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How do career satisfaction and life satisfaction associate?

Tamara Hagmaier, Andrea E. Abele and Kyra Goebel

Department of Psychology and Sports Science,

Friedrich-Alexander Universitaet Erlangen-Nuernberg, Erlangen (FAU), Germany

Career
satisfaction
and life
satisfaction

Abstract

Purpose – Life satisfaction is an ultimate goal in human existence, and it is also an important factor in the work domain. It may both trigger work-related outcomes and be influenced by work-related factors. The authors are here concerned with career satisfaction and its association with life satisfaction. From a bottom-up perspective, career satisfaction should enhance life satisfaction; from a top-down perspective, the influence should work in the reverse direction; and from an interactionist perspective reciprocal influences are conceivable. The paper aims to discuss these issues.

Design/methodology/approach – The authors tested these perspectives in two longitudinal studies with three points of measurement each. Study 1 ($n=517$) covered a period of five years and Study 2 an eight-week period ($n=99$). The authors analyzed the data by means of latent growth curve modeling and cross-lagged analysis.

Findings – Both studies revealed that life satisfaction and career satisfaction are positively associated both within and across time. The directional association between both constructs is well-represented by a top-down model; further, by a reciprocal influence model. The bottom-up model received least support. Study 2 additionally showed that work centrality is a moderator.

Research limitations/implications – The authors discuss these findings with respect to both the relevance of life satisfaction in the work domain and the relationship between global and domain-specific life satisfaction.

Originality/value – The present research is the first one that investigates the association between career satisfaction and life satisfaction using two longitudinal studies.

Keywords Employee well-being, Structural equation modelling, Work-life issues

Paper type Research paper

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Introduction

Life satisfaction, defined as the overall cognitive judgement of one's life (Diener *et al.*, 1985), is an ultimate goal in human existence and has a number of further positive concomitants, e.g., having more friends and being healthier (Diener and Biswas-Diener, 2008). Work and organizational psychologists are recognizing that life satisfaction might also be an important issue in their field (Abele *et al.*, 2016; Erdogan *et al.*, 2012) as it is positively related to job performance (Jones, 2006) and to lower turnover intentions (Rode *et al.*, 2007). As a consequence, life satisfaction is a desirable goal for both an individual and the organization. It is therefore important to know how working conditions and the subjective experience of one's work and career affect an individual's life satisfaction.

In our present research, we are specifically concerned with if and how the experience of one's career, i.e., career satisfaction, affects life satisfaction. Career satisfaction refers to the evaluation of the accumulated experiences in one's career so far. It is a promising addition to research on life satisfaction and job satisfaction (Bowling *et al.*, 2010; Judge *et al.*, 1998) because it takes a long-term perspective to work experiences, and because it is a salient indicator of a person's evaluation of the overall work domain. Whereas some studies (Rode, 2004; Near and Rechner, 1993) suggest that the effect of work domain on life satisfaction is weak compared to non-work domains, a review by Erdogan *et al.* (2012) revealed that the relatively weak association of work domain satisfaction with life satisfaction might be a result in former studies of biased samples. Further, existing



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studies dealing with career satisfaction and life satisfaction are mostly cross-sectional (e.g. Burke *et al.*, 1999; Todd *et al.*, 2009). Thus, the first aim of our study is to examine the relationship between career satisfaction and life satisfaction not only within, but also across time.

Based on the theoretical framework from Campbell *et al.* (1976), there are three alternative theoretical perspectives with regard to the direction of influence between career satisfaction and life satisfaction, but little is known yet about which of them best describes the association between these two constructs. From an applied perspective, it makes a difference whether career satisfaction shapes life satisfaction or whether life satisfaction affects career satisfaction or both show a reciprocal influence. In the first case, work-related interventions should be in the focus as these may affect career satisfaction; in the latter two cases, a more global focus on both work-related measures and employees' work-life balance would be taken. Thus, the direction of influence between career satisfaction and life satisfaction is of both theoretical and applied interest and it is the second aim of our study.

To address these aims, we will present two longitudinal studies with three points of measurement each. Study 1 was conducted with a large sample of professionals who were approached three times with long time intervals between measures (overall five years). Study 2 was also a three-wave longitudinal research. Now, the time intervals between measures were much shorter (four weeks each), and we additionally included work centrality as a possible moderator (Rain *et al.*, 1991; Rice *et al.*, 1980).

Theoretical background and hypothesis development

The theoretical framework developed by Campbell *et al.* (1976) states that an individual's perceived level of satisfaction with life in general is related to levels of satisfaction in various life domains, such as work, family, community, health, and so on. Whereas some studies (Rode, 2004; Near and Rechner, 1993) suggest that the effect of work domain on life satisfaction is weak compared to non-work domains, a review by Erdogan *et al.* (2012) revealed that the relatively weak association of work domain satisfaction with life satisfaction might be a result in former studies of biased samples. These authors found that out of 6,160 journal articles dealing with life satisfaction and the work domain, only 193 (3.13 percent) of them examined working adults for whom the work domain was an essential part of their life.

Further, many of these studies refer to the positive relation between job satisfaction, i.e., satisfaction with one's tasks, colleagues, supervisors, pay, and life satisfaction (e.g. Judge and Watanabe, 1993; Hirschi, 2014; Rice *et al.*, 1980; Unanue *et al.*, 2017). Yet, only a handful of studies examine the link between career satisfaction and life satisfaction. Career satisfaction refers to the evaluation of the accumulated experiences in one's career so far (Abele *et al.*, 2011). It is a broader construct compared to job satisfaction and is likely to be a salient indicator of a person's evaluation of the work domain. It is therefore a promising addition to the analysis of life satisfaction and job satisfaction because it takes a long-term perspective to work experiences.

The few studies that deal with the association between career satisfaction and life satisfaction are cross-sectional and the correlation coefficients reported are all positive and vary between 0.31 in a sample of professional women (Burke *et al.*, 1999) and 0.65 in samples of university alumni (Todd *et al.*, 2009) and US professionals (Boudreau *et al.*, 2001). Further studies were conducted by Murphy and Kram (2010; full-time employed MBA students; $r=0.40$), Beutell and Wittig-Berman (1999; university students having a family and an additional job; $r=0.40$), Nemcek and James (2007; nurses; $r=0.45$), and Vigoda-Gadot *et al.* (2010; retired Israeli army in a second career; $r=0.57$).

Due to the cross-sectional design of these studies, one might state that career satisfaction and life satisfaction are related within time. However, little is known yet about their association across time. A recent study by Abele *et al.* (2016) revealed that career satisfaction and life satisfaction might also be positively related across time. Yet, as this study contains only two points of measurement, it is not possible to demonstrate a directional influence of one construct on the other as for such a demonstration three points of measurement are necessary. Thus, the first aim of our study is to expand existing research by showing that career satisfaction and life satisfaction are not only related within, but also across time. By using three points of measurement, we will also be able to demonstrate directional influences:

H1. Career satisfaction and life satisfaction are not only positively associated within time but they are also positively associated across time (*H1*).

Based upon Campbell *et al.*'s (1976) domain model of life satisfaction, additional theoretical models have been formulated to account more precisely for the interplay between life satisfaction and various life domains (e.g. Diener *et al.*, 1999). Scholars distinguish three perspectives: a bottom-up, a top-down, and an interactionist perspective. The bottom-up approach states that objective life conditions and the experiences in different life domains determine a person's overall level of life satisfaction (Heller *et al.*, 2004). The bottom-up approach is based on the idea that individuals have basic needs and their fulfillment – both externally provided and self-generated – enhances satisfaction (Erdogan *et al.*, 2012). Support for the bottom-up perspective comes from experimental research showing that life satisfaction judgments vary with situational conditions (Iverson and Maguire, 2000). Research has also shown that positive and negative life events have an influence on life satisfaction (Stallings *et al.*, 1997). However, the bottom-up approach was seriously challenged by a wide variety of empirical findings. Studies showed that bottom-up influences (e.g. income, health, age, material status or educational level) account only for a small portion of variance in general life satisfaction (cf. Campbell *et al.*, 1976) and are short-lived. Even extreme events (e.g. quadriplegics or lottery winners) were shown to exert only little and short-term influences on a person's life satisfaction (cf. Heller *et al.*, 2004). Yet, not all life events lead to a gradual adaptation of a person's life satisfaction. The death of a loved one, for instance, leads to an enduring change in life satisfaction (Lucas, 2007). Moreover, life domains are weighted differently (Erdogan *et al.*, 2012) and their impact on global life satisfaction varies between persons. Taken together, the bottom-up approach suggests that satisfaction with one's career has an influence on life satisfaction[1]. An example of this perspective is Sirgy's (2001) bottom-up spillover model postulating that the satisfaction within one domain of life may spill over to other domains of life (horizontal spillover) and spill over to hierarchically superior constructs, such as general life satisfaction (vertical spillover). Regarding the present issues, it would suggest that employees who are very satisfied with their career show a vertical spillover to life satisfaction.

The top-down approach, in contrast, takes a dispositional perspective on satisfaction. It argues that a person is predisposed toward being more or less satisfied with his or her life in general and consequently also with specific aspects of his or her life. Supporters of this approach argue that both personality traits as well as general life satisfaction are relatively stable constructs and that global features of our personality influence our perception of events. Thus, individuals may have a global tendency to perceive life in a more or less positive or negative manner, depending on their stable personality traits (DeNeve and Cooper, 1998; Heller *et al.*, 2004). Several meta-analyses (DeNeve and Cooper, 1998; Steel *et al.*, 2008) revealed that personality predicted 18 percent of life satisfaction with emotional stability and extraversion being the most important factors. According to a top-down perspective, a person with high life satisfaction will evaluate life domains more positively

than a person with lower life satisfaction. Stated differently, life satisfaction constitutes an important indicator that individuals use to evaluate their life domains, among others, also their career development (Ballout, 2008). This approach predicts a directional influence from life satisfaction to career satisfaction. An exemplary model that takes such a perspective is the propensity model developed by Kozma *et al.* (2000). It focuses on a dispositional component that determines the stability of a person's psychological well-being despite changing life circumstances.

As a third possibility for the direction of influence, finally, an interactionist approach is conceivable. A dynamic interactionist approach (Emmons *et al.*, 1986) treats both top-down and bottom-up factors as simultaneous independent and interdependent variables with bidirectional causality. Applied to our present reasoning, life satisfaction should affect domain-specific satisfaction, like, for instance, career satisfaction, and domain-specific satisfaction should affect life satisfaction to a similar degree. An example of this approach is the bidirectional model (Mallard *et al.*, 1997). Based on Michalos' (1985) multiple discrepancy theory, it is argued that the relationship between life satisfaction and career satisfaction might be bidirectional, as there are simultaneous bottom-up and top-down influences.

Although research exploring the causal relationship between global and domain-specific satisfaction is recognized as very important (cf. Mallard *et al.*, 1997; Rain *et al.*, 1991), to the best of our knowledge, no research so far has examined which of the described theoretical approaches and models best describes the direction of influence between career satisfaction and life satisfaction. Based upon research in other domains of life satisfaction being more in favor of a top-down approach (cf. Lucas, 2007) as well as an interactionist approach (cf. job satisfaction and life satisfaction; Alghamdi, 2015; Rode, 2004) than a bottom-up one, we also predict that top-down and reciprocal models describe the association between career satisfaction and life satisfaction better than bottom-up models:

H2. Life satisfaction and career satisfaction are either reciprocally related over time or there is a top-down impact from life satisfaction on career satisfaction (*H2*).

Knowing more about the direction of influence between career satisfaction and life satisfaction is not only important for theoretical reasons, but also regarding practical implications. If our data would support the top-down approach, then the starting point for interventions would be a person's traits and affective dispositions, which are relatively stable factors (Lent *et al.*, 2005). Thus, sustainable interventions to foster a person's career satisfaction would require a more global focus and probably a great deal of time and effort. If, on the other hand, our results would be in favor of a bottom-up approach, it would be easier to design interventions for fostering a person's career satisfaction. In this case, interventions that aim at strengthening a person's occupational self-efficacy or career goals might be a good starting point. Finally, if the data would support an interactionist approach, both temperamental factors as well as more dynamic and modifiable situational aspects could be used as starting points (Heller *et al.*, 2004).

Study 1

Method

Sample and procedure. Data were collected in a prospective longitudinal study with a sample of 1,200 professionals who had graduated with a master's degree at different German universities in 1999. We first contacted our participants immediately after their final exams in 1999. They received further questionnaires in the years 2001, 2004, 2006, 2008, and 2011.

The sample we are concerned with in this study comprised participants who had answered the questionnaires in 2006, 2008, and 2011 (here referred to as T1, T2, and T3), which all included the same measures for career satisfaction and life satisfaction. Dropout analyses (gender, age, and GPA) revealed no differences in the answers to the

first questionnaire (1999) between participants who answered the 2006, 2008, and 2011 questionnaires and those who did not take part in the survey anymore. The final sample ($n = 517$) comprised 136 women and 381 men (mean age at T1: $M = 34.22$, $SD = 2.15$, at T2: $M = 36.56$, $SD = 2.10$, and at T3: $M = 38.93$, $SD = 2.14$). Participants worked on average 37.80 hours a week at T1 ($SD = 6.36$), 38.21 hours a week at T2 ($SD = 5.99$), and 37.56 hours a week at T3 ($SD = 6.56$). Two-thirds of the participants worked in private enterprises (65.6 percent) and one-third (34.4 percent) was state-employed. Most of the participants lived with a partner (at T1 82.2 percent, at T2 83.4 percent, and at T3 85.1 percent) and many of them were parents (at T1 42.0 percent, at T2 53.0 percent, and at T3 63.8 percent).

Measures

Career satisfaction. Career satisfaction was assessed using a German version of the career satisfaction scale (CSS; Spurk *et al.*, 2011). The scale is the most frequently used measure of career satisfaction, it is one-dimensional and reveals high levels of construct validity (Hofmans *et al.*, 2008). The CSS comprises five items (sample item: "I am satisfied with the progress I have made toward meeting my overall career goals"). Participants' answers were based on a five-point rating scale ranging from 1 = not at all to 5 = very much.

Life satisfaction. We measured life satisfaction with a German version (Glaesmer *et al.*, 2011) of the Satisfaction with Life Scale (SWLS; Diener *et al.*, 1985). The scale consists of five items (e.g. "In most ways my life is close to the ideal", "If I could live my life over, I would change almost nothing"). We applied a five-point response format ranging from 1 = strongly disagree to 5 = strongly agree. The scale is widely used and correlates expectedly with other measures of subjective well-being and health (e.g. positive and negative affect, social support, and depressiveness, see Diener *et al.*, 1985; Glaesmer *et al.*, 2011).

Control variables. Participants' gender was assessed at T1 and was coded 0 = female, 1 = male. Family status was measured at all three times (living with a partner: 0 = no, 1 = yes and having children: 0 = no, 1 = yes). Participants indicated their weekly working hours by answering an open-ended question at T1, T2, and T3.

Analytical strategy. We first conducted CFAs to ensure that our measures are distinctly constructed and tested for measurement invariance of the two scales, CSS and SWLS, over time. We then used latent growth curve modeling a statistical analysis that estimates growth trajectories of intra-individual change over time to test our hypotheses that career satisfaction and life satisfaction are related within and across time (*H1*). Specifically, we assessed if the intercept (initial level) and slope (intra-individual change trajectory) of career satisfaction were related to the intercept and slopes of life satisfaction over the three points of measurement. *H2*, stating that career satisfaction and life satisfaction predict change in each other over time, was tested by means of cross-lagged analyses. This type of analysis is particularly useful to estimate whether a variable temporally precedes and/or follows another variable (Martens and Haase, 2006). Career satisfaction and life satisfaction were always assessed as latent constructs with their respective items as indicators. The analyses were conducted using Mplus (Muthén and Muthén, 1998).

Results

Before running a series of CFAs to assure the discriminant validity among study variables, we tested the normality of our observed variables. Results revealed that the univariate skewness values of our variables range between -1.06 and -0.37 , the univariate kurtosis values between -1.12 and 1.59 . As values for skewness and kurtosis between -2 and $+2$ are considered acceptable to prove normal univariate distribution (Field, 2000; George and Mallery, 2010; Gravetter and Wallnau, 2014;

Trochim and Donnelly, 2006), our variables fulfill this criterion. Yet, regardless of whether the distribution of observed variables is univariate normal, the multivariate distribution can still be multivariate non-normal (West *et al.*, 1995), thus we also assessed the multivariate skewness and kurtosis values (Mardia's coefficient) of our data. Results revealed that both Mardia's multivariate skewness (117.30, $p < 0.001$), and Mardia's multivariate kurtosis (1136.04, $p < 0.001$) differ significantly from the null hypothesis, meaning that they are non-normal distributed. Thus, we decided to use the Satorra-Bentler's maximum likelihood mean (MLM) adjusted estimator, which is robust to non-normality, to conduct our further analysis.

Results of the CFA with MLM estimator revealed that the two-factor models (for the three points of measurement) fit the data well (T1: $\chi^2 = 75.64$, $df = 34$, CFI = 0.98, TLI = 0.97, RMSEA = 0.05, SRMR = 0.04; T2: $\chi^2 = 90.43$, $df = 34$, CFI = 0.97, TLI = 0.96, RMSEA = 0.06, SRMR = 0.04; T3: $\chi^2 = 95.75$, $df = 34$, CFI = 0.97, TLI = 0.96, RMSEA = 0.06, SRMR = 0.04; cf. Hu and Bentler, 1999). Moreover, we tested with Satorra-Bentler scaled difference χ^2 test (Satorra and Bentler, 2001), if these models provided a significant improvement in fit compared to one-factor models. Results show that the two-factor model fit the data better than the one-factor models (T1: difference test scaling correction (CD) = 1.54, Satorra-Bentler Scaled χ^2 difference S-B $\Delta\chi^2(1) = 482.43$, $p < 0.001$; T2: CD = 2.04, S-B $\Delta\chi^2(1) = 299.72$, $p < 0.001$; T3: CD = 3.65, S-B $\Delta\chi^2(1) = 212.80$, $p < 0.001$). Thus, career satisfaction and life satisfaction could be clearly distinguished. Table I displays descriptive statistics and correlations for the study variables.

Next, we provided evidence of measurement invariance across points of measurement. To proceed with LGC analyses, it is necessary to demonstrate at least scalar invariance, which is given when equivalent factor structures and equal factor loadings are observed across time points. All scales either fulfilled or exceeded this requirement and the suitability of the scales for the subsequent LGC model was confirmed.

Then, we modeled linear and non-linear univariate LGC models of career satisfaction and life satisfaction to establish which growth curve best describes the change of each construct over time. For both constructs, linear growth proved better and was used in subsequent analyses.

Next, we specified a bivariate multiple indicator latent growth curve model to test the hypothesis that career satisfaction is significantly related to life satisfaction across time (*H1*). The fit indices for the model were good ($\chi^2 = 750.19$, $df = 399$, CFI = 0.96, TLI = 0.96, RMSEA = 0.04, SRMR = 0.05). Replicating previous findings, the LGC model showed significant correlations between the intercept of career satisfaction and the intercept of life satisfaction, $r(515) = 0.61$, $p < 0.001$. Supporting *H1*, a positive correlation between the slopes of career satisfaction and life satisfaction was found, $r(515) = 0.89$, $p < 0.001$, indicating that an increase in one measure was associated with an increase in the other.

We tested the alternative *H2* with a series of nested cross-lagged models (see Figure 1).

Model 1 is an autoregressive model that estimates the stability of the constructs over time (Burkholder and Harlow, 2003). Model 2 tests the top-down approach, Model 3 the bottom-up approach, and Model 4 the reciprocal approach. Table II shows the autoregressive paths as well as the cross-lagged standardized regression paths between career satisfaction and life satisfaction of Models 1-4.

The autoregressive model (Model 1) test revealed an acceptable fit ($\chi^2 = 778.13$, $df = 401$, CFI = 0.96, TLI = 0.96, RMSEA = 0.04, SRMR = 0.08; for a goodness-of-fit summary of all tested models, see Table III).

We then tested whether either or both of the cross-lagged models (Model 2 or Model 3) provided a significantly better fit to the data than the more parsimonious Model 1. Results revealed that Model 2 provided a significantly better fit than Model 1 (S-B $\Delta\chi^2 = 22.02$, $df = 3$, $p < 0.001$). In contrast, the fit indices of Model 3 were not significantly better than the

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Gender ^a	-	-																			
2. Partner T1 ^b	-	-	0.02																		
3. Partner T2 ^b	-	-	-0.01	0.68***																	
4. Partner T3 ^b	-	-	0.03	0.56***	0.73***																
5. Parents T1 ^c	-	-	0.10*	0.32***	0.35***	0.35***															
6. Parents T2 ^c	-	-	0.11*	0.39***	0.44***	0.42***	0.80***														
7. Parents T3 ^c	-	-	0.11*	0.47***	0.53***	0.49***	0.64***	0.80***													
8. Age T1	34.22	2.15	0.14**	0.06	0.02	0.01	0.09*	0.07	-0.01												
9. Age T2	36.56	2.10	0.13**	0.06	0.03	0.02	0.08	0.07	-0.01	0.97***											
10. Age T3	38.93	2.14	0.13**	0.06	0.02	0.02	0.09*	0.07	-0.01	0.98***	0.97***										
11. Working hours T1	37.80	6.36	0.31***	0.01	0.04	0.02	-0.20***	-0.12**	-0.06	0.01	0.01	-0.00									
12. Working hours T2	38.21	5.99	0.38***	-0.05	-0.02	-0.04	-0.18***	-0.20***	-0.13**	0.01	0.01	0.00	0.67***								
13. Working hours T3	37.56	6.56	0.43***	-0.08	-0.05	-0.05	-0.05	-0.05	-0.16***	0.03	0.04	0.04	0.45***	0.61***							
14. CS T1	3.72	0.70	-0.01	0.13**	0.14**	0.14**	0.05	0.07	0.09*	-0.09*	-0.08	-0.07	0.06	0.03	0.01	(0.82)					
15. CS T2	3.63	0.73	-0.02	0.11**	0.11**	0.14**	0.04	0.03	0.05	-0.09*	-0.09*	-0.07	0.06	0.08	0.04	0.60***	(0.85)				
16. CS T3	3.77	0.73	0.05	0.14**	0.14**	0.13**	0.03	0.02	0.04	-0.14**	-0.14**	-0.13**	0.12**	0.14**	0.14**	0.42***	0.55***	(0.87)			
17. LS T1	3.71	0.76	-0.01	0.37***	0.33**	0.29***	0.26***	0.29***	0.34***	-0.08	-0.06	-0.06	-0.09*	-0.11*	-0.09*	0.44***	0.34***	0.29***	(0.85)		
18. LS T2	3.77	0.70	-0.02	0.33***	0.38***	0.33***	0.25***	0.27***	0.32***	-0.07	-0.07	-0.07	-0.07	-0.06	-0.07	0.38***	0.47***	0.39***	0.69***	(0.84)	
19. LS T3	3.78	0.73	-0.01	0.26***	0.32***	0.40***	0.19***	0.21***	0.25***	-0.07	-0.06	-0.06	-0.06	-0.10*	-0.07	0.29***	0.34***	0.42***	0.539***	0.71***	(0.84)

Notes: CS, career satisfaction; LS, life satisfaction. ^a $n = 517$; 0 = female, 1 = male; ^b0 = not living with a partner, 1 = living with a partner; ^c0 = not having children, 1 = having children. Internal consistency coefficients (Cronbach's α s) appear along the diagonal in parentheses. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table I. Correlations, means, and standard deviations between variables in Study 1

Career satisfaction and life satisfaction

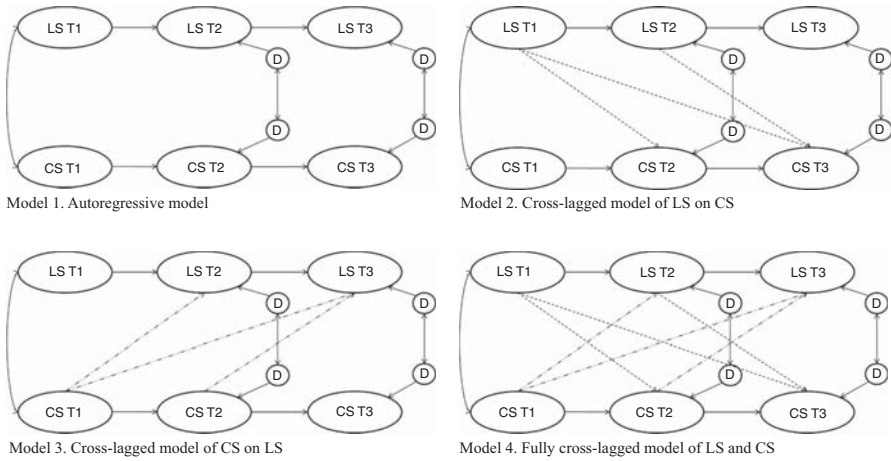


Figure 1. Models 1-4 of the cross-lagged analyses

Notes: LS, life satisfaction; CS, career satisfaction; D, disturbance terms associated with the latent variables at T2 and T3. All latent constructs were measured by their respective items. For clarity reasons, only the structural model without paths representing residual covariance between the items of the three measurement points of LS and CS is shown

Table II. Autoregressive and cross-lagged standardized regression paths of Models 1-4 in Study 1

	Autoregressive paths				Cross-lagged paths					
	LS		CS		LS→CS			CS→LS		
	T1→T2	T2→T3	T1→T2	T2→T3	T1→T2	T1→T3	T2→T3	T1→T2	T1→T3	T2→T3
Model 1 Autoregressive	0.75***	0.76***	0.65***	0.60***	-	-	-	-	-	-
Model 2 LS→CS	0.75***	0.77***	0.59***	0.54***	0.11*	-0.07	0.23**	-	-	-
Model 3 CS→LS	0.71***	0.76***	0.66***	0.60***	-	-	-	0.07	-0.03	0.03
Model 4 Fully cross-lagged	0.72***	0.79***	0.60***	0.53***	0.11*	-0.08	0.23**	0.07	-0.04	0.01

Notes: $n = 517$. LS, life satisfaction; CS, = career satisfaction. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table III. Goodness-of-fit summary for the Models tested in Study 1

	χ^2	df	CFI	TLI	AIC	BIC	RMSEA	90% CI of RMSEA	SRMR
Model 1 Autoregressive	778.13	401	0.960	0.956	31,852	32,251	0.043	0.038	0.047
Model 2 LS→CS	757.24	398	0.961	0.958	31,837	32,249	0.042	0.037	0.046
Model 3 CS→LS	775.22	398	0.960	0.956	31,855	32,267	0.043	0.038	0.047
Model 4 Fully cross-lagged	754.49	395	0.961	0.957	31,840	31,948	0.042	0.037	0.046

Notes: CFI, comparative fit index; TLI, Tucker-Lewis index; AIC, Akaike information criterion; BIC, Bayesian information criterion; RMSEA, root mean square error of approximation; CI, confidence interval; SRMR, standardized root mean square residual; CS, career satisfaction; LS, life satisfaction

ones of Model 1 ($S-B\Delta\chi^2 = 2.41$, $df = 3$, $p = 0.49$). Then Model 2, the best fitting model so far, was compared with the fully cross-lagged model (Model 4) to determine the most appropriate model (Martens and Haase, 2006). Results revealed that the more complex Model 4 (reciprocal influence) does not fit the data better than the more parsimonious Model 2 (top-down influence; ($S-B\Delta\chi^2 = 1.63$, $df = 3$, $p = 0.65$)). Model 2 explained 43 percent

of the variance in career satisfaction at T2, 36 percent of the variance in career satisfaction at T3, 56 percent of the variance in life satisfaction at T2, and 60 percent of the variance in life satisfaction at T3.

Study 2

Study 2 was again a three-wave longitudinal research, but now with four-week time intervals between measures. The aim of Study 2 was twofold. First, we wanted to test the longitudinal association of career satisfaction and life satisfaction within a shorter time period. It may be that bottom-up influences of career satisfaction on life satisfaction will be more easily detected, if studied within a shorter time period than the one analyzed in Study 1. This reasoning can be based on set-point theory according to which positive and negative experiences do have an influence on life satisfaction. However, in many cases, this influence is short-lived and life satisfaction will soon adapt to an individual's usual level of satisfaction (Fujita and Diener, 2005; Lucas, 2007). It may be that changes in career satisfaction have a short-term influence on life satisfaction, but this influence will disappear after a while, e.g., a person might get a bonus for his or her work and this spills over to his or her life satisfaction for a short time.

Second, we wanted to test the influence of one possible moderator of the career satisfaction-life satisfaction relationship, namely the centrality a person assigns to his or her work (Rain *et al.*, 1991). As suggested by Rice *et al.* (1980), individuals with high work centrality might show a stronger path from career satisfaction to life satisfaction than participants, for whom work centrality is low.

H1 and *H2* are the same as in Study 1. We stated a third hypothesis on the impact of work centrality:

H3. Work centrality is a moderator of the career satisfaction-life satisfaction association.

The association should be stronger for persons with high than with low work centrality (*H3*).

Method

Sample and procedure. Study 2 was conducted with a heterogeneous sample of employed persons. Participants were recruited via several online platforms where they were asked to follow a link to our first online questionnaire (T1). Four and eight weeks later, they were contacted again and asked to fill out a second (T2) and a third one (T3). All three questionnaires included measures of life satisfaction and of career satisfaction. In half of the questionnaires, life satisfaction was assessed first, and career satisfaction later; in the other half of the questionnaires, career satisfaction was assessed first, and life satisfaction later. Moreover, each questionnaire contained a measure of work centrality and some distractor scales.

Out of 137 participants who answered the first questionnaire, 91 (66.4 percent) completed the second and 87 (63.5 percent) the third one. After matching the data and excluding participants who only participated in the first questionnaire, the final sample (participants who answered at least two questionnaires; $n = 99$) comprised 77 women and 22 men (mean age: $M = 36.40$, $SD = 11.92$). Participants were all Germans, worked in different professions (e.g. administration secretaries, computer scientists, human resource managers, nurses, sales managers, teachers), and spent 38.91 working hours a week on average ($SD = 10.41$). The majority (68.7 percent) lived with a partner, and almost every third person (27.3 percent) reported having children. About half of the sample held a university degree (56.6 percent). Dropout analyses showed that the participants who only answered the first questionnaire ($n = 38$) and the final sample ($n = 99$) did neither differ in gender, family status, and educational level, all χ^2 s < 1.94 , all $ps > 0.21$, nor in age, weekly working hours, life satisfaction, career satisfaction, and work centrality, all $ts < 0.73$, all $ps > 0.46$.

Hence, we could exclude systematic dropout effects. Moreover, life satisfaction, career satisfaction, and work centrality were not influenced by the order of presenting life satisfaction and career satisfaction at all three times of measurement, all t s < 1.48, all p s > 0.15.

Measures. Career satisfaction and life satisfaction as well as the control variables were measured with the same scales/variables as used in Study 1. We measured work centrality with a scale developed by Gerhardt (2005). It comprises six items (e.g. "If I won the lottery jackpot, I would immediately stop working"; reverse-coded) that are answered on a five-point rating scale from 1 = strongly disagree to 5 = strongly agree. Further, we measured participants' educational level (university degree: 0 = no, 1 = yes) as the sample was more heterogeneous.

Analytical strategy. The analytical strategy for testing $H1$ and $H2$ was the same as in Study 1. $H3$ could not be tested with CLM as the sample size was too small for a moderated CLM analysis, thus it was rather tested by means of a moderated mediation analysis (Preacher and Hayes, 2008).

Results

Testing for normality of our variables, results revealed that the univariate skewness values of our variables range between -0.88 and 0.92, the univariate kurtosis values between -1.11 and 0.89. Thus, our variables can be regarded as normally distributed. Further, results show that Mardia's multivariate skewness (1523.43, $p < 0.01$) differs from the null hypothesis, whereas Mardia's multivariate kurtosis (2391.35, $p = 0.58$) does not. In sum, our variables are not perfectly well behaved, thus we again used the MLM estimator for conducting our further analysis.

CFAs followed by Satorra-Bentler scaled difference χ^2 tests showed that three-factor models, which assume that career satisfaction, life satisfaction, and work centrality are distinct constructs, fit the data better than one-factor models (T1: CD = 0.70, S-B $\Delta\chi^2(2) = 441.17$, $p < 0.001$; T2: CD = 0.61, S-B $\Delta\chi^2(2) = 413.42$, $p < 0.001$; T3: CD = 0.61, S-B $\Delta\chi^2(2) = 323.33$, $p < 0.001$) or two-factor models (T1: CD > 1.04, S-B $\Delta\chi^2(2) > 174.74$, p s < 0.01; T2: CD > 1.00, S-B $\Delta\chi^2(2) = 121.34$, p s < 0.01; T3: CD > 0.97, S-B $\Delta\chi^2(2) > 87.88$, p s < 0.01).

Also, the tests for measurement invariance showed that all scales fulfilled or exceeded the requirement of scalar invariance, which means that the scales were suitable for conducting LGC models. The descriptive statistics, correlations, and reliability coefficients are shown in Table IV.

Remarkable hereby is that neither career satisfaction, $F(2,77) = 0.51$, $p = 0.61$, nor life satisfaction, $F(2,77) = 0.29$, $p = 0.75$, nor work centrality, $F(2,77) = 0.16$, $p = 0.85$, changed over the eight-week period. Consequently, there was not enough slope variance in career and life satisfaction to establish LGC models and we were not able to test $H1$ by means of LGC, but only by inspecting their correlations.

Replicating previous findings, career satisfaction and life satisfaction were positively correlated within all three times of measurement (T1: $r(97) = 0.61$; T2: $r(97) = 0.53$; T3: $r(97) = 0.65$, all p s < 0.001). Supporting $H1$, we also found positive correlations between career satisfaction and life satisfaction across time (career satisfaction T1 with life satisfaction T2: $r(97) = 0.59$, $p < 0.001$, career satisfaction T1 with life satisfaction T3: $r(97) = 0.60$, $p < 0.001$; career satisfaction T2 with life satisfaction T3: $r(97) = 0.53$, $p < 0.001$; life satisfaction T1 with career satisfaction T2: $r(97) = 0.52$, $p < 0.001$; life satisfaction T1 with career satisfaction T3: $r(97) = 0.60$, $p < 0.001$; life satisfaction T2 with career satisfaction T3: $r(97) = 0.58$, $p < 0.001$).

We tested $H2$ with a series of nested cross-lagged models (see Figure 1). Table V shows the autoregressive paths as well as the cross-lagged standardized regression paths between career satisfaction and life satisfaction of Models 1-4.

The autoregressive model (Model 1; testing the stability of constructs over time, see Burkholder and Harlow, 2003) revealed an acceptable fit ($\chi^2 = 680.96$, $df = 405$, CFI = 0.90, TLI = 0.89, RMSEA = 0.08, SRMR = 0.11; for a goodness-of-fit summary of all tested models see Table VI).

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Gender ^a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Education ^b	-	-	0.27***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Partner T1 ^c	-	-	0.10	0.20*	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Parents T1 ^d	-	-	0.06	-0.06	0.17	-	-	-	-	-	-	-	-	-	-	-	-
5. Age T1	36.40	11.93	0.33***	0.20	0.16	0.60***	-	-	-	-	-	-	-	-	-	-	-
6. Working hours T1	38.91	10.41	0.27***	0.26**	0.02	0.05	0.26**	-	-	-	-	-	-	-	-	-	-
7. CS T1	3.48	0.82	0.17	0.21*	0.09	-0.07	0.00	0.07	(0.86)	-	-	-	-	-	-	-	-
8. CS T2	3.40	0.92	0.11	0.11	0.05	-0.14	-0.03	-0.04	0.79***	(0.89)	-	-	-	-	-	-	-
9. CS T3	3.47	0.79	0.16	0.17	0.10	-0.05	-0.04	-0.05	0.80***	0.76***	(0.86)	-	-	-	-	-	-
10. LS T1	3.47	0.83	0.18	0.14	0.18	0.14	0.02	-0.11	0.61***	0.52***	0.60***	(0.85)	-	-	-	-	-
11. LS T2	3.42	0.81	0.24*	0.12	0.22*	0.07	0.01	-0.13	0.59***	0.53***	0.58***	0.79***	(0.86)	-	-	-	-
12. LS T3	3.46	0.85	0.19	0.21*	0.27*	0.03	-0.04	-0.04	0.60***	0.53***	0.65***	0.80***	0.81***	(0.90)	-	-	-
13. WoC T1	3.00	0.76	0.18	0.28***	-0.13	0.16	0.06	0.24*	0.25*	0.00	0.31**	0.14	0.19	0.24*	(0.78)	-	-
14. WoC T2	2.99	0.72	0.21*	0.24*	-0.22*	0.13	0.01	0.27*	0.31**	0.09	0.36**	0.20	0.30**	0.24*	0.82***	0.74)	-
15. WoC T3	2.99	0.75	0.13	0.25*	-0.29**	0.05	-0.04	0.37***	0.32**	0.11	0.31**	0.18	0.21	0.24*	0.81***	0.81***	(0.79)

Notes: CS, career satisfaction; LS, life satisfaction; WoC, work centrality. ^a1 = male; ^b0 = no university degree, 1 = university degree; ^c0 = not living with a partner, 1 = living with a partner; ^d0 = not having children, 1 = having children. Internal consistency coefficients (Cronbach's α s) appear along the diagonal in parentheses. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Career satisfaction and life satisfaction

Table IV. Correlations, means, and standard deviations between variables in Study 2

We then tested whether either or both of the cross-lagged models (Model 2 or Model 3; Figure 1) provided a significantly better fit to the data than the more parsimonious Model 1. Results revealed that Model 2 provided a significantly better fit than Model 1 ($S-B\Delta\chi^2 = 7.64$, $df = 3$, $p < 0.05$). The fit indices of Model 3 were also significantly better than the ones of Model 1 ($S-B\Delta\chi^2 = 7.38$, $df = 3$, $p = 0.05$). Then Model 2, the best fitting model so far, was compared with the fully cross-lagged model (Model 4) to determine the most appropriate model. Results revealed that the more complex Model 4 does not fit the data significantly better than the more parsimonious Model 2 ($\chi^2 = 667.81$, $df = 402$, $CFI = 0.90$, $TLI = 0.89$, $RMSEA = 0.08$, $SRMR = 0.09$; $S-B\Delta\chi^2 = 5.22$, $df = 3$, $p = 0.15$).

As Model 2 was the top-down model, and Model 4 was the reciprocal model, we again found that these models fit the data better than the bottom-up model (Model 3). The top-down model explains 79 percent of the variance in career satisfaction at T2, and 78 percent of the variance in career satisfaction at T3, 80 percent of the variance in life satisfaction at T2, and 81 percent of the variance in life satisfaction at T3.

Moderated mediation analyses. In a last step, we tested $H3$ according to which work centrality is a moderator of the association between career satisfaction and life satisfaction. The association should be stronger with high work centrality. We conducted a mediated moderation analysis with work centrality T2 as the moderator and life satisfaction T2 as the mediator (autoregressor). We standardized all variables prior to these analyses and applied the multiple mediation/moderation SPSS macro developed by Preacher and Hayes (2008). As recommended by Preacher and Hayes (2008), we created 5,000 bootstrap samples and computed the mean estimated indirect effects, the standard errors as well as the 95 percent confidence intervals for each indirect path. The indirect effect remains significant, if zero lies outside the computed confidence intervals. Findings are depicted in Figure 2(a).

There was a significant direct effect from career satisfaction T1 to life satisfaction T3 ($\beta = 0.17$, $p < 0.04$). The indirect effect of career satisfaction T1 on life satisfaction T3

Table V. Autoregressive and cross-lagged standardized regression paths of Models 1-4 in Study 2

		Autoregressive paths				Cross-lagged paths					
		LS		CS		LS → CS			CS → LS		
		T1 → T2	T2 → T3	T1 → T2	T2 → T3	T1 → T2	T1 → T3	T2 → T3	T1 → T2	T1 → T3	T2 → T3
Model 1	Autoregressive	0.90***	0.89***	0.89***	0.87***	–	–	–	–	–	–
Model 2	LS → CS	0.90***	0.90***	0.95***	0.67***	–0.08	0.06	0.26	–	–	–
Model 3	CS → LS	0.79***	0.74***	0.89***	0.87***	–	–	–	0.12	0.11	0.11*
Model 4	Fully cross-lagged	0.79***	0.78***	0.95***	0.69***	–0.09*	0.05	0.24	0.13**	0.13	0.04*

Notes: $n = 99$. LS, life satisfaction; CS, career satisfaction. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table VI. Goodness-of-fit summary for the models tested in Study 2

	χ^2	df	CFI	TLI	AIC	BIC	RMSEA	90% CI of			
								RMSEA	SRMR		
Model 1	Autoregressive	680.96	405	0.90	0.89	6073.46	6373.02	0.083	0.072	0.094	0.105
Model 2	LS → CS	667.81	402	0.90	0.89	6066.31	6373.66	0.082	0.071	0.093	0.092
Model 3	CS → LS	673.24	402	0.90	0.89	6071.74	6313.08	0.083	0.072	0.093	0.094
Model 4	Fully cross-lagged	662.14	399	0.90	0.89	6066.64	6315.77	0.082	0.070	0.092	0.085

Notes: CFI, comparative fit index; TLI, Tucker-Lewis index; AIC, Akaike information criterion; BIC, Bayesian information criterion; RMSEA, root mean square error of approximation; CI, confidence interval; SRMR, standardized root mean square residual; CS, career satisfaction; LS, life satisfaction

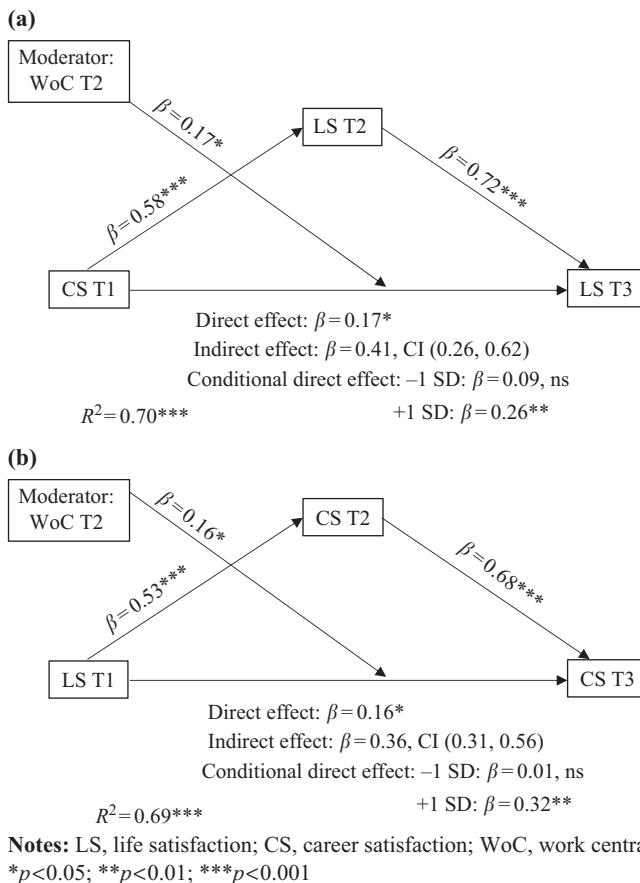


Figure 2. Moderated mediation effects of (a) CS on LS and (b) LS on CS

mediated via life satisfaction T2 was also significant ($\beta=0.41$, 95 percent CI (0.26, 0.62)). Supporting *H3*, work centrality T2 had a significant effect on the association between career satisfaction T1 and life satisfaction T3 ($\beta=0.17$, $p < 0.03$). This conditional direct effect became even stronger the more work centrality was reported at T2: For participants with low work centrality scores (-1 SD) the effect did not become significant ($\beta=0.09$, ns), whereas for participants with high work centrality scores (+1 SD) the path between career satisfaction T1 and life satisfaction T3 was highly significant ($\beta=0.26$, $p < 0.01$).

We also computed the reverse moderated mediation model of life satisfaction at T1 on career satisfaction at T3 with work centrality at T2 as the moderator and with the autoregressor (career satisfaction at T2) as the mediator (Figure 2(b)).

The direct effect of life satisfaction on career satisfaction remained significant ($\beta=0.16$, $p < 0.04$) after the mediator and the moderator were considered. The indirect effect of T1 life satisfaction on T3 career satisfaction mediated via T2 career satisfaction was also highly significant ($\beta=0.36$, 95 percent CI (0.31, 0.56)). Testing *H3*, again work centrality had a significant effect on the association between life satisfaction T1 and career satisfaction T3 ($\beta=0.16$, $p < 0.04$). This conditional direct effect became

the stronger the more work centrality was reported at T2 (-1 SD: $\beta = 0.01$, ns; $+1$ SD: $\beta = 0.32$, $p < 0.01$).

Finally, in *post hoc* analysis, we included family status, working hours (median split), and education level into our moderated mediation models to test if these variables are also significant moderators. These variables, however, did not change the above findings. We did not consider gender and age as these were uncorrelated to our variables of interest (see Table IV).

Discussion

Knowing that life satisfaction is a desired goal for individuals and knowing that life satisfaction has a number of positive consequences also in the field of work and organizations, our studies aimed at investigating the association between career and life satisfaction. Previous cross-sectional studies suggested that career satisfaction and life satisfaction are positively related (cf. Erdogan *et al.*, 2012; Lounsbury *et al.*, 2004). Our findings support and extend these studies by showing that career satisfaction and life satisfaction are not only related within but also across time. The results of our two longitudinal studies with different samples of participants and with different time intervals between measures revealed within time and across time correlations between career satisfaction and life satisfaction that varied between $r = 0.29$ and $r = 0.65$. The explained variances in career satisfaction (varying between 36 and 79 percent) were smaller in Study 1 than in Study 2, which is probably due to the longer time intervals between measures in Study 1. Further, both studies found that a test of different models on the directional association between life satisfaction and career satisfaction always favored the top-down approach and – somewhat less – the interactionist approach.

Theoretical and practical implications

Referring to the presented competitive theoretical perspectives, our results support the top-down approach stating that a person with high life satisfaction will also experience his or her career and work more positively than a person with lower life satisfaction (Ballout, 2008). As a consequence, further research should include personality traits and affective dispositions as distal predictors of life satisfaction and not ignore or treat them as control variables that need to be partialled out (Erdogan *et al.*, 2012). Further, based on our results, the interactionist approach should not be discarded as our reciprocal model had only slightly worse fit indices than the top-down model. As Diener (1984) argued, some portion of a person's well-being might be due to personality, some due to life circumstances, and some due to their interaction. Thus, the person as well as the situation and their interaction should be taken into account, while searching for starting points of interventions to foster a person's well-being. In both studies, the bottom-up approach received least support. Thus, we suggest that concerning career satisfaction and life satisfaction, the bottom-up approach may only be applicable in very specific circumstances. These are situations, for example, in which a person experiences an exceptional success in his or her career and consequently feels more satisfied with his or her life in general. If a person experiences high workload for a longer period this might, however, have a negative impact on a person's overall satisfaction with his or her life (Goh *et al.*, 2015). This enhancement of global life satisfaction should, however, soon lead to adaptation to the individual's usual level of satisfaction (Diener *et al.*, 2006; Headey and Wearing, 1989).

Further, we were able to show that work centrality fosters the association between life satisfaction and career satisfaction, in both directions. The more centrality a person assigns to his or her work, the stronger is the impact of career satisfaction on life satisfaction and

also of life satisfaction on career satisfaction. Thus, it is important that theoretical models to well-being as well as practical interventions are aware of moderating effects.

With regard to an applied perspective, it is important to know that life satisfaction has a directional effect on career satisfaction. Interventions aimed at increasing positive work-related feelings and outcomes need not only be directly concerned with working conditions but could also indirectly affect these outcomes by being concerned with a person's global life satisfaction. Interventions and programs aiming at a good work-life balance, for instance, may indirectly enhance workers' career satisfaction by enhancing their global life satisfaction. The specific means of increasing life satisfaction may be different between workers, the general approach, e.g., enhancing life satisfaction as an indirect way of enhancing positive work-related feelings, is the same.

Limitations and further research

A few limitations of the current studies should be noted. First, we only used self-report measures. It is possible that findings were influenced by common method variance. Yet, given the self-reflective nature of career satisfaction and life satisfaction, the use of self-report measures may be appropriate. However, Schwarz and Strack (1991) demonstrated how the wording of questions could easily influence the judgment of people. Thus, using measures of global life satisfaction might be vulnerable to idiosyncratic information, such as current mood or weather. Further, it is not sure if people include or do not include significant life events (e.g. hospitalization or the loss of a child) when evaluating their global life satisfaction. An idea for further research to gain more precise information about the experience and change of life satisfaction across the life span might be the use of a measure of general life satisfaction that includes a temporal dimension (e.g. the Temporal Satisfaction With Life Scale; Pavot *et al.*, 1998). Second, the sample size of Study 2 was small and we were not able to conduct growth curves as the slope variance of career and life satisfaction was too small probably due to the small time gap between points of measurement. Third, we only tested the influence of one possible moderator, yet, there might be more variables effecting the relationship between career satisfaction and life satisfaction. For example, hope, defined as the perceived capability to derive pathways to desired goals, might be an important moderator (Hirschi, 2014). Hope motivates a person via agency thinking to use those pathways (Snyder, 2002). A fourth limitation refers to the fact that both studies were conducted in Germany and thus cannot be generalized to other cultural contexts. As the relationship between life satisfaction and different domains of life varies between different cultures (Mallard *et al.*, 1997), culture or individualism/collectivism (Haar *et al.*, 2014) should be recognized as possible moderators in future studies.

Conclusion

Although life satisfaction is a major life goal and although adults spend a majority of their lifetime working, work and organizational psychology have only recently recognized that life satisfaction may be an important factor in the domain of work. The current longitudinal studies enrich our understanding of how life satisfaction and career satisfaction develop and how they are related over time.

Note

1. For more detailed information about the mechanisms that shape bottom-up or top-down influences, see Heller *et al.* (2004) or Lent *et al.* (2005).

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Corresponding author

Tamara Hagmaier can be contacted at: tamara.hagmaier-goettle@fau.de

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