
Analytic Strategies for the Study of Adaptation to Major Life Events: Making the Most of Large-Scale Longitudinal Surveys

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Abstract

Longitudinal surveys are essential for studying developmental change across the lifespan and have been instrumental in contributing to a better understanding of how people change from childhood through adolescence, adulthood, and into old age. This chapter reviews some of the strengths of longitudinal surveys for studying the adaptation and self-regulation of individuals who experience major life events across their adult lives. First, large national longitudinal surveys are highly instructive and necessary in order to prospectively collect data on sufficiently large sub-samples of people who are confronted with certain life events as the survey unfolds. Second, having access to prospective data from such sub-samples enables us to thoroughly track developmental changes in the nature, correlates, and outcomes of adaptation and self-regulation with the experience of major life events. Third, we discuss how multi-phase growth curve models can be used to distinguish between pre-event changes, reaction, and adaptation in order to examine individual differences in each of these phases and to explore individual and contextual variables that may serve as risk- or protective factors. Finally, we consider how embedded micro-longitudinal study designs and propensity score matching techniques may increase the advantages of panel surveys for studying adaptation and self-regulation across adulthood. In sum, combining the strengths of longitudinal surveys with contemporary methods of analysis can put researchers in a position to advance their knowledge of how life events shape developmental change trajectories across the entire lifespan.

1 Introduction

Longitudinal surveys are essential for examining how individuals change or remain stable over a given period of time (Baltes & Nesselroade, 1979). Longitudinal surveys are especially important for examining the extent to which major life events (e. g., disability, spousal loss, and unemployment) may or may not influence developmental trajectories of change across domains of functioning (Diener, Lucas, & Scollon, 2006; Hultsch & Plemons, 1979). Major life events have been shown to come with considerable changes in daily routines. For example, the incidence of pathology, spousal loss, and unemployment typically results in substantial declines in well-being (Fauth et al., 2012; Infurna et al., 2013; Lucas, 2007). However, the effects of these events are often not uniform. People differ in how they anticipate, deal with, and adjust to the events (Bonanno, 2004; Carver, 1998; Infurna & Luthar, in press). Tracking individuals as they go through such experiences enables researchers to make use of longitudinal surveys to examine such patterns of change and the multitude of different risk- and protective factors that contribute to heterogeneity.

Our focus in the present chapter is to highlight the utility of longitudinal surveys for examining developmental change and adaptation in relation to the experience of major life events. In conjunction with our aim, we focus on how the National Educational Panel Survey (NEPS) can be used to help answer research questions about the effects of major life events on psychological adjustment. The NEPS comprises a multiple cohort (i. e., newborn, preschool, various school-age cohorts, college students, and a wide age range of adults) large-scale (approx. total sample of 100,000) longitudinal study of Germans who are assessed on an annual basis using an extensive battery consisting of competence-related, economic, sociological, psychological, and health information. The NEPS thus provides the opportunity to study developmental change and adaptation to life events in each of these cohorts before, during the time of, and after these life events happen. For example, researchers can begin to examine employment outcomes for individuals transitioning from college to the workforce. Furthermore, researchers are in a position to examine the long-term sequelae of major life events that may occur in childhood and adolescence and how these sequelae impact later developmental outcomes in adulthood. We have organized the chapter into four sections. First, we discuss why longitudinal surveys are needed to gain access to large samples to study subgroups of the population who experience major life events such as disability, spousal loss, and unemployment. Second, we discuss how longitudinal surveys allow for the thorough tracking of developmental changes before, at the time of, and after major life events, as well as of correlates and the consequences of such events. Third, we highlight how we can capitalize on the flexibility of multi-phase models of change to better understand the different processes underlying the anticipation, reaction, and adaptation to an event. Our fourth and final section foreshadows how incorporating micro-longitudinal study designs within longitudinal surveys can enable the further understanding of the mechanisms involved in

the adaptation to major life events and how advances in contemporary methodology, such as propensity score matching procedures, can be used as a methodological tool to advance our understanding of change in relation to major life events.

2 Longitudinal Surveys and Sample Size

Major life events can be broadly defined as internal or external occurrences that signify a qualitative shift or role transformation in one's life (Frederick & Loewenstein, 1999; Diener et al., 1999; Hultsch & Plemons, 1979). For example, a more controllable role transformation would be getting married, experiencing childbirth, or starting a career, whereas a less controllable role transformation would be suffering from a threatening health event or becoming unemployed. Experiencing a major life event can result in a wide range of responses or changes across a variety of domains of functioning. Well-being is one of the most studied domains for examining change in relation to major life events, and its pattern of change typically consists of multiple phases: reaction and adaptation. The reaction phase refers to changes in the time surrounding the life event (which could be months or years). For example, individuals typically experience a substantial drop in well-being with spousal loss (Lucas et al., 2003), whereas positive life events, such as marriage or childbirth, are associated with an increase or boost in well-being (Diener et al., 2006; Lucas, 2007). The phase following the reaction to a major life event is called adaptation. In the context of major life events, adaptation broadly refers to whether or not an individual returns to his or her previous level of functioning after he or she has experienced the event (Frederick & Loewenstein, 1999). For example, unemployment typically results in sustained lower levels of well-being as compared with the years prior to unemployment (Lucas, 2007). Furthermore, the initial decrease in well-being during the time surrounding spousal loss (reaction) is typically followed by the return of well-being levels to previous levels after several years (Lucas et al., 2003). We note that our description of well-being change in relation to major life events mainly focuses on the model-implied (average) pattern of change of reaction and adaptation. However, there are large between-person differences in reaction and adaptation such that individuals may follow different pathways of change in relation to major life events. For example, Bonnano (2004) explains that individuals may follow four different trajectories (i.e., resilient, chronic, delayed, or recovered), with most individuals being resilient and not experiencing any (lasting) changes in functioning associated with the major life event (for discussion, see Infurna & Luthar, *in press*).

We next assert that longitudinal surveys are an essential tool for studying developmental change and adaptation to major life events across domains of functioning. We use spousal loss as an example throughout this chapter to illustrate this point. Our concentration on spousal loss is due to its status as one of the most stressful and detrimental events that could occur in someone's life (Holmes & Rahe, 1967). This focus

also provides the opportunity to discuss in more detail how longitudinal surveys can be used to study developmental change and adaptation to major life events.

The ultimate goal when studying major life events is to examine how they impact functioning in the time leading up to, surrounding, and following event occurrence. There are several advantages of longitudinal surveys for studying developmental change and adaptation in relation to major life events. First, interdisciplinary longitudinal surveys assess relatively large samples of participants repeatedly, which allows researchers to identify segments of the population that have experienced a major life event. For example, the incidence rate of widowhood for men and women across the entire lifespan in the United States is 3.5 and 7.8 per 1,000 individuals, respectively (Elliott & Simmons, 2011; Lee, 2002; Spraggins, 2003). Second, longitudinal surveys repeatedly assess participants at a regular interval, which enables the examination of how participants develop and change prior to, surrounding, and following a major life event. This examination is critical because unlike experimental conditions in which there are typically two groups, namely control and experimental, researchers cannot require participants in a study to experience an event such as spousal loss. Therefore, longitudinal surveys provide the opportunity and flexibility to study “natural experiments” by identifying these events that naturally occur in the life course and isolating the various components of change that may occur. Third, examining developmental change processes in relation to major life events permits targeting the “stressful” times in which individuals’ reactive and regulatory systems are in action, that is the times during which individual differences in how these systems function will stand out (Gerstorf & Ram, 2012; Hultsch & Plemons, 1979). As such, natural events provide unique opportunities to study the mechanisms underlying successful development (Rutter, 2007). For example, losing a spouse is a devastating event that can lead to dramatic changes in one’s well-being and health. Research on this transition can shed light on factors that contribute to adjustment, recovery, and even growth. For example, supportive social relationships, one’s ability to fulfill personal and social responsibilities, and the capacity for positive emotions and generative experiences are typically associated with resilience when confronted with major life events (Bonanno et al., 2002, 2004; Frederickson et al., 2003). Therefore, it is of utmost importance to be in a position to study not only average change, but also what some of the risk- and protective factors that moderate these changes are.

3 Prospective Tracking of Developmental Change

Longitudinal surveys allow for the identification of individuals who have experienced specific major life events. Once individuals who have experienced the major life event of interest have been identified, we can then examine how particular domains of functioning change in relation to event occurrence. The yearly assessments as implemented in surveys like the NEPS enable the capturing of anticipatory and re-

sponsive changes to life events as they unfold and allow data availability on the date of the event to have information on the amount of time that has elapsed (for discussion, see Uglanova & Staudinger, 2012). For example, empirical evidence suggests that well-being is relatively stable across adulthood and old age (Charles et al., 2001). Research in the past decade has shown that well-being change in adulthood and old age may be driven by processes beyond that of chronological age, such as major life events (Diener et al., 2006; Lucas, 2007).

More specifically, aligning individuals in relation to a major life event allows researchers to examine the nature of change and the consequences of such events. When examining change in relation to major life events, we are interested in examining change in the time leading up to, surrounding, and following the experience of spousal loss, as well as long-term outcomes thereof (e.g., mortality, incidence of disease). The repeated assessments can help researchers distinguish the defined components of change. For spousal loss, we are interested in defining and distinguishing between *anticipation*, *reaction*, and *adaptation*. The time leading up to spousal loss can be represented by an *anticipatory period* characterized by stability or declines in well-being. Changes (e.g., declines in well-being) during the anticipation phase can be considered an active process that may help individuals cope with the impending loss of their loved one or, in contrast, be indicative of a loss of resources and an inability for emotional regulation (Heckhausen, Wrosch, & Schulz, 2010; Kastenbaum & Costa, 1977). The *reaction period* refers to one's changes in well-being at the time surrounding spousal loss. Are individuals able to maintain their levels of functioning despite the devastating experience of spousal loss, or does this loss result in a precipitous drop (Uglanova & Staudinger, 2012)? The time following spousal loss is referred to as the *adaptation period*. This phase examines whether individuals are able to return back to levels of functioning that are similar to those several years prior to spousal loss (Lucas, 2007). Lastly, we can target *long-term outcomes* of the major life event, such as mortality following spousal loss. Several studies have shown that spousal loss is predictive of physical health declines and mortality (Elwert & Christakis, 2008; Mendes de Leon, Kasl, & Jacobs, 1993; Schulz & Beach, 1999; Stroebe, Schut, & Stroebe, 2007). The continuous tracking of participants in longitudinal surveys enables researchers to examine the long-term consequences of poor adaptation to a major life event. For example, sorrow after the loss of a loved one may not be associated with mortality (reaction), but failure to return to a normal emotional life after a certain period of time (adaptation) may be detrimental and increase one's mortality hazard.

Not all individuals exhibit the same pattern of well-being change with spousal loss, and in fact, there are large between-person differences in how individuals react and adapt to life-altering events (Carver, 1998; Wortman & Silver, 1989). For example, Bonanno (2004) suggests that most individuals are resilient and able to adapt by recovering relatively quickly or even maintaining their pre-loss well-being, whereas other individuals experience steep loss-related declines in well-being and are only

able to adapt slowly (for discussion, see Infurna & Luthar, in press). Reasons for heterogeneity in trajectories of change following major life events include situational and individual factors (Bonanno, 2004; Carver, 1998; Hultsch & Plemons, 1979), which may have differing roles depending on the phase. For example, older age and greater health problems of the spouse may result in stronger well-being declines in the years preceding spousal loss (anticipation) because spousal loss may be considered an expected event with anticipatory declines being instrumental for adaptation in the following years (Jopp & Smith, 2006; Schulz et al., 2003). During the time surrounding spousal loss (reaction), social network integration and supportive relationships may serve to protect against the negative impact of the stress of losing a spouse because people have a larger pool of individuals to go to, which may help with coping and protect against well-being declines (Bonanno, 2004; Cohen & Wills, 1985). Following spousal loss, educational attainment may lead to better adaptation through the knowledge and use of adaptive and compensatory strategies (Adler et al., 1994).

There is much to be gained from using longitudinal surveys to examine developmental change and adaptation in relation to major life events. First, researchers are able to compare and contrast the magnitude of effects major life events have on particular domains of functioning. Up to this point, most of the research has focused on well-being change in relation to major life events. However, whether the pattern of change is similar across psychological factors, such as goal (dis)engagement strategies as well as cognition and health, remains an open question. For example, does spousal loss only result in substantial declines in well-being and not in cognitive functioning? Compared across major life events, could events centered around pathology (e.g., disability) have a greater impact beyond the well-being domain and influence cognition and health in contrast to events centered on work or family that may only impact the well-being domain? Future research will be able to disentangle such propositions by examining whether the eventual onset of the life event drives the change and whether the levels and rates of change in the years preceding have implications for the eventual onset of such events. Second, researchers can pinpoint the time in relation to the major life event that is most stressful for the individual and which areas of functioning are at their limits. This has intervention implications for helping to maintain one's levels of functioning in times of great disruption (Rae et al., 2010). For example, interventions that focus on positive activities, such as cultivating one's strengths, visualizing an ideal future self, and performing kind acts, are shown to boost one's well-being (for discussion, see Lyubomirsky & Layous, 2013). Lastly, it is important to examine not only how levels of functioning differ following a major life event as compared with prior, but also whether the rate of change is affected. We have found that depressive symptoms show shallower increases in the years following cancer diagnoses as compared with the years leading up to cancer diagnosis (Infurna et al., 2013). The developmental rate of change leading up to a major life event, such as a cancer diagnosis, may be indicative of an eventual underlying pathology that will lead to an increased risk for pathology incidence. Not only can one's absolute levels

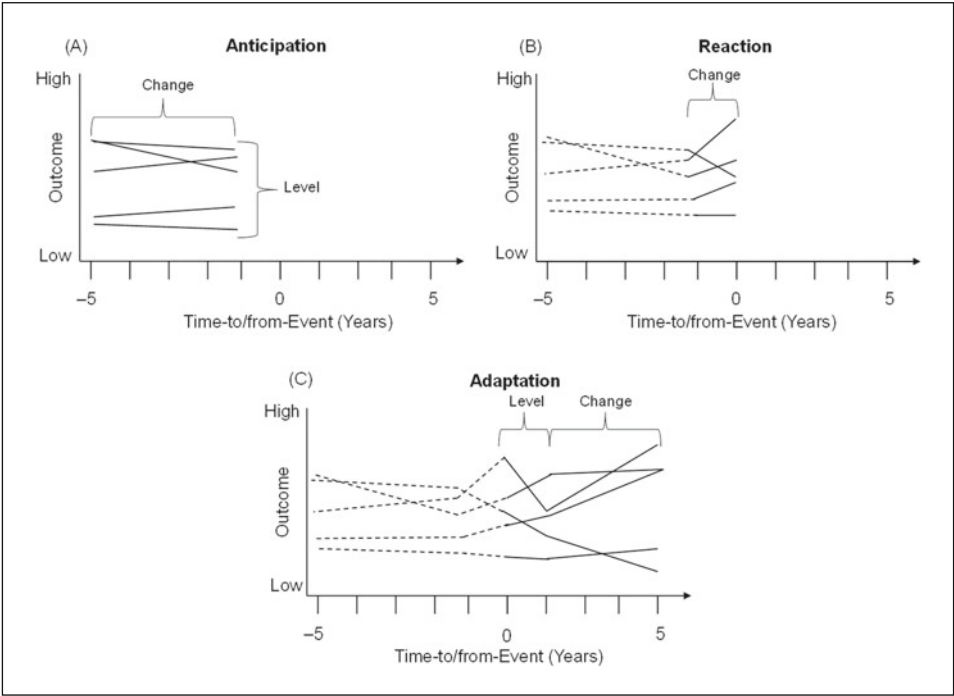
of functioning be altered by a particular life event, but the event could subsequently put an individual on a positive or negative trajectory of change. Change in the developmental rate following a life event, such as spousal loss or cancer diagnosis, could be indicative of individuals' seeking out support or using ambulatory care that results in less steep declines in domains of functioning. Future research bears the burden of examining such notions further and discovering what the implications of an altered rate of change for outcomes following the particular life event are.

4 Multi-phase Growth Models

In the previous sections, we detailed how longitudinal surveys are instrumental for studying developmental change in relation to major life events. These research studies often need large-enough sample sizes and the specified measures of interest to examine the nature and correlates of change in relation to major life events. This next section focuses on how analytical models, particularly multi-phase growth models (McArdle & Nesselroade, 2003; Ram & Grimm, 2007; Singer & Willett, 2003), can be used to answer our research questions and hypotheses. As we have discussed, when individuals are confronted with major life events, one would expect that different phases can be distinguished and that different sorts of risk- and protective factors play a role in these phases. In the case of examining developmental change in relation to spousal loss, phases to be distinguished include anticipation (i.e., time prior to spousal loss), reaction (i.e., time surrounding spousal loss), and adaptation (i.e., time following spousal loss). For example, low perceived control may protect against well-being declines with spousal loss because it indicates an acknowledgement that spousal loss is due to factors beyond one's own control; conversely, high perceived control following spousal loss may lead to better adaptation through individuals' engagement in the proper coping and goal-engagement strategies (Skinner, 1995). Using advanced methods such as multi-phase growth models, we can indeed model whether (different constellations of) perceptions of control moderate changes in well-being in relation to major life events using a large-sample and frequent-assessment dataset such as the NEPS and thereby arrive at a better understanding of the phenomena we are interested in.

Multi-phase growth curve analysis comprises a flexible set of models that allow researchers to isolate particular components along a time series when examining change in relation to major life events (McArdle & Nesselroade, 2003; Ram & Grimm, 2007; Singer & Willett, 2003). Figure 1 graphically illustrates how such a model can be used to distinguish the components involved in how the outcome of interest changes in relation to the major life events of anticipation, reaction, and adaptation. Part A of Figure 1 displays how levels and rates of change in the outcome may vary several years prior to event incidence (anticipation). Anticipation can be broadly assessed as change in the years leading up to the major life event. In the case of widowhood, an-

Figure 1 Illustrating the components or phases of developmental change in relation to major life events. These three components include anticipation (A), reaction (B), and adaptation (C). Anticipation refers to individuals' levels and rates of change in functioning prior to the major life event (A). The reaction phase refers to how individuals may display differential rates of change with the incidence of the major life event (B). Lastly, differential levels and rates of change may be exhibited in the years following the major life event, which is referred to as adaptation (C). Each line in Figure 1 displays a hypothetical trajectory of change for individuals who experience spousal loss.



anticipatory changes in well-being may begin up to several years prior to spousal loss, possibly due to the worsening health of the dying spouse. Part B of Figure 1 graphically illustrates the reaction phase and how change may take different forms with life event incidence as well as that this may differ across individuals. The reaction phase is typically quantified as the time surrounding the life event (i. e., during the year when the event occurred). For methodological reasons, this is typically defined as the difference in well-being or another outcome between the wave immediately prior to the event and the wave when the event was first observed or reported. This explains why reaction appears to refer to something that happens before the event (i. e., between -1 and 0). However, identifying the date or month of the event permits moving towards having more nuanced approaches for studying reactions to major life events through

examining change via monthly intervals (see Uglanova & Staudinger, 2012). Lastly, Part C of Figure 1 illustrates how individuals show differential level and change in the years following event incidence. Adaptation for some individuals may be immediate (one year) or take several years for others. Adaptation may take different forms: (a) whether individuals' levels of functioning in the years following the life event will return back to prior levels and (b) how individuals' rates of change following the event may or may not be similar to those in the years leading up to the life event. For example, anticipatory declines in well-being leading up to spousal loss may result in individuals' being able to better adapt and show stronger increases in well-being in the years following widowhood.

The components of the multi-phase growth model shown in Figure 1 can be used to answer research questions regarding developmental change and adaptation in relation to major life events. As a first step, we can model the average trajectory of change in relation to the event of interest. Furthermore, by estimating variance in each of the growth components, we can determine whether there are between-person differences. Second, researchers may be interested in examining whether between-person difference factors, such as socio-demographic, cognition, and physical health factors, moderate such associations. The lines in Figure 1 represent trajectories for hypothetical participants and, in particular, that there can be a great deal of heterogeneity in how individuals anticipate, react to, and adapt to life-altering events (Carver, 1998; Infurna & Luthar, *in press*; Wortman & Silver, 1989). This is indeed the case with spousal loss such that not all individuals exhibit the same pattern of well-being change in relation to spousal loss. The task would be to examine whether various risk- and protective factors, such as social support or coping strategies, buffer against declines in the time surrounding the major life event and better adaptation in the time that follows. This would be done, for example, by inserting social support into the model as a moderator of well-being change during the anticipation and adaptation phases.

5 Implications for the National Educational Panel Study (NEPS)

The NEPS offers various opportunities for tracking developmental change and adaptation in relation to major life events. First and foremost, the design of the NEPS allows for addressing research questions centered on major life events from the initiation of the study. Beginning with the second wave, researchers can use the NEPS to examine change following major life events, such as spousal loss or the incidence of disease, through annual observations across domains of functioning. The NEPS can be used, for example, to examine whether goal engagement or disengagement strategies are best for optimizing well-being following spousal loss. Furthermore, do goal (dis)engagement strategies display similar associations on developmental outcomes in the context of major life events at different phases of the lifespan? Second, the

NEPS surveys participants from the entire lifespan, that is infancy through old age, which opens up the opportunity to study the impact of major life events that are more likely to occur in specific areas of the lifespan and compare their effects depending on one's own point in the lifespan. For example, researchers using the NEPS will be in a position to compare and contrast the effects of spousal loss for a period of the lifespan when it would be atypical (i. e., young adulthood and midlife) to typical (i. e., old age). Spousal loss in young adulthood and midlife could be associated with more substantial drops in well-being due to its being considered an "off-time" event as compared with old age, at which point it is considered an "on-time" event (Neurgarten & Hagestad, 1976). Thinking more broadly beyond just spousal loss, the NEPS can help examine whether the timing of major life events plays a role in shaping developmental change across the lifespan. Thus, the lifespan nature of the NEPS puts researchers in the unique position of studying major life events from across the entire lifespan and investigating their implications for developmental change and adaptation, such as the transition from school to the work force, unemployment, retirement, marital transitions, and the onset of disease.

Another advantage of the lifespan sample of the NEPS is the ability to assess whether (or not) life events have cumulative effects across the entire lifespan, effectively allowing researchers to move more towards a prospective approach. For example, empirical evidence suggests that psychological stress in childhood is associated with an increased susceptibility to chronic disease in old age (Miller, Chen, & Parker, 2011). The longitudinal design of the NEPS allows for more specifically examining how early life events, such as psychological stress in childhood, transpire over time to affect development in adulthood through possible psychosocial and biological mechanisms that may underlie these associations. For example, child maltreatment may be linked to adult mental and physical health problems via emotion processing and risky health behavior (Infurna, Rivers, Reich, & Zautra, 2015; Miller et al., 2011; Repetti, Taylor, & Seeman, 2002).

Third, previous research has largely centered on well-being change in relation to spousal loss and more generally to major life events. The extensive assessment battery of the NEPS allows researchers to take a multivariate approach by examining how other components may or may not be affected by the major life event and also allows them to target mediators and moderators of change in prominent areas, such as well-being. For example, how are motivational processes of primary and secondary control strategies, such as goal engagement, affected by spousal loss (e. g., Heckhausen et al., 2010)? It could be expected that spousal loss would result in an initial decline in goal engagement strategies and an increase in goal re-engagement strategies as individuals turn their focus to more attainable goals. This, especially, could be the case when the surviving spouse may have been involved in caregiving-related activities. Examining change in psychosocial constructs with major life events can lead to mediation analyses aimed at their role in accounting for well-being change. For example, declines in well-being with spousal loss could be due to or accounted for by the loss

of emotional support from one's network or a change in goal engagement strategies. Lastly, the extensive psychosocial battery can be used to examine various risk- and protective factors that moderate change or adjustment with major life events. For example, do perceptions of control and social support provide an additive or multiplicative effect for increasing one's likelihood for adaptation following widowhood?

6 Future Directions

This final section discusses future directions that can be used to more thoroughly examine the extent to which domains of functioning change in relation to major life events. In particular, we discuss propensity score matching procedures as a statistical method of analysis to further our understanding of how major life events influence developmental trajectories of change. We also concentrate on how the incorporation of micro-longitudinal designs (e.g., measurement-burst designs) within the context of macro-longitudinal studies of change can complement and allow for taking a more process-oriented approach to studying the underlying mechanisms and pathways.

Propensity score matching is a class of methods in which the objective is to create a case-matched "control" group to compare with the "treatment" group (Rubin, 1974). This technique is a way to move towards making potentially causal inferences with observational data and has largely been used in prevention and intervention research. Moreover, it has recently been incorporated in psychological research (Foster, 2010; Rutter, 2007; Stuart, 2010). The relevance for major life events would be the creation of a "control" group to compare with participants who have experienced a particular life event in order to examine whether there are differences in the levels and rates of change in the outcome of interest. The objective would be to move towards determining whether a particular life event may "cause" developmental changes in particular areas of functioning.

This procedure would consist of two steps. First, researchers would need to identify covariates, or factors by which to identify participants to include in the control group. Covariates would need to be selected based on how likely they would be to be associated with the treatment condition or major life event. For example, socio-demographic and behavioral factors are typically associated with disease incidence; therefore, these factors would be essential to include as covariates to ensure that the two groups would be similar on these factors prior to conducting further analyses. The selected covariates would then be used to estimate a propensity score using logistic regression to indicate the likelihood of an individual's being assigned to the treatment condition (i.e., major life event; Stuart, 2010). In the second step, participants who had experienced the major life event would then be matched to participants who had not experienced the major life event based on the propensity score, which would represent the predicted likelihood of being assigned to the treatment or major life event group. Once a "control" group had been determined, the next step would be to

conduct analyses to examine whether there were differences in the levels and rates of change in the outcome of interest between the two groups. For example, had individuals who had experienced spousal loss already exhibited lower levels of and steep drops in well-being in the years leading up to spousal loss? Focusing on the transition from adolescence to young adulthood, Jackson and colleagues (2012) utilized propensity score matching to create two groups of participants in Germany who did or did not experience military training. In comparing these two groups, they found that military training resulted in lower levels of agreeableness. Further, highly informative applications of propensity score matching techniques are readily available in the literature (e.g., Gerstorf et al., 2015).

Macro-longitudinal studies allow for examining developmental change over years or decades. For example, multiple longitudinal surveys have shown that well-being remains relatively stable across the adult lifespan, even into older ages (Charles et al., 2001; Mroczek & Spiro, 2005). These designs allow researchers to gain insight into the long-term course of development and, as we have discussed in this chapter, developmental change and adaptation in relation to major life events. However, longitudinal surveys are limited in their ability to discern the underlying mechanisms driving change. To obtain the necessary data, longitudinal studies may look to embed micro-longitudinal or measurement-burst designs within the macro-longitudinal design (for discussion, see Nesselrode, 1991; Ram & Gerstorf, 2009). At the micro-time scale, researchers obtain multiple reports or assessments over a relatively short span of time (e.g., hours, days) via a diary, ecological momentary assessment, or ambulatory procedures (Bolger et al., 2003; Hoppmann & Riediger, 2009; Sliwinski, 2008). This enables the examination of individuals in the daily context and the procurement of reports of stressors, emotions, behaviors, and physiological indicators that can be linked to longitudinal change. Furthermore, measurement-burst designs can help distinguish among intra-individual change and variability that may occur at different time scales (for discussion, see Sliwinski, 2008). When combined with data from longitudinal studies assessing change over years or decades, this can shed light on mechanisms of developmental change (Gerstorf, Hoppmann, & Ram, 2014). For example, Ram and colleagues (2011) found that cognitive aging over approximately 13 years of time was associated with greater cognitive plasticity, less cardiovascular lability, and less emotional diversity over a two-week period in older adults. Embedding this sort of design in longitudinal studies more regularly can provide the opportunity to examine daily functioning both prior to and following major life events. In the specific case of spousal loss, research has been able to study risk- and protective factors associated with well-being change following event occurrence. For example, Ong and colleagues (2005) observed that reporting more daily control was linked to less daily anxiety and buffered against the impact of stressors on well-being in a sample of recently bereaved persons.

7 Conclusion

Longitudinal surveys are essential for studying and examining developmental change across the lifespan. In this chapter, we have discussed the advantages of longitudinal surveys for examining developmental change and adaptation in relation to major life events. Our discussion additionally focused on how major life events can be studied in the NEPS. The NEPS offers many fruitful avenues to examine how major life events may or may not shape developmental change across the lifespan. First, large-scale longitudinal surveys are essential tools for capturing sufficiently large sub-samples of individuals who are confronted with certain life events as the study unfolds. Second, prospective data from longitudinal surveys allows researchers to prospectively assess developmental change and adaptation in relation to major life events. Third, multi-phase growth models can be used to distinguish between the components of level and rate of change with the experience of major life events. Fourth, future research could examine further components of developmental change and adaptation via the utilization of micro-longitudinal designs and propensity score matching methods.

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