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RESEARCH PAPER

Lay Theories for Life Satisfaction and the Belief that Life Gets Better and Better

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Abstract
Many individuals believe that life gets better and better over time. To examine the sources and significance of such beliefs, we examined lay theories for life satisfaction (LS) in relation to individuals' beliefs concerning how their LS was unfolding over time. Two studies were conducted with online participants: one correlational (Study 1; $N = 320$, M age = 30.39, 55% male), the other experimental (Study 2; $N = 321$, M age = 30.46, 53% male). In both studies more incremental (vs. entity) lay theories were associated with more steeply inclining subjective trajectories for LS. Furthermore, both sets of beliefs had unique effects on individuals' goal-striving toward a brighter future life, as well as psychological adjustment (self-efficacy, hope, optimism, positive affect, negative affect). Thus, lay theories and subjective trajectories for LS share a common assumption concerning change in life satisfaction over time. And each set of beliefs plays a unique role in positive functioning.

Keywords Lay theory · Life satisfaction · Subjective trajectory · Positive functioning

1 Introduction

For most individuals, living a happy and satisfying life is among our most valued goals (Diener 2008). And it appears that the future is when we anticipate these dreams will come true. Indeed, many individuals view their lives as becoming better and better over time for a significant portion of their adult lives (Newby-Clark and Ross 1998). Individuals' beliefs concerning how their lives are unfolding over time have been studied in a variety of ways, including based on their recollected past, current, and anticipated future life satisfaction (Staudinger et al. 2003). Despite their normative nature, emerging research has revealed some surprising findings concerning such beliefs among younger and middle-aged adults, including links between more steeply inclining subjective trajectories for one's life satisfaction (LS) and less positive functioning in a variety of domains (Busseri et al. 2009a,

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b; Lachman et al. 2008). Extending this previous research, in the present work we report two studies (one correlational, one experimental) examining how younger adults evaluate their lives to be unfolding over time in relation to their lay theories (Dweck 1999) concerning the malleable (vs. fixed) nature of their LS. Furthermore, both sets of beliefs were evaluated in relation to individuals' pursuit of a brighter future, as well as self-regulatory resources and emotional well-being. The present work thus provides valuable new insights concerning the sources and significance of the widely-held view that life gets better and better over time.

1.1 Life Gets Better and Better

Up until late adulthood and older age, individuals typically view their lives as improving over time (Busseri 2013). For example, we envision an increasing number of positive life events and transitions up to middle age (Berntsen and Rubin 2003). Younger adults also expect that personality features will become increasingly desirable (Fleeson and Heckhausen 1997; Heckhausen et al. 1989) and perceive that their lives will become more and more satisfying (Staudinger et al. 2003). Thus, there exists a robust set of beliefs conveying the message that our lives will become better and better across much of the adult lifespan.

Despite the normative nature of these beliefs concerning younger adulthood and middle-age, life satisfaction does not, in fact, get increasingly better over time for most individuals. Rather, notwithstanding short-term fluctuations due to life events and experiences, the typical longitudinal trend in LS evaluations is one of stability, rather than change (Fujita and Diener 2005; Lucas 2007). Consequently, most individuals' views of their past and future lives are biased (Busseri et al. 2009a, b; Lachman et al. 2008). Furthermore, the belief that life gets better over time has been interpreted as a sign of optimism and mental health (Gallagher et al. 2013). However, this belief—as reflected in individuals' evaluations of their recollected past, current, and anticipated future LS—has been linked with *less positive* indicators of psychological, interpersonal, and physical functioning among younger adults; in contrast, more positive levels of functioning are linked with perceived stability in one's life, rather than change (Busseri et al. 2009a; Lachman et al. 2008). The timing of the perceived change (and stability) also appears to matter. In particular, among younger adults envisioning a dramatically brighter future life is linked with less positive functioning, whereas perceiving self-improvement from one's past to current life is linked with more adaptive functioning (Busseri et al. 2009b, 2012, 2013; Busseri and Choma 2016; Busseri and Merrick 2016). Together, these two dynamics suggest that a psychologically optimal subjective trajectory for LS among younger and middle-aged adults combines greater perceived past-current improvement and less anticipated current-future improvement (Choma et al. 2014).

With respect to the sources of individuals' beliefs concerning how their lives are unfolding over time, the processes and priorities underlying successful human development are thought to change over the lifespan. Such priorities include growth and accumulation of resources during younger adulthood, optimization during middle age, and maintenance and compensation for losses during older age (Baltes 1997). From this perspective, the widely-held view that life gets better and better over time reflects the developmental salience and significance of growth and gains throughout much of the adult lifespan (Busseri 2013). Such dynamics are also informed by research based on cultural life script theory, which has revealed a high degree of consensus concerning the perceived timing and valence of key life events and transitions (Berntsen and Rubin 2003, 2004). Of particular relevance,

younger adulthood is thought to be characterized by an increasing number of positive life events. From this perspective, the view that life gets more and more satisfying over time throughout younger adulthood and up to middle-age reflects a culturally-transmitted life script, according to which positive life events are expected to become more and more numerous during this lifestage (Shanahan and Busseri 2016, 2017). Consequently, when evaluating how their own lives are unfolding over time, individuals likely consider the normative trajectory for other individuals their own age (Baltes and Smith 2003; Busseri 2013), as well as compare their own perceived (and anticipated) change in LS relative to normative others (Choma et al. 2014).

Together, these dynamics create the potential for a powerful social norm conveying the belief that life *should* be getting better and better over time during younger adulthood and perhaps into middle-age. Because of this social norm, visions of a brighter future may function as a comparison standard against which one's current life is judged, rather than as a motivating goal (Boldero and Francis 2002; Markman and McMullen 2003). Accordingly, an inclining subjective trajectory for one's LS, particularly between the present and anticipated future, may result in disappointment and frustration, rather than energization and hope, among younger adults (Busseri and Merrick 2016; Choma et al. 2014). In contrast, the belief that one's life has improved from the past to the present appears to be an adaptive form of perceived self-improvement which individuals can use to bolster their self-image and motivation (Peetz and Wilson 2008; Taylor et al. 1995).

Together, these various lines of inquiry highlight the significance of individuals' beliefs concerning how their lives are unfolding over time, and suggest that perceptions concerning both change and stability in one's life are closely linked to positive functioning during younger adulthood and middle-age (see also Keyes and Ryff 2000). Building on these notions, in the present work we examined individuals' lay theories for LS as framework for better understanding the widely-held view that life gets better and better.

1.2 Lay Theories

According to Dweck (1999), individuals have lay (or 'implicit') theories concerning personally important attributes and characteristics (e.g., intelligence, personality traits). Two types of lay theories are typically delineated: An incremental lay theory (or 'growth mindset'), according to which the attribute is malleable and can be changed through personal effort; and an entity theory (or 'fixed mindset'), according to which the attribute is fixed and thus cannot be changed (Dweck et al. 1995). Incremental and entity lay theories differ, therefore, with respect to assumptions concerning the malleability of the attribute and the amount of control an individual has over the attribute (Molden and Dweck 2006).

Lay theories have been examined in a variety of domains (Burnette et al. 2013; Dweck et al. 1995; Howell 2017), often in terms of individual differences assessed using self-report scales modified from the original lay theory of intelligence scale (e.g., "You can always greatly change how intelligent you are", "Your intelligence is something about you that you can't change very much"; Dweck 1999). Research examining multiple lay theories within the same sample has revealed substantial independence among individuals' lay theories for different attributes (e.g., personality, intelligence, emotions, morality; Hughes 2015; Schroder et al. 2016). An experimental approach has also been employed through use of manipulation materials designed to bolster an incremental versus entity mindset. Individuals in such studies are typically provided with information suggesting that a given attribute (e.g., intelligence) is either largely genetically-determined and thus cannot be

changed, or environmentally-influenced and malleable through personal effort (Chiu et al. 1997; Hong et al. 1999).

Correlational and experimental findings have indicated that individuals holding incremental (vs. entity) lay theories are characterized by more effective goal pursuit, emotion regulation, and motivation, as well as greater achievement in various life domains (Burnette et al. 2013; Dweck 1999; Dweck et al. 1995; Lazowski and Hulleman 2015; Yeager et al. 2014). Such successes have been attributed to various processes, including incremental lay theorists' more effective coping with negative feedback, their greater willingness to invest time and effort in achieving their goals, and a stronger sense of efficacy with respect to improving the attribute of interest (Hong et al. 1999). For such individuals, negative feedback is a useful reminder that although they may not have reached their goals "yet" (Dweck 2014), they can do so through personal investment. Entity theorists, in contrast, use performance feedback as a means of self-evaluation, and thus suffer from frustration and discouragement in the face of challenges, hampered by their perceived lack of control over changing the attribute (Hong et al. 1999). For such individuals, negative feedback is a painful reminder that they are unable to achieve change or improvement, and consequently are "gripped in the tyranny of now" (Dweck 2014).

1.3 Lay Theories and the Belief that Life Gets Better and Better

Of particular interest for present purposes are two recent reports examining younger individuals' lay theories for well-being ("You have a certain amount of well-being, and you can't really do much to change it"; Howell et al. 2016) and happiness (e.g., "No matter who you are, you can significantly change your happiness"; Van Tongeren and Burnette 2018). Using correlational and experimental approaches, these studies reported that more incremental (vs. entity) lay theories for well-being/happiness among younger adults were linked with greater well-being (Howell et al. 2016; Van Tongeren and Burnette 2018), greater engagement in well-being promoting activities (Howell et al. 2016), greater hope (Howell et al. 2016), as well as higher satisfaction in various life domains (Van Tongeren and Burnette 2018). These studies provide valuable information concerning the potential implications of individuals' lay theories for happiness and well-being—both concepts which are closely linked with LS (Busseri and Sadava 2011; Diener 1984).

With respect to present purposes, however, neither study examined lay theories in relation to how younger individuals view their lives to be unfolding over time. Furthermore, none of the experimental studies reported in these works included a control group. Consequently, the extent to which incremental lay theories boost and/or entity lay theories dampen positive functioning relative to a non-manipulated (control) state is unknown. However, in a recent study Bunda and Busseri (in press) found that young adults holding more incremental (vs. entity) lay theories for health, following an experimental manipulation, also perceived greater improvements in their health over time, as reflected in more steeply inclining subjective trajectories for their health. Furthermore, the relationship between these two sets of beliefs was modest and each set of beliefs uniquely predicted health behavior intentions. Such findings suggest that lay theories may be linked to how younger individuals view their lives as unfolding over time within a specific life domain (i.e., health), and that both sets of beliefs may have unique significance.

Yet to be investigated, however, is whether such results apply to individuals' lay theories and beliefs concerning how their lives *overall* are unfolding over time. In support of this connection, we note that lay theories have been conceptualized as reflecting individuals'

core assumptions about the world, and that such assumptions can impact self-judgments and predictions for personal outcomes (Chiu et al. 1997; Dweck et al. 1995; Molden and Dweck 2006; Plaks and Stetcher 2007; Plaks et al. 2009). Furthermore, lay theories can be influenced by individuals' motivation for self-enhancement (Steimer and Mata 2016), and stronger incremental lay theories have been linked with a greater willingness to denigrate one's past self (Ward and Wilson 2015). Lay theories also appear to be target-age specific, such that younger age is associated with more incremental lay theories concerning one's own and others' attributes (Neel and Lassetter 2015). Similarly, subjective trajectories for LS have been examined in relation to developmentally-guided beliefs concerning how life is supposed to unfold over time—including anticipated growth and improvement during younger adulthood (Busseri 2013; Lachman et al. 2008; Shanahan and Busseri 2016). Collectively, these findings suggest that younger individuals with a more incremental (vs. entity) view of their LS would perceive greater improvement in their LS over time, as reflected in more steeply inclining subjective trajectories.

With respect to the significance of such beliefs, previous research indicates that incremental (vs. entity) lay theorists put greater emphasis on malleable processes that can positively impact goals, intentions, and expectancies (Chiu et al. 1997; Dweck 1999), as well as emotional responses (Howell 2017; Plaks and Stetcher 2007). Consequently, more incremental lay theories for LS may be linked with more effective pursuit of one's brighter anticipated future life. Similarly, based on previous research examining the potential consequences of subjective trajectories among younger adults (e.g., Bunda and Busseri, in press; Busseri et al. 2009a; Busseri and Merrick 2016), more steeply inclining subjective trajectories, particularly between one's recollected past and present lives, should be linked with more effective goal striving. In summary, therefore, lay theories and subjective trajectories for LS may be linked with each other, and with more effective pursuit of a brighter future life.

1.4 The Present Work

To evaluate these notions in the present work we conducted two online studies, one correlational and one experimental, in which we assessed lay theories for LS in relation to subjective trajectories for LS (also referred to as 'subjective LS trajectories') among younger adults. We also evaluated how both sets of beliefs uniquely impacted (or predicted) goal striving in pursuit of a brighter future life, as well as several personal resources linked with stronger self-regulation and successful goal pursuit (Burnette et al. 2013), including confidence and commitment (Oettingen et al. 2005, 2009), self-efficacy (Howell 2017; Tamir et al. 2007), hope (Howell 2017; Howell et al. 2016; Magaletta and Oliver 1999), optimism (Howell et al. 2016), and emotional well-being (Burnette et al. 2013; Howell 2017; Howell et al. 2016; Tamir et al. 2007). Together, these studies provide valuable new insights concerning the sources and significance of the widely-held view that life gets better and better over time during younger adulthood.

2 Study 1

In Study 1 we employed a correlational design to assess associations among lay theories for LS, subjective LS trajectories, self-regulatory resources, and goal striving in pursuit of a brighter future life in a sample of younger adults. Our first goal was to assess the

relationship between lay theories for LS and subjective LS trajectories. We expected that individuals viewing their LS as more malleable (vs. fixed) would perceive greater improvements in their LS over time. Consequently, we predicted that younger adults with more incremental (vs. entity) lay theories for LS would have more steeply inclining subjective LS trajectories.

Our second goal was to assess lay theories for LS and subjective LS trajectories in relation to self-regulatory resources, emotional well-being, and goal striving in pursuit of a brighter future life. Consistent with previous lay theory research (Burnette et al. 2013; Dweck 1999; Molden and Dweck 2006), we anticipated that individuals viewing their LS as malleable (vs. fixed) would be characterized by more adaptive functioning and effective goal pursuit. Thus, we predicted that more incremental (vs. entity) lay theories for LS would be linked with stronger goal striving (i.e., greater confidence and commitment), greater self-regulatory resources (i.e., stronger self-efficacy, greater hope and optimism), and greater emotional well-being (i.e., more positive affect, less negative affect). With respect to subjective LS trajectories, previous research has suggested that a psychologically optimal subjective trajectory among younger adults combines perceived past-current improvement and anticipated current-future stability (Busseri et al., 2009b; Choma et al. 2014). In the present context, therefore, we expected that more positive self-regulatory resources, greater emotional well-being, and stronger goal striving would be found among individuals with steeper past-current subjective LS trajectory slopes and flatter (i.e., less steeply inclining) current-future LS trajectory slopes.

A final consideration was whether lay theories for LS and the subjective LS trajectories would each uniquely predict the outcomes of interest. To the extent that both sets of beliefs reflect a shared assumption concerning the improvability of LS, they may be redundant predictors. However, recent research indicates only modest overlap between these two sets of beliefs in the health domain, and that each uniquely predicts health-promoting behavior (Bunda and Busseri, in press). Consequently, we expected that lay theories for LS and subjective LS trajectories would independently predict self-regulatory resources, emotional well-being, and goal striving.

2.1 Method

2.1.1 Participants and Procedures

Participants were recruited online from Amazon Mechanical Turk (MTurk). MTurk workers from America were eligible for the study provided that they were within the target age range (younger adults; 18–40 years old) and had previously achieved a 90% approval ratings based on their previous MTurk activity. The study was completed online using Qualtrics software. After providing consent, participants completed the study questionnaire, and were provided with an on-line debriefing form and payment code redeemable for $1.50 USD through MTurk. Of the 352 individuals who participated in the study, 320 (91%) were within the target age range, correctly responded to two attention check items, passed an acquiescence check (i.e., had zero variance on no more than one multi-item scale), and completed the study measures described below. Subsequent analyses are based on this group of 320 participants (M age = 30.39 years, SD = 5.14; 55% male; 78% White, 9% Black, 7% Latino, 4% Asian; 67% college/university educated or higher).

2.1.2 Measures

2.1.2.1 Lay Theories for Life Satisfaction An eight-item scale was created for present purposes to assess participants' lay theories for LS, modified from the lay theory of intelligence scale (Dweck 1999). Of the eight items, four items assessed incremental beliefs and four items assessed entity beliefs concerning LS. (Scale items are shown in the "Appendix"). Items were rated on a six-point scale, ranging from 1—*strongly agree*, to 6—*strongly disagree*. In an exploratory principle components analysis, one large component (Eigen value = 5.81) explained 73% of the item variance across the eight items, and standardized loadings were larger than .79 in absolute magnitude. Ratings were thus averaged (after reverse-scoring the incremental item ratings), such that higher scores indicated more incremental (vs. entity) lay theories of LS ($\alpha = .95$).

2.1.2.2 Subjective Trajectories for LS Using three self-anchoring ladders (Kilpatrick and Cantril 1960), participants rated their current ("your life right now"), past ("your life 5 years in the past"), and future ("your life 5 years in the future") lives. Items were rated on an 11-point rating scale, ranging from 0—*worst life possible (very dissatisfying)*, to 10—*best life possible (very satisfying)*. This scale has been widely used over the past five decades, with strong evidence of validity (e.g., Cantril 1965; McIntosh 2001; Pavot et al. 1998; Staudinger et al. 2003). Following Busseri et al. (2009a, b; see also Busseri and Merrick 2016; Choma et al. 2014), subjective LS trajectory slope scores were computed from these three ratings: past-current LS (current LS minus past LS), current-future LS (future LS minus current LS), and past-future LS (future LS minus past LS).

2.1.2.3 Confidence Participants were provided with five numbered boxes in which they were asked to describe different things they plan on doing "in order to achieve the future you think you will have". Participants then rated how likely they were to do each thing over the next 5 years, using a seven-point scale ranging from 0—*not at all*, to 6—*extremely likely*. Ratings were averaged, such that higher scores indicated greater confidence in attaining one's plans for the future ($\alpha = .71$).

2.1.2.4 Commitment Participants rated how committed they were, how much time and effort they were willing to invest, and how motivated they were to making the future they anticipated having come true. Items were rated on a seven-point scale, ranging from 1—*not at all*, to 7—*extremely*. Ratings were averaged, such that higher scores indicated greater commitment to achieving one's plans for the future ($\alpha = .92$).

2.1.2.5 Self-efficacy The 10-item Self-Efficacy Scale (Chen et al. 2001) was used to assess participant's self-efficacy (e.g., "It is easy for me to stick to my aims and accomplish my goals"). Items were rated on a five-point scale, ranging from 1—*strongly disagree*, to 5—*strongly agree*. Ratings were averaged, such that higher scores indicated greater self-efficacy ($\alpha = .94$).

2.1.2.6 Hope The 12-item Hope Scale (Snyder et al. 1991) was used to assess participants' dispositional hope (e.g., "I can think of many ways to get the things in life that are most important to me"). Items were rated using a four-point scale, ranging from 1—*definitely false*, to 4—*definitely true*. Ratings were averaged, such that higher scores indicated greater hope ($\alpha = .89$).

2.1.2.7 Optimism The Life Orientation Test-Revised (Scheier et al. 1994) was used to assess participants' dispositional optimism. This scale comprises six items reflecting optimism (e.g., "In uncertain times, I usually expect the best") and pessimism (e.g., "I rarely count on good things happening to me"), along with four filler items. Ratings were made on a five-point scale, ranging from 0—*strongly disagree*, to 4—*strongly agree*. Ratings were averaged (after reverse-scoring the pessimism items), such that higher scores indicating greater optimism ($\alpha = .90$).

2.1.2.8 Positive and Negative Affect The 12-item Scale of Positive and Negative Experiences (Diener et al. 2010) was used to assess the frequency of participants' positive (e.g., happy, positive) and negative (sad, negative) affective experiences over the past 4 weeks. Items were rated on a five-point scale, ranging from 1—*very rarely or never*, to 5—*very often or always*. Ratings were averaged separately for the positive and negative items such that higher scores indicated more frequent positive (PA) and negative (NA) affective experiences ($\alpha s = .94$ and .93, respectively).

2.2 Results

Descriptive statistics and correlations for the study measures are shown in Table 1. As predicted, lay theories for LS were positively correlated with the subjective LS trajectories. Specifically, individuals holding more incremental lay theories for LS perceived greater increases between their past and current LS, and between their past and future LS (but not between their current and future LS).

Lay theories for LS and subjective LS trajectories were also correlated with each of the goal striving, self-regulatory resources, and emotional well-being measures, as hypothesized. That is, individuals with more incremental lay theories for LS reported: greater commitment to and confidence in achieving their brighter future lives; greater self-efficacy, hope, and optimism; and greater PA and lower NA. The same patterns of associations were found in relation to the past-future slope of individuals' subjective LS trajectories, as well as the past-current slope, with the exception of one non-significant correlation (i.e., commitment). In contrast, the current-future subjective LS trajectory slope was significantly correlated with *greater* commitment and *lower* emotional well-being (i.e., lower PA and greater NA).

To examine the unique predictive effects of the lay theories for LS and subjective LS trajectories, we used ordinary least squares regression to regress the goal striving, self-regulatory resource, and emotional well-being measures onto these two sets of beliefs simultaneously. Note that although we had originally intended to examine the various measures as separate criteria, strong positive correlations were observed among this measures (see Table 1). An exploratory principle components analysis with oblique rotation revealed two large components that explained 74% of the variance across the seven criteria measures: The first component had strong positive loadings from the commitment and confidence measures; the second component had strong loadings from the remaining measures (i.e., positive loadings from self-efficacy, optimism, hope, and positive affect, as well as a negative loading from negative affect). Thus, prior to subsequent analysis, we computed two composite scores by standardizing and averaging the relevant measures (and reverse-scoring the negative affect measure) such that higher scores indicated, respectively, greater goal striving and more positive psychological adjustment.

Table 1 Descriptive statistics and correlations among study measures—Study 1

Measure	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Lay theory	4.61	1.02	–												
2. LS—past	5.29	2.35	.03	–											
3. LS—current	5.98	2.27	.20	.15	–										
4. LS—future	7.96	1.99	.31	.12	.52	–									
5. Slope—PC	0.69	3.02	.13	− .68	.64	.30	–								
6. Slope—CF	1.98	2.10	.02	− .05	− .59	.38	− .41	–							
7. Slope—PF	2.68	2.89	.19	− .73	.24	.59	.75	.30	–						
8. Confidence	4.85	0.90	.22	.13	.31	.41	.13	.05	.17	–					
9. Commitment	5.87	1.09	.45	.14	.26	.48	.09	.17	.22	.48	–				
10. Self-efficacy	3.89	0.73	.39	.15	.46	.52	.22	.00	.23	.43	.55	–			
11. Hope	3.06	0.54	.34	.14	.51	.54	.27	− .03	.26	.53	.58	.85	–		
12. Optimism	2.48	0.96	.34	.14	.49	.49	.26	− .06	.23	.38	.38	.68	. 69	–	
13. PA	3.64	0.88	.31	.18	.61	.50	.32	− .18	.20	.44	.41	.61	. 64	. 69	–
14. NA	2.04	0.89	− .23	− .13	− .56	− .40	− .32	.23	− .17	− .30	− .29	− .55	− .53	− .60	− .66

$N = 320$. *r*s greater than .10 (absolute value) are significant at $p < .05$

LS life satisfaction, *PC* past-current, *CF* current-future, *PF* past-future, *PA* positive affect, *NA* negative affect

Table 2 Results from regression of goal striving and psychological adjustment on lay theories for life satisfaction and subjective trajectories for life satisfaction—Study 1

Predictor	Goal-striving		Psychological adjustment	
	r	β	*r*	β
Lay theory	.40*	.37*	.38*	.35*
Slope—PC	.13*	.15*	.33*	.27*
Slope—CF	.13*	.16*	−.12*	−.04
Model R^2		.18*		.22*

$N = 320$. Results should be read by column (criterion) variable. For each predictor (row) variable, pairwise correlations with the criterion (*r*) and standardized regression coefficients (β) are shown

PC past-current, *CF* current-future

*$p < .05$

We entered lay theories for LS and both the past-current and current-future subjective LS trajectory slopes as simultaneous predictors of each composite score. As shown in Table 2, lay theories for LS and the past-current subjective LS trajectory slope each had unique positive predictive effects in both models. That is, as expected, stronger goal striving and more positive psychological adjustment were predicted by more incremental lay theories for LS and more steeply inclining past-current subjective LS trajectories. In addition, the current-future subjective LS trajectory slope had a unique *positive* predictive effect on goal striving (but not psychological adjustment). That is, contrary to predictions, greater goal striving was also predicted by more steeply inclining current-future subjective LS trajectories.

2.3 Discussion

Study 1 provided evidence of a positive relationship between lay theories for LS and subjective LS trajectories among younger adults. That is, individuals who viewed their LS as more malleable (vs. fixed) also tended to perceive greater improvements in their LS over time, particularly from their past to current lives. The modest magnitude of this link, however, suggests substantial independence between lay theories for LS and subjective LS trajectories, consistent with previous research exploring parallel issues in the health domain (Bunda and Busseri, in press).

The present study also provided evidence that both sets of beliefs uniquely predicted goal striving and psychological adjustment. That is, consistent with previous lay theories research (e.g., Burnette et al. 2013; Dweck et al. 1995; Molden and Dweck 2006), individuals who viewed their LS as more malleable tended to report greater confidence and commitment to pursuing a brighter anticipated future, as well as greater self-efficacy, hope, and optimism, and more positive (and less negative) affective experiences. Similar positive predictive effects on goal striving and psychological adjustment were found for the subjective LS trajectories with respect to the past-current subjective LS trajectory slope. These latter results are consistent with previous research suggesting that more steeply inclining past-current subjective LS trajectories are linked with more adaptive functioning in a variety of domains (Busseri et al. 2009a, b; Busseri and Peck 2015; Shanahan and Busseri 2016).

Contrary to predictions, however, we also found that more steeply inclining current-future subjective LS trajectories were predictive of stronger goal striving. Such findings

are noteworthy because they are inconsistent with several previous studies indicating that greater inclines in this piece of the subjective LS trajectory may be maladaptive (e.g., Busseri et al. 2012; Choma et al. 2014). We note, however, that consistent with these previous studies, greater inclines in this piece of the subjective LS trajectory were associated with less (rather than more) positive psychological adjustment in the pairwise analysis, and were not a significant predictor of psychological adjustment in the regression analysis. (We consider the implications of these findings in greater detail in the General Discussion.)

In summary, Study 1 provided novel and valuable insights concerning the link between lay theories for LS and subjective LS trajectories, as well as their associations with psychological adjustment and goal striving in pursuit of a brighter future life among younger adults. Critically, however, the use of a correlational design limits claims concerning causality. Further, given that this was the first study to examine these particular issues, the reliability of these findings is unclear, including the links between stronger goal striving and more steeply inclining subjective LS trajectories found for both pieces (i.e., past-current, current-future) of the subjective trajectory. Thus, a second study was undertaken to address these limitations.

3 Study 2

In Study 2, we sought to replicate and extend the findings from Study 1. To do so, we employed an experimental design to assess the impact of manipulating younger adults' lay theories for LS. Our first goal was to determine the impact of manipulating lay theories for LS on young adults' subjective LS trajectories. Consistent with Study 1, as well as previous research manipulating lay theories (e.g., Hong et al. 1999), we expected that individuals viewing their LS as more malleable would view their LS as changing more over time compared to individuals viewing their LS as fixed. Consequently, we predicted that younger adults in the incremental lay theory condition would report more steeply inclining subjective LS trajectories than those in the entity condition. Note that because we expected that incremental lay theories for LS and inclining subjective LS trajectories would be normative among younger adults (as in Study 1), we expected participants in the control condition to also have inclining subjective LS trajectories, although the inclining slope of the subjective LS trajectories might be steeper in incremental (vs. control) condition following the manipulation.

Our second goal was to assess the effects of lay theories for LS and subjective LS trajectories on self-regulatory resources, emotional well-being, and goal striving in pursuit of a brighter future life among younger adults. Consistent with previous lay theories research (Dweck 1999; Molden and Dweck 2006), we predicted that goal striving (confidence, commitment), self-regulatory resources (self-efficacy, hope, optimism), and emotional well-being would be more positive in the incremental lay theory condition than in the entity condition. Furthermore, given that we anticipated that incremental lay theories for LS to be normative, we expected participants in the incremental condition to report levels of each outcome that were similar to, if not more positive than, those in the control condition. In addition, consistent with previous subjective LS trajectory research (e.g., Busseri et al. 2009a, b, 2012) and results from Study 1, we expected that more positive self-regulatory resources, greater emotional well-being, and stronger goal striving would be found among individuals with steeper past-current (but not current-future) subjective LS trajectory slopes. Finally, we evaluated whether the lay theories manipulation and the subjective LS

trajectories would each have unique effects on the outcomes of interest. Based on previous research (Bunda and Busseri, in press) and results from the present Study 1, we expected that the lay theories manipulation and the subjective LS trajectories would have independent predictive effects on individuals' self-regulatory resources, emotional well-being, and goal striving in pursuit of a brighter future life.

3.1 Method

3.1.1 Participants and Procedure

Participants were recruited online from Amazon MTurk. MTurk workers from America were eligible for the study provided that they were within the target age range (younger adults; 18–40 years old), had previously achieved a 90% approval ratings based on their previous MTurk activity, and had not participated in the first study. The study was completed online using Qualtrics software. After providing consent, participants completed the study questionnaire, and were provided with an on-line debriefing form and payment code redeemable for $1.50 USD through MTurk. Of the 389 individuals who participated in the study, 348 (89%) were within the target age range, correctly responded to two attention check items, passed an acquiescence check (as in Study 1), and completed the study measures. Furthermore, of the participants who were randomly assigned to one of two lay theory conditions (described below), 87% responded to the open-ended comprehensive check questions; only these participants were included in the subsequent analyses (see Howell et al. 2016; Van Tongeren and Burnette 2018, for similar screening approaches). Thus, analyses are based on 321 participants (M age = 30.46 years, SD = 5.02; 53% male; 81% White, 7% Black, 10% Latino, 8% Asian; 65% college/university educated or higher).

3.1.2 Manipulation

Participants were randomly assigned to one of three conditions. In the incremental lay theory condition, participants read a fictitious one-page media article summarizing results from psychological research indicating that personal LS is malleable (and improvable) because it is strongly influenced by personal efforts and factors within one's control. In the entity condition, participants read a similarly structured article summarizing results from research indicating that LS is generally fixed (i.e., not changeable or improvable) because it is strongly influenced by genetics and factors beyond one's control. Note that both of these articles were modeled on previously validated lay theory manipulations related to well-being/happiness (Howell et al. 2016; Van Tongeren and Burnette 2018). To ensure that participants had read and understood the manipulation material, they were asked to summarize the main message of the article in one or two sentences, using an open-ended text box. They were also asked to respond to four comprehensive check items (e.g., "According to the article you just read, how much can life satisfaction change over time?"), each rated on a five-point scale ranging from 0—*not at all*, to 4—*a lot*. Finally, participants were asked to provide examples from personal experience of how the information from the media article applied to their own lives, using an open-ended text box. Following this, participants completed the study measures described below. In the control condition, participants were not exposed to either media article, but instead only completed the study measures.

3.1.3 Measures

The measures for lay theories for LS (α = .97), subjective LS trajectories, goal striving (confidence, α = .74; commitment, α = .94), self-efficacy (α = .93), hope (α = .89), optimism (α = .92), and PA and NA (αs = .93 and .90 respectively) were identical to those used in Study 1.

3.2 Results

Descriptive statistics and correlations among the study measures are shown in Table 3. Comparisons among conditions, as evaluated by a series of one-way ANOVAs and post hoc pairwise comparisons, are detailed in Table 4. As expected, the lay theory manipulation significantly impacted participants' lay theories for LS. Specifically, participants in the incremental and control conditions had higher incremental (vs. entity) lay theory of LS scores compared to the entity condition; however, results did not differ between the incremental and control conditions. Also consistent with predictions, the lay theory manipulation impacted the subjective LS trajectories, including the past-current, current-future, and past-future slopes. Specifically, the past-current slope was significantly steeper in the incremental versus entity and control conditions. Further, both the current-future and past-future slopes were significantly steeper in the incremental and control conditions versus the entity condition; however, the current-future and past-future slopes did not differ between the incremental and control conditions.

The lay theory manipulation also significantly impacted each of the goal striving, self-regulatory resources, and emotional well-being outcomes, with two exceptions (i.e., the manipulation did not significantly impact optimism and NA). As detailed in Table 4, consistent with predictions, mean outcome levels were significantly more positive in the incremental condition than in the entity condition for each of the outcomes except optimism and NA. Furthermore, compared to the control condition, results in the incremental condition were significantly more positive for each outcome except confidence (and optimism and NA); and results in the entity condition were significantly less positive compared to the control condition for confidence and commitment.

The goal striving, self-regulation resources, and emotional well-being measures were also positively correlated with lay theories for LS and the subjective LS trajectories (see Table 3). Specifically, consistent with predictions, individuals with more incremental (vs. fixed) lay theories for LS and those who perceived greater improvements from their past to current LS also reported greater commitment to and confidence in achieving their brighter future lives; greater self-efficacy, optimism, and hope; as well as greater PA and less NA. Similar associations were found for the past-future subjective LS trajectory slope, and, contrary to predictions, for the current-future slope with respect to confidence, commitment, and self-efficacy (but not for hope, optimism, PA, or NA).

To examine the unique effects of the lay theory manipulation and the subjective LS trajectories, we used ordinary least squares regression to regress the outcome measures onto these two sets of beliefs. Although we had intended to examine the seven outcome measures as separate criteria, strong positive correlations were observed among these various measures (see Table 3). An exploratory principle components analysis with oblique rotation revealed two large components that explained 75% of the variance across the seven measures: The first component had strong positive loadings from the commitment

Table 3 Descriptive statistics and correlations among study measures—Study 2

Measure	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Lay theory	4.31	1.23	–												
2. LS—past	5.07	2.44	−.12	–											
3. LS—current	6.09	2.15	.12	.21	–										
4. LS—future	8.07	1.86	.31	.15	.53	–									
5. Slope—PC	1.02	2.90	.19	−.68	.57	.26	–								
6. Slope—CF	1.98	1.97	.16	−.08	−.60	.37	−.37	–							
7. Slope—PF	3.01	2.84	.31	−.76	.17	.53	.76	.32	–						
8. Confidence	4.83	0.91	.17	−.02	.20	.38	.17	.14	.27	–					
9. Commitment	5.89	1.13	.34	−.10	.16	.52	.20	.32	.42	.50	–				
10. Self-efficacy	3.90	0.66	.25	.07	.37	.55	.22	.12	.30	.40	.53	–			
11. Hope	3.04	0.51	.26	.13	.45	.58	.23	.06	.27	.45	.57	.82	–		
12. Optimism	2.45	0.98	.18	.19	.51	.52	.22	−.07	.18	.34	.35	.70	.72	–	
13. PA	3.57	0.86	.15	.13	.55	.61	.30	−.02	.29	.39	.38	.63	.67	.70	–
14. NA	2.14	0.81	−.13	−.08	−.44	−.47	−.26	.04	−.24	−.21	−.23	−.50	−.53	−.61	−.60

$N = 321$. *r*s greater than .10 (absolute value) are significant at $p < .05$

LS life satisfaction, *PC* past-current, *CF* current-future, *PF* past-future, *PA* positive affect, *NA* negative affect

Table 4 Results from comparisons among experimental conditions—Study 2

Outcome	Incremental		Entity		Control		Group comparisons	
	M	*SD*	*M*	*SD*	*M*	*SD*	Omnibus	Pairwise
Lay theory	4.85	1.15	3.33	1.08	4.69	0.99	$F(2,318) = 55.78$, $p < .001$, $\eta^2 = .26$	I, C > E
Slope—PC	1.60	2.91	0.70	2.87	0.83	2.88	$F(2,318) = 2.71$, $p = .068$, $\eta^2 = .02$	I > C, E
Slope—CF	2.10	1.88	1.41	1.91	2.24	2.01	$F(2,318) = 5.03$, $p = .007$, $\eta^2 = .03$	I, C > E
Slope—PF	3.70	3.07	2.11	2.55	3.08	2.73	$F(2,318) = 7.24$, $p = .001$, $\eta^2 = .04$	I, C > E
Confidence	5.04	0.76	4.59	0.94	4.84	0.94	$F(2,318) = 5.36$, $p = .005$, $\eta^2 = .03$	I, C > E
Commitment	6.30	0.84	5.44	1.19	5.88	1.17	$F(2,318) = 13.65$, $p < .001$, $\eta^2 = .08$	I > C > E
Self-efficacy	4.07	0.61	3.74	0.68	3.87	0.66	$F(2,318) = 5.76$, $p = .004$, $\eta^2 = .04$	I > C, E
Hope	3.17	0.47	2.94	0.53	3.00	0.50	$F(2,318) = 5.29$, $p = .005$, $\eta^2 = .03$	I > C, E
Optimism	2.59	0.97	2.42	0.98	2.38	0.98	$F(2,318) = 1.48$, $p = .230$, $\eta^2 = .01$	ns
PA	3.78	0.80	3.51	0.81	3.48	0.90	$F(2,318) = 3.71$, $p = .030$, $\eta^2 = .02$	I > C, E
NA	2.05	0.85	2.20	0.75	2.16	0.81	$F(2,318) = 0.92$, $p = .398$, $\eta^2 = .01$	ns

$N = 321$. *ns* = 93, 83, and 145 for incremental, entity, and control conditions, respectively

PC past-current, *CF* current-future, *PF* past-future, *PA* positive affect, *NA* negative affect, *I* incremental condition, *E* entity condition, *C* control condition, *ns* no significant pairwise differences

and confidence measures; the second component had strong loadings from the remaining measures (i.e., positive loadings from self-efficacy, optimism, hope, and positive affect, as well as a negative loading from negative affect). Thus, we computed two composite scores by standardizing and averaging the relevant measures such that higher scores indicated, respectively, greater goal striving and more positive psychological adjustment.

In Step 1 of a hierarchical regression model, we entered two dummy codes representing contrasts between conditions (i.e., incremental vs. control, entity vs. control). In Step 2, we entered the lay theory measure. And in Step 3, we entered both the past-current and current-future subjective LS trajectory slopes as simultaneous predictors. This approach allowed us to evaluate the impact of each of the incremental and entity conditions versus the control condition on the composite goal striving and psychological adjustment scores, as well as to determine which experimental effects were accounted for by individuals' lay theories for LS and/or their subjective LS trajectories.

Results are shown in Table 5. In the prediction of goal striving, both experimental conditions had significant effects (vs. control condition) in Step 1. That is, goal striving was significantly greater in the incremental (vs. control) condition and significantly weaker in the entity (vs. control) condition. The latter effect was accounted for by a significant positive predictive effect of the lay theory for LS measure in Step 2, whereas the former effect was not. That is, the negative effect of the entity (vs. control) condition on goal striving was explained by individuals' lay theories for LS, whereas the positive impact of the incremental (vs. control) condition was independent of individuals' lay theories for LS. At Step 3, both the incremental (vs. control) condition contrast and the lay theories for LS measure remained unique positive predictors of goal striving, along with the past-current subjective LS trajectory slope (as expected) and the current-future subjective LS trajectory slope (contrary to predictions).

In the prediction of psychological adjustment, only the incremental (vs. control) condition contrast had a significant effect in Step 1. That is, psychological adjustment was significantly greater in the incremental (vs. control) condition. This effect was not accounted for

Table 5 Results from regression of goal striving and psychological adjustment on lay theories for life satisfaction and subjective trajectories for life satisfaction—Study 2

	Goal-striving				Psychological adjustment			
Predictor	*r*	Step 1	Step 2	Step 3	*r*	Step 1	Step 2	Step 3
Dummy—I vs. C	.22*	.16*	.15*	.13*	.16*	.14*	.13*	.10
Dummy—E vs. C	− .23*	− .17*	− .05	− .03	− .09	− .03	− .03	.08
Lay theory	.30*		.24*	.14*	.23*		.24*	.18*
Slope—PC	.21*			.30*	.29*			.28*
Slope—CF	.27*			.35*	.01			.10
Model R^2		.07*	.11*	.23*		.02*	.06*	.12*

$N = 320$. I vs. C = dummy code contrasting incremental (1) and control (0) conditions. E vs. C = dummy code contrasting entity (1) and control (0) conditions. Results should be read by column (criterion) variable. For each predictor (row) variable, pairwise correlations with the criterion (*r*) and standardized regression coefficients (β) are shown from each step of the hierarchical regression model

PC past-current, CF current-future

*$p < .05$

by the significant positive predictive effect of the lay theory for LS measure in Step 2. That is, the positive impact of the incremental (vs. control) condition on psychological adjustment was independent of individuals' lay theories for LS. At Step 3, the lay theories for LS measure remained a unique positive predictor (the incremental condition contrast was no longer significant), along with the past-current subjective LS trajectory slope but not the current-future slope (both findings were as expected).

3.3 Discussion

The experimental manipulation had a significant impact on younger adults' lay theories for LS and on their subjective trajectories, such that those in the incremental (vs. entity) lay theory condition reported greater improvements in their LS over time, including between their past-current, current-future, and past-future lives. However, individuals in the incremental condition did not differ in their lay theories for LS (or their current-future and past-future slopes) from those in the control condition. Together, these findings suggest that the manipulation was not effective in boosting incremental beliefs, but was effective in creating relatively stronger entity beliefs. Furthermore, the magnitude of the manipulation impact on the subjective LS trajectories was considerably more modest than its impact on the lay theories for LS, suggesting substantial independence between these two sets of beliefs.

In addition, both the lay theory manipulation and the subjective LS trajectories uniquely impacted (or predicted) individuals' goal striving and psychological adjustment. That is, consistent with the correlational results from Study 1 and previous lay theories research (e.g., Dweck et al. 1995; Molden and Dweck 2006), comparisons among the three experimental conditions in Study 2 indicated that individuals in the incremental (vs. control and entity) condition reported greater confidence and commitment to pursuing their brighter anticipated future lives, as well as more positive psychological adjustment (including greater self-efficacy and hope). Furthermore, in the regression analysis predicting the composite goal striving score, the impact of the incremental condition relative to the control condition remained significant *even after* controlling for individuals' lay theories for LS

(as well as their subjective LS trajectories)—raising questions about the source of this particular experimental effect. Indeed, it appears that the manipulation created greater goal striving among individuals in the incremental (vs. control) condition for reasons that were independent of participants' lay theory beliefs concerning LS, and independent of their beliefs about how much their LS was changing over time. Also noteworthy, in comparisons among the three conditions, the entity (vs. incremental and control) condition had a negative impact on participants' goal striving, but not psychological adjustment. Furthermore, the impact of the entity (vs. control) condition on goal striving was fully explained by individuals' lay theories for LS following the manipulation—providing insight concerning the source of this particular experimental effect.

Independent of these experimental effects, participants' lay theories for LS were uniquely and positively predictive of greater goal striving and more positive psychological adjustment. Such findings are consistent with previous lay theories research, including results from Study 1 in the present work, and demonstrate the potential benefit of holding stronger incremental (vs. entity) beliefs concerning one's LS. Furthermore, the subjective LS trajectories also had unique predictive effects. Specifically, individuals with more steeply inclining past-current subjective LS trajectories were characterized by stronger goal striving and more positive psychological adjustment. Such findings are consistent with previous research linking more steeply inclining past-current subjective LS trajectories with more adaptive functioning (e.g., Busseri et al. 2012; Merrick and Busseri 2015).

Contrary to predictions, however, results from Study 2 also indicated a unique predictive effect for the current-future subjective LS trajectory slope on goal striving (but not on psychological adjustment). These latter findings are consistent with those observed in Study 1 and suggest that although this particular component of the subjective LS trajectories may be negatively (or not significantly) linked with emotional well-being (e.g., Busseri et al. 2009a, b, 2012), there may be some positive motivational impact with respect to anticipating that one's life in the future will be better than one's life at present (Boldero and Francis 2002; Carver and Scheier 1998).

In summary, Study 2 replicated several of the findings from Study 1 and also provided novel evidence concerning the lay theories manipulation. In particular, results from Study 2 provided valuable additional insights concerning the link between lay theories for LS and subjective LS trajectories among younger adults, as well as the unique positive roles of both sets of beliefs in relation to psychological adjustment and goal striving in pursuit of a brighter future life.

4 General Discussion

4.1 A Shared Assumption Concerning Change in Life Satisfaction

Our first goal was to evaluate lay theories for LS in relation to how younger adults view their LS to be unfolding over time. Subjective LS trajectories convey beliefs concerning how one's life is unfolding over time (Busseri 2013; Busseri et al. 2009a; Röcke and Lachman 2008; Shmotkin 2005). In both studies reported here, average levels of the subjective LS trajectory slopes were positive. That is, the typical respondent reported a pattern of LS evaluations indicating perceived improvement in one's life over time, from the past to the anticipated future. Such findings are consistent with other studies examining subjective LS trajectories (e.g., Lachman et al. 2008; Staudinger et al. 2003), and suggest a

widely-shared belief that life gets better and better over time among younger adults. Lay theories also reflect core assumptions about the changeable (vs. fixed) nature of personal attributes (Dweck 1999; Molden and Dweck 2006). In both of the present studies, average levels of lay theories for LS were incremental. That is, the typical younger adult respondent indicated some degree of endorsement of the general belief that one's LS is changeable through personal effort. Such results are consistent with previous studies examining lay theories for two closely related concepts, well-being and happiness, among samples of young adults (Howell et al. 2016; Van Tongeren and Burnette 2018). Together, these previous findings along with the present results suggest a commonly-shared assumption concerning the malleability of personal well-being (see also Schroder et al. 2016).

Accordingly, we had anticipated a positive association between individuals' lay theories for LS and their subjective LS trajectories. Results from both studies supported this prediction. In Study 1 and Study 2, more incremental (vs. entity) lay theories for LS were linked with more steeply inclining subjective LS trajectories. Also, in Study 2, the subjective LS trajectory slopes were more steeply inclining in the incremental and control (vs. entity) lay theory conditions. Thus, both sets of beliefs appear to reflect a shared assumption concerning change (i.e., improvement) in LS over time.

Our findings also provide valuable insights concerning which parts of the subjective LS trajectories were linked with lay theories. In Study 1, in which the lay theories for LS were measured, the association was found primarily in terms of how individuals evaluated their past versus current LS. In Study 2, in which the lay theories for LS were measured and manipulated, the association was found with respect to the how individuals evaluated their past versus current *and* current versus anticipated future LS. More specifically, relative to the control group, the effect of the incremental condition was found only with respect to the slope of past-current subjective LS trajectory, whereas the effect of the entity control was found with respect to the current-future (and past-future) subjective LS trajectory slope. Overall, therefore, the manipulation significantly impacted each piece of the subjective LS trajectory, although the incremental and entity conditions each impacted different pieces of the subjective LS trajectory. Accordingly, the relevance of individuals' views concerning the malleable (vs. fixed) nature of their LS was not limited to anticipated changes between their current and future lives, but instead extended both backward (incremental condition) and forward (entity condition) in subjective time. More generally, therefore, lay theories for LS are relevant not only to visions of a brighter future—that is, the "power of yet" (Dweck 2014)—but also to the full temporal horizon across which individuals' lives are perceived to be unfolding over time.

The magnitude of the linkage between lay theories for LS and subjective LS trajectories was modest, however, regardless of whether it was based on individual differences in each set of beliefs (Study 1, Study 2), or following an experimental manipulation (Study 2). Such findings suggests that lay theories for LS are not synonymous with subjective LS trajectories, consistent with findings recently reported in the health domain (Bunda and Busseri, in press). These results are somewhat surprising, however, given that younger individuals typically interpret the word "change" in reference to oneself as implying self-improvement or personal growth (O'Brien and Kardas 2016). Since the lay theory measures mention "change" in each scale item, it is likely that individuals interpreted such scale items in terms of the potential improvability of the attribute in question. If so, why were lay theories for LS not more strongly associated with the subjective LS trajectories?

One potential explanation pertains to the relative degree of personal control implied by each set of beliefs. Incremental theorists believe that change can occur through personal effort, whereas entity theorists view the investment of effort as pointless given the fixed

nature of the attribute (Dweck et al. 1995; Molden and Dweck 2006). The subjective LS trajectories, however, provide no information concerning the degree to which individuals' perceive that they are in control of or responsible for changes in their LS. Furthermore, given that the belief that life gets better and better during young adulthood and middle-age is a cultural norm (Berntsen and Rubin 2003; Shanahan and Busseri 2016, 2017), it may be seen as an inevitable outcome of normal development during these life stages. If so, even individuals perceiving that their life is getting increasingly more satisfying over time may not attribute such changes to personal control or effort. In addition, we note that some lay theories research suggests that individuals are motivated to self-enhance through viewing their personal strengths as stable and their personal weaknesses as malleable and improvable, and that such motivations can impact individuals' expected change in their personality traits (Steimer and Mata 2016). Accordingly, differences between incremental and entity theorists in their perceived desirability of change in LS may weaken the overall association between lay theories for LS and the subjective LS trajectory slopes. Further research is needed to explore each of these notions.

4.2 The Significance of Believing in Change in Life Satisfaction

Our second goal was to evaluate both sets of beliefs in relation to individuals' goal striving toward their brighter anticipated future lives, as well as their self-regulatory resources and emotional well-being. Based on previous research demonstrating that lay theories have implications for motivational and emotional functioning (Dweck 1999; Molden and Dweck 2006), we had anticipated that more incremental lay theories for LS would be linked with stronger goal striving and more positive psychological adjustment. Results from both studies provided support for this prediction. Such findings indicate that incremental (vs. entity) lay theories for LS may result in greater confidence and commitment in pursuit of a brighter anticipated future; these goal-striving components have been identified as key ingredients to successful goal attainment (Oettingen et al. 2005, 2009, 2015). Our findings also extend previous lay theories research through demonstrating that incremental lay theories for LS positively predict (and may positively impact) psychological adjustment (including self-efficacy, hope, optimism, and emotional well-being). Such personal resources are important aspects of effective self-regulation, coping, and life management, and are each linked with a host of other indicators of adaptive functioning (Baumgardner and Crothers, 2009; Snyder et al. 2010).

Yet our findings also highlight an unanticipated result concerning the unique effect of the incremental (vs. control) condition on goal striving in Study 2, which was found independent of individuals' lay theories for LS beliefs. Such findings suggest that the factor(s) responsible for boosting participants' confidence in and commitment to achieving their desired future lives in the incremental condition may extend beyond the degree to which they viewed their LS as changeable through personal effort (as well as beliefs concerning recollected past and anticipated future changes in LS). Given that previous studies examining lay theories for concepts related to LS (e.g., happiness and well-being) have not included a control condition, further work is needed to evaluate the reliability of these findings and to identify theoretically-relevant factors (e.g., social norms, social comparisons) that may underlie the possible unique boost from the incremental condition.

Furthermore, based on previous research examining the significance of subjective LS trajectories (Busseri et al. 2009a, b, 2012; Lachman et al. 2008), we had anticipated that

more steeply inclining past-current subjective LS trajectory slopes would be linked with more positive psychological adjustment among younger adults. Results from both studies support this prediction. Such findings provide additional evidence that more steeply inclining past-current subjective LS trajectories are characteristic of younger adults who are functioning well in a variety of life domains (Busseri et al. 2009a, b, 2012; Busseri and Merrick 2016). Our results further extend this previous research through demonstrating that subjective LS trajectories are also linked with greater confidence in and commitment to achieving one's brighter anticipated future. Although such links with goal striving have been speculated about in previous research on subjective trajectories (e.g., Busseri and Merrick 2016; Choma et al. 2014), the present work is the first to provide direct empirical evidence of such associations. Given the importance of these aspects of goal striving to successful goal attainment (Oettingen et al. 2005, 2009, 2015), younger individuals who view their LS as having improved from the past to the present are particularly well-positioned to attain the satisfying future lives that they envision.

Extending this previous research, the present studies also provide valuable new insights concerning the current-future subjective LS trajectory slope. Previous research has linked steeper slopes for this component of younger individuals' subjective LS trajectories with *less* positive functioning (Busseri et al. 2012; Choma et al. 2014). Consonant with such findings, in both of the present studies the current-future subjective LS trajectory slope was not positively correlated with the various aspects of psychological adjustment, and did not significantly predict psychological adjustment in the regression models. Contrary to our predictions, however, in both studies steeper current-future slopes were correlated with *greater* goal-striving with respect to pursuing one's goals for the future, and significantly predicted greater goal striving in the regression models. Such findings are novel in the subjective LS trajectory literature. These results suggest a possible unique and immediate motivational benefit to expecting that one's LS will improve from the present into the future among younger adults (Boldero and Francis 2002; Carver and Scheier 1998), particularly with respect to thoughts and intentions concerning specific goals for the future. Further research is needed to determine whether such apparent motivational benefits are reliable and/or specific to a context focusing on younger individuals' beliefs concerning the malleable (vs. fixed) nature of their LS.

All of these findings underscore the unique roles of lay theories for LS and subjective LS trajectories. That is, more positive outcomes (goal striving, psychological adjustment) were found among individuals viewing their LS as malleable (vs. fixed), even controlling for how much they perceived their LS to be changing over time. More positive outcomes were also found among individuals viewing their LS to be more greatly improving over time (past-current, current-future) even controlling for how malleable (vs. fixed) they believed their LS to be through personal effort. We speculate that the unique predictive effects of the lay theories for LS may stem from the component of these beliefs pertaining to personal control and agency, independent of the amount of recollected or anticipated change in one's LS. In contrast, we propose that the unique predictive effects of the subjective LS trajectories may derive from a sense of gratitude and appreciation for the perceived improvements in one's life, independent of the degree to which such improvements are thought to be within one's control or attributable to one's own efforts. Future research is needed to directly evaluate these notions.

4.3 Limitations

In addition to the caveats already discussed, several other limitations should be noted. First, both studies were conducted with American participants online, the majority of whom were white and college/university educated. Our results may not generalize to samples with different sociodemographic characteristics. Future research is thus needed to examine socioeconomic factors in relation to lay theories for LS, subjective LS trajectories, and their potential impacts. The homogeneity of the present samples may also explain, at least in part, the high internal consistencies and strong positive correlations observed in both studies for several of the outcomes measures.

The present work also included only participants who are 40 years of age or younger—consistent with the strong normative belief that life gets better and better during this period of life (Busseri 2013; Staudinger et al. 2003). Consequently, the present findings may only apply to individuals from this lifestage. Lifespan development theories suggest that anticipated losses and declines are more typical among older adults (Baltes 1997), and also that normative perceptions of key life events and transitions during older adulthood are largely negative (Berntsen and Rubin 2003). Furthermore, some research suggests that lay theories become less incremental (i.e., more entity) with increasing age (Neel and Lassetter 2015), and that subjective LS trajectories become less inclining (and eventually declining) with greater age (Busseri 2013; Röcke and Lachman 2008). Accordingly, we would predict that both sets of beliefs would be related to each other across the adult lifespan. Yet to be evaluated, however, is how lay theories of LS and subjective LS trajectories are related to each other, as well as to indicators of goal striving and positive functioning, among middle-aged and older adults. More generally, other theoretically-relevant factors that have been shown to vary by lifestage could also be considered in future research exploring these ideas, including well-being indicators such as psychological or eudaimonic well-being (Ryff 1991), as well as the extent to which individuals view their future lives as open-ended versus time-limited (Carstensen 2006).

Both of the present studies employed a new measure designed to assess individuals' lay theories for LS. This measure was developed by modifying the words referring to the target belief (i.e., LS) from the original items employed by Dweck (1999) to assess lay theories of intelligence. This modification approach parallels that employed in many other lay theories studies, including recent studies employing (new) lay theories measures for well-being and happiness (Howell et al. 2016; Van Tongeren and Burnette 2018). In both of the present studies this measure demonstrated unidimensionality and high internal consistency. And given the strong positive correlations typically found among self-reports of LS, happiness, and well-being, we would expect similarly strong correlations among the corresponding lay theories measures. At present, however, it is unclear whether our findings would converge with those based on scales developed in these recent studies. Future research should therefore include each of these lay theories scales in order to evaluate their convergent validity.

The entity condition from the experimental manipulation employed in Study 2 created significantly less incremental lay theories for LS, and less steeply inclining current-future (and past-future) subjective LS trajectories, compared to the control and incremental conditions. However, even in the entity condition the mean lay theories scores remained on the incremental (vs. entity) side of the response scale, and the mean subjective LS trajectory slopes were each positive (i.e., inclining). Furthermore, the incremental condition did not create more incremental lay theories for LS or more steeply inclining current-future (or past-future) subjective LS trajectories, compared to the control condition. Such findings

may reflect the normative nature of incremental lay theories for LS and inclining subjective LS trajectories among younger adults. Yet to be determined, however, is whether incremental lay theories for LS and inclining subjective LS trajectories can be increased, as well as whether entity lay theories for LS or non-inclining (i.e., stable or declining) subjective LS trajectories can be created, based on a lay theories manipulation. Such impacts may required repeated manipulation sessions or more extensive manipulation materials (e.g., Howe and Dweck 2015; Yeager et al. 2014). Such impacts may also be most likely among individuals with low baseline levels of LS and/or less incremental (more entity) lay theories at baseline. Future research examining such issues may thus reveal important boundary conditions and shed further light on the processes underlying both lay theories for LS and subjective LS trajectories.

Related, the present work does not address psychological and external factors (e.g., personality traits, life events, social conditions) that may influence the extent to which individuals view their LS as something that is changeable (vs. not), as well as the extent of anticipated improvements in their LS. For example, many individuals holding incremental lay theories may not anticipate that self-improvement will be continual or never-ending across the lifespan. Further research is needed to inform such issues. Finally, the duration of the effects of the lay theory manipulation in Study 2 were not assessed. Thus, it is unclear, for example, whether participants in the incremental condition in Study 2 maintained their greater goal striving beyond the experimental session and/or eventually experienced greater attainment of their anticipated brighter future lives. To address such issues, future studies employing longitudinal assessments following an experimental manipulation are required (e.g., Blackwell et al. 2007; Yeager et al. 2014).

5 Conclusions

The present work provides important new insights concerning the widely-held view that life gets better and better over time. Results from both of the present studies suggest that individuals' lay theories for LS—that is, their core beliefs concerning its malleable (vs. fixed) nature—play a significant role in shaping how they view their LS to be unfolding over time. These two sets of beliefs concerning LS are separable, however, and appear to function independently in predicting or influencing goal striving, self-regulatory resources, and emotional well-being. Thus, lay theories for LS and subjective LS trajectories are related but distinct frameworks for understanding the psychological significance of individuals' evaluations of their past, present, and anticipated future lives.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Informed Consent Informed consent was obtained from all participants.

Appendix

Lay Theory for Life Satisfaction Scale

This questionnaire has been designed to investigate ideas about your life satisfaction. There are no right or wrong answers. We are interested in your ideas. Using the scale below, please indicate that extent to which you agree or disagree with each of the following statements by circling the number that corresponds to your opinion next to each statement.

	Strongly agree	Agree	Mostly agree	Mostly disagree	Disagree	Strongly Disagree
1. I have a certain amount of life satisfaction and I can't really do much to change it.	1	2	3	4	5	6
2. My life satisfaction is something that I can't change very much.	1	2	3	4	5	6
3. No matter who you are, you can change your life satisfaction a lot.	1	2	3	4	5	6
4. To be honest, I can't really change how satisfied I am with my life.	1	2	3	4	5	6
5. I can always substantially change how satisfied I am with my life.	1	2	3	4	5	6
6. I can experience new things, but I can't really change my basic level of life satisfaction.	1	2	3	4	5	6
7. No matter how much life satisfaction I have, I can always change it quite a bit.	1	2	3	4	5	6
8. I can change even my basic level of life satisfaction considerably.	1	2	3	4	5	6

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