Dynamics: Trajectories and Transitions, 1968-1980*. Cornell University Press.
- Elder, Glen H. Jr. 1998. "The Life Course as Developmental Theory." *Child Development* 69(1):1–12.
- Elder, Glen H. Jr. and Avshalom Caspi. 1988. "Economic Stress in Lives: Developmental Perspectives." *Journal of Social Issues* 44(4):25–45.
- Elder, Glen H. Jr., Monica Kirkpatrick Johnson, and Robert Crosnoe. 2003. "The Emergence and Development of Life Course Theory." Pp. 3–19 in *Handbook of the Life Course, Handbooks of Sociology and Social Research*. Springer, Boston, MA.

- Firebaugh, Glenn and Matthew B. Schroeder. 2009. "Does Your Neighbor's Income Affect Your Happiness?" *American Journal of Sociology* 115(3):805–31.
- Fomby, Paula and Andrew J. Cherlin. 2007. "Family Instability and Child Well-Being." *American Sociological Review* 72(2):181–204.
- Garipey, Genevieve, Frank J. Elgar, Mariane Sentenac, and Christopher Barrington-Leigh. 2017. "Early-Life Family Income and Subjective Well-Being in Adolescents." *Plos One* 12(7):e0179380.
- Gelman, Andrew and John Carlin. 2014. "Beyond Power Calculations: Assessing Type S (Sign) and Type M (Magnitude) Errors." *Perspectives on Psychological Science* 9(6):641–51.
- George, Linda. 2009. "Conceptualizing and Measuring Trajectories." Pp. 163–86 in *The Craft of Life Course Studies*, edited by G.H. Elder, Jr. and J.Z. Giele. Laguna Beach, CA: Guilford.
- George, Linda K. 2011. "As Time Goes By: Gerontological and Life Course Musings." Pp. 645–649 in *Handbook of Sociology of Aging*. Springer.
- George, Linda K. 2013. "Life Course Perspectives on Mental Health." in *Handbook of the Sociology of Mental Health*, edited by C. S. Aneshensel, J. C. Phelan, and A. Bierman. New York: Springer.
- George, Linda K. 1993. "Sociological Perspectives on Life Transitions." *Annual Review of Sociology* 19(1):353–373.
- George, Linda K. 2010. "Still Happy After All These Years: Research Frontiers on Subjective Well-Being in Later Life." *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 65B(3):331–39.
- George, Linda K. 2014. "Taking Time Seriously: A Call to Action in Mental Health Research." *Journal of Health and Social Behavior* 55(3):251–64.
- Hagerty, Michael R. 2003. "Was Life Better in the 'Good Old Days'? Intertemporal Judgments of Life Satisfaction." *Journal of Happiness Studies* 4(2):115–39.
- Hale, Jo Mhairi. 2017. "Cognitive Disparities: The Impact of the Great Depression and Cumulative Inequality on Later-Life Cognitive Function." *Demography* 54(6):2125–58.

- Hales, C. N. and D. J. Barker. 2001. "The Thrifty Phenotype Hypothesis." *British Medical Bulletin* 60:5–20.
- Hauret, Laetitia and Donald R. Williams. 2017. "Relative Income and Pay Satisfaction: Further Evidence on the Role of the Reference Group." *Journal of Happiness Studies* 1–23.
- Hayward, Mark D. and Bridget K. Gorman. 2004. "The Long Arm of Childhood: The Influence of Early-Life Social Conditions on Men's Mortality." *Demography* 41(1):87–107.
- Henderson, Andrea K. 2016. "The Long Arm of Religion: Childhood Adversity, Religion, and Self-Perception Among Black Americans." *Journal for the Scientific Study of Religion* 55(2):324–48.
- Hitlin, Steven and Monica Kirkpatrick Johnson. 2015. "Reconceptualizing Agency within the Life Course: The Power of Looking Ahead." *American Journal of Sociology* 120(5):1429–72.
- Hoelter, Lynette, Jennifer Johnson-Hanks, Rosalind Berkowitz King, and Pamela J. Smock. 2011. *Understanding Family Change and Variation: Toward a Theory of Conjunctural Action*. Dordrecht; New York: Springer.
- Johnson, Monica Kirkpatrick and Steven Hitlin. 2017. "Family (Dis)Advantage and Life Course Expectations." *Social Forces* 95(3):997–1022.
- Johnson, Monica Kirkpatrick and Stefanie Mollborn. 2009. "Growing up Faster, Feeling Older: Hardship in Childhood and Adolescence." *Social Psychology Quarterly* 72(1):39–60.
- Johnson, Monica Kirkpatrick, Rayna Amber Sage, and Jeylan T. Mortimer. 2012. "Work Values, Early Career Difficulties, and the U.S. Economic Recession." *Social Psychology Quarterly* 75(3):242–67.
- Lam, Jack, Wen Fan, and Phyllis Moen. 2014. "Is Insecurity Worse for Well-Being in Turbulent Times? Mental Health in Context." *Society and Mental Health* 4(1):55–73.
- Link, Bruce G. 2008. "Epidemiological Sociology and the Social Shaping of Population Health." *Journal of Health and Social Behavior* 49(4):367–84.
- Lynch, Scott and Bryce Bartlett. n.d. "Appropriate Confidence Intervals for 'Eyeballing' Statistically Significant Differences Between Groups." Unpublished Manuscript.



- Lynch, Scott M. and J. Scott Brown. 2005. "A New Approach to Estimating Life Tables with Covariates and Constructing Interval Estimates of Life Table Quantities." *Sociological Methodology* 35(1):177–225.
- Mannheim, Karl. [1927] 1993. "The Problem of Generations." Pp. 351–98 in *From Karl Mannheim*, edited by K. Wolff. New Brunswick, N.J: Transaction Publishers.
- McInerney, Melissa and Jennifer M. Mellor. 2012. "Recessions and Seniors' Health, Health Behaviors, and Healthcare Use: Analysis of the Medicare Current Beneficiary Survey." *Journal of Health Economics* 31(5):744–51.
- McLeod, Jane D. 2012. "The Meanings of Stress: Expanding the Stress Process Model." *Society and Mental Health* 2(3):172–86.
- McLeod, Jane D. and Michael J. Shanahan. 1996. "Trajectories of Poverty and Children's Mental Health." *Journal of Health and Social Behavior* 37(3):207–20.
- Moen, Phyllis. 2014. "Constrained Choices: The Shifting Institutional Contexts of Aging and the Life Course." Pp. 175–216 in *New Directions in the Sociology of Aging*, edited by L. J. Waite, T. J. Plewes, and National Research Council (U.S.). Washington, D.C: National Academies Press.
- Moen, Phyllis. 2016. "Work Over the Gendered Life Course." Pp. 249–75 in *Handbook of the Life Course: Volume II*, edited by M. J. Shanahan, J. T. Mortimer, and M. Kirkpatrick Johnson. Cham: Springer International Publishing.
- Mueller, Collin and Bryce Bartlett. 2017. "Heterogeneity in U.S. Immigration Policy Regimes and Mexican American Functional Limitation Trajectories," *Journals of Gerontology, Series B*, gbx026 (Advance Articles, <https://doi.org/10.1093/geronb/gbx026>).
- NBER. 2010. "U.S. Business Cycle Expansions and Contractions." *U.S. Business Cycle Expansions and Contractions*. Retrieved May 2, 2016 (<http://www.nber.org/cycles.html>).
- NORC. 2012. "General Social Survey." Retrieved (<http://www3.norc.org/GSS+Website/>).
- Pampel, Fred. 2011. "Cohort Changes in the Socio-Demographic Determinants of Gender Egalitarianism." *Social Forces* 89(3):961–82.

- Pampel, Fred C. and Lori M. Hunter. 2012. "Cohort Change, Diffusion, and Support for Environmental Spending in the United States." *American Journal of Sociology* 118(2):420–48.
- Pearlin, Leonard I. 2010. "The Life Course and the Stress Process: Some Conceptual Comparisons." *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 65B(2):207–15.
- Pearlin, Leonard I., Carol S. Aneshensel, and Allen J. Leblanc. 1997. "The Forms and Mechanisms of Stress Proliferation: The Case of AIDS Caregivers." *Journal of Health and Social Behavior* 38(3):223–36.
- Proietti, Tommaso. 2003. "Forecasting the US Unemployment Rate." *Computational Statistics & Data Analysis* 42(3):451–76.
- Pantoja, Phillip, Delia Bugliari, Nancy Campbell, Chris Chan, Orla Hayden, Michael Hurd, Regan Main, Joshua Mallett, Colleen McCullough, Erik Meijer, Michael Moldoff, Susann Rohwedder, and Patricia St. Clair. 2016. "RAND HRS Income and Wealth Imputations, Version P." Retrieved (<http://hrsonline.isr.umich.edu/modules/meta/rand/randincwlth/randiwp.pdf>).
- Raudenbush, Stephen W. 2002. *Hierarchical Linear Models: Applications and Data Analysis Methods*. 2nd ed. Thousand Oaks: Sage Publications.
- Reynolds, John R. and Catherine E. Ross. 1998. "Social Stratification and Health: Education's Benefit Beyond Economic Status and Social Origins." *Social Problems* 45(2):221–47.
- Riley, Matilda White. 1994. "Aging and Society: Past, Present, and Future." *The Gerontologist* 34(4):436–46.
- Riley, Matilda White and John W. Riley Jr. 1994. "Structural Lag: Past and Future." Pp. 15–36 in *Age and Structural Lag: Society's Failure to Provide Meaningful Opportunities in Work, Family, and Leisure*, edited by M. W. Riley, R. L. Kahn, A. Foner, and K. A. Mack. Oxford, England: John Wiley & Sons.
- Ross, Catherine E. and John Mirowsky. 2003. *Social Causes of Psychological Distress*. 2d ed. New Brunswick (U.S.A.): Aldine Transaction.
- Ryder, Norman B. 1965. "The Cohort as a Concept in the Study of Social Change." *American Sociological Review* 30(6):843–61.

- Schnittker, Jason. 2008. "Diagnosing Our National Disease: Trends in Income and Happiness, 1973 to 2004." *Social Psychology Quarterly* 71(3):257–80.
- Schuman, Howard and Amy Corning. 2017. "The Conversion of Generational Effects into Collective Memories." *International Journal of Public Opinion Research* 29(3):520–32.
- Schwarz, Norbert and Fritz Strack. 1999. "Reports of Subjective Well-Being: Judgmental Processes and Their Methodological Implications." Pp. 61–84 in *Well-being: The Foundations of Hedonic Psychology*. New York, NY, US: Russell Sage Foundation.
- Shanahan, Michael J. 2000. "Pathways to Adulthood in Changing Societies: Variability and Mechanisms in Life Course Perspective." *Annual Review of Sociology* 26(1):667–92.
- Silva, Jennifer M. 2012. "Constructing Adulthood in an Age of Uncertainty." *American Sociological Review* 77(4):505–22.
- Smith, Tom W., and Jaesok Son. 2010. An analysis of panel attrition and panel change on the 2006–2008 General Social Survey Panel. Technical Report, NORC, University of Chicago.
- Strohschein, Lisa. 2005. "Household Income Histories and Child Mental Health Trajectories." *Journal of Health and Social Behavior* 46(4):359–75.
- Tausig, Mark. 2013. "The Sociology of Work and Well-Being." Pp. 433–55 in *Handbook of the Sociology of Mental Health*, edited by C. S. Aneshensel, J. C. Phelan, and A. Bierman. Springer Netherlands.
- Tausig, Mark and Rudy Fenwick. 1999. "Recession and Well-Being." *Journal of Health and Social Behavior* 40(1):1–16.
- University of Michigan. 2017. "Health and Retirement Study, HRS Polygenic Scores, Public Use Dataset. Produced and Distributed by the University of Michigan with Funding from the National Institute on Aging (Grant Number NIA U01AG009740). Ann Arbor."
- University of Michigan and Rand Corp. 2016. "Health and Retirement Study, Rand Version P, Public Use Dataset." Produced and Distributed by Rand and the University of Michigan with Funding from the National Institute on Aging (Grant Number NIA U01AG009740). Ann Arbor."

- Vaisey, Stephen and Omar Lizardo. 2016. "Cultural Fragmentation or Acquired Dispositions? A New Approach to Accounting for Patterns of Cultural Change." *Socius: Sociological Research for a Dynamic World* 2:1:15.
- Von Hippel, Paul T. 2007. "Regression with Missing Ys: An Improved Strategy for Analyzing Multiply Imputed Data." *Sociological Methodology* 37(1):83–117.
- Warner, David F. and Tyson H. Brown. 2011. "Understanding How Race/Ethnicity and Gender Define Age-Trajectories of Disability: An Intersectionality Approach." *Social Science & Medicine* (1982) 72(8):1236–48.
- Willson, Andrea E., Kim M. Shuey, and Glen H. Elder Jr. 2007. "Cumulative Advantage Processes as Mechanisms of Inequality in Life Course Health." *American Journal of Sociology* 112(6):1886–1924.
- Wolfers Justin. 2003. "Is Business Cycle Volatility Costly? Evidence from Surveys of Subjective Well-Being." *International Finance* 6(1):1–26.
- Yang, Yang and Kenneth C. Land. 2013. *Age-Period-Cohort Analysis: New Models, Methods, and Empirical Applications*. Boca Raton, FL: CRC Press.

## Biography

Bryce Bartlett was born July 28, 1977. He grew up in a small town dominated by mining, oil extraction, and paleontology. He received a BA in English from Brigham Young University in April 2002, and a JD from Washington University School of Law in St. Louis in May 2005. Bryce practiced as an attorney at Husch & Eppenberger, LLC (later known as Husch Blackwell LLP) from 2005 to 2012 as a litigator in their St. Louis, Missouri office. Bryce's first real introduction to sociology was on a flight to Dallas, en route to conduct his first deposition of an expert on economic damages. He was fascinated by the discipline when he learned that the Legal Realism movement of the early 20<sup>th</sup> Century was an extension of "sociological jurisprudence" from Lawrence Friedman's book, *A History of American Law*.

Bryce's interest in sociology grew exponentially until he decided to do something about it. He attended Duke University as a graduate student in the Sociology Department from August 2012 until May 2018, receiving a Master of Arts in Sociology in May 2015. At Duke, Bryce affiliated with the Duke Population Research Institute, the Social Science Research Institute, and the Biodemography of Aging Research Unit. Bryce's graduate training from 2013 to 2017 was supported by an National Institutes of Health Training (NIH) training grant (T32 AG000139). From September 2017 to May 2018 Bryce was also a Fellow in the Program for Advanced Research in Social Sciences, and the Vorsanger-Smith Scholar.