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Birds of a feather flock together: How congruence between worker and occupational personality relates to job satisfaction over time

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Abstract

Person–environment fit (P–E fit) and job satisfaction are key constructs in vocational and organizational research. Research established that they are positively related, but little is known about how they relate over time. We analyzed P–E fit as the congruence between the Big Five personality traits of a worker and of all job incumbents in the same occupation, and how this congruence relates to job satisfaction over time. Analyses were based on 7,049 participants from the German Socio-Economic Panel from 2005, 2009, and 2013. We used latent change score modeling to assess changes in congruence and job satisfaction over eight years, and further created 3D response surface plots based on polynomial regression to investigate nonlinear relations between each Big Five trait and job satisfaction. Change in P–E fit was not related to simultaneous change in job satisfaction and did not predict subsequent change in job satisfaction. The surface analyses indicated that a worker's and an occupation's personality are primarily independently relevant for the level of job satisfaction and that effects differ for different personality traits.

Keywords: person–environment fit, personality, job satisfaction, latent change score model, response surface analysis

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Person–environment fit (P–E fit) is a prominent research field in vocational and organizational psychology, examining the match between workers and environmental characteristics. A core assumption of P–E fit theory is that fit relates to positive work outcomes (Edwards & Shipp, 2007). This is supported by numerous empirical findings showing that higher levels of fit are associated with higher levels of satisfaction at work (Kristof-Brown, Zimmerman, & Johnson, 2005), career success (Ballout, 2007), and job performance (Seong, Kristof-Brown, Park, Hong, & Shin, 2015). Job satisfaction is among the most frequently assessed work outcomes of fit, not only due to its own importance, but also because job satisfaction can play a key role in linking fit with other outcomes, such as higher levels of organizational citizenship behavior (Vilela, González, & Ferrín, 2008), and higher work engagement (Guglielmi et al., 2016).

Despite the vast P–E fit literature considering change in fit (Jansen & Shipp, 2013; Su, Murdock, & Rounds, 2015), an important shortcoming in previous research has been that most studies did not address how changes in fit relate to changes in other variables. This shortcoming has been increasingly recognized, and researchers have called to pay more attention to examining within-person change of P–E fit and its relation to important work outcomes (Boon & Biron, 2016). As an exception, Gabriel, Diefendorff, Chandler, Moran, and Greguras (2014) examined fit as a changeable construct and showed that perceived person–job fit (P–J fit) predicted an increase in job satisfaction, but job satisfaction did not predict change in the perceived P–J fit. Indeed, the relation between P–E fit and job satisfaction might be highly dynamic because a lack of fit might reduce job satisfaction in the short term, but could also induce workers to change to jobs with a better fit to increase job satisfaction in the longer term (Dawis, 2002).

Another important limitation of the existing literature is that most studies have focused on P–E fit in terms of subjectively perceived fit of values, needs, interests, or abilities (Edwards, 2008). However, P–E fit can potentially refer to a match in a vast range of personal and environmental characteristics (Edwards, 2008). One group of central personal characteristics are personality traits, which are meaningfully related to important work outcomes, such as job satisfaction (Judge, Heller, & Mount, 2002). Personality is incorporated in many P–E fit theories (Edwards, 2008). For example, the attraction-selection-attrition framework (Schneider, Smith, & Goldstein, 2000) and Holland's (1997) RIASEC typology have proposed that workers are attracted to work environments where job

incumbents show similar personality characteristics to themselves. However, apart from research focusing on fit in terms of vocational interests (Su et al., 2015), we are not aware of any research that has investigated how P–E fit, in terms of personality characteristics, is related to job satisfaction. To advance this research, our study specifically focused on how the objective fit between a worker's and the average personality characteristics of job incumbents in the same occupation (herein named occupational personality) relates to job satisfaction, thereby expanding our understanding of the consequences associated with different ways of how workers fit into jobs.

In addressing these issues, our study makes several key contributions to the P–E fit literature. First, it offers insight into how objective congruence between the personality of a worker and job incumbents in their occupation relates to job satisfaction. We base our analyses on a large representative sample from the German Socio-Economic Panel (SOEP) and characterize occupations based on the core concept of personality—the five-factor model (McCrae & Costa, 1987)—by using the mean Big Five profile of all job incumbents in the same occupation. Second, we use latent change score modeling (LCSM) to offer unique insights into how changes in congruence relate to changes in job satisfaction over several years. We therefore explicitly account for the fact that P–E fit and job satisfaction can change over time, adding to newly emerging research on within-individual variability of fit and its relation to work outcomes (e.g., Boon & Biron, 2016; Gabriel et al., 2014; Lu, Wang, Lu, Du, & Bakker, 2014). Contrary to many studies we thus not only look at the level of job satisfaction, but also changes in job satisfaction. Examining simultaneous change in fit and satisfaction allows to better test the basic theoretical tenet of P–E fit that higher levels of fit lead to better work outcomes. Third, we provide a more in-depth examination of how personality congruence in different traits is linked to job satisfaction, drawing upon three-dimensional plots based on polynomial response surface analysis (RSA) for each of the Big Five dimensions separately. As summarized by van Vianen (2018), there are frequent nonlinear relations between person–job fit and outcomes, pointing to an incremental value of expanding the examination beyond linear relations. RSA allows us to discover nonlinear ways in which P–E fit might relate to job satisfaction, thereby going beyond a purely linear examination of how P–E fit is linked to outcomes (Oh et al., 2014; Su et al., 2015). Finally, we will discuss results of LCSM and RSA, which offer valuable complementary insights about the relation between personality congruence and job satisfaction. Together, they provide a more complete picture: LCSM allows to test for change in personality congruence

and how it relates to change in job satisfaction, while RSA informs about probable nonlinear relations.

Types of Person–Environment Fit

The conceptualization and meaning of P–E fit is diverse, with no single P–E fit theory capturing the whole variety (Dawis, 2002; Edwards, 2008; Kristof-Brown et al., 2005; Su et al., 2015). Moreover, the P–E fit literature has been criticized for using ambiguous conceptualizations and measures of fit (van Vianen, 2018). Essentially, P–E fit needs to simultaneously consider characteristics of the person and the work environment, and necessitates that the personal and environmental characteristics closely correspond to each other (Dawis, 2002). P–E fit research has considered a diverse range of personal and environmental characteristics such as vocational interests (Holland, 1997; Wille, Tracey, Feys, & De Fruyt, 2014), values and culture (Chatman, 1989; 1991), or personality traits (Schneider, Smith, Taylor, & Fleenor, 1998). Depending on the respective characteristics considered, there are different kinds of fit such as person–organization, person–team, person–leader, person–vocation, or person–job fit. Person–occupation fit usually precedes other types of fit, because educational or vocational choices often takes place before working in a concrete job in a specific organization or team (Bradley-Geist & Landis, 2012).

A major distinction is made in the literature between complementary and supplementary P–E fit, which represent two separate research traditions (Cable & Edwards, 2004). Complementary P–E fit occurs when a person or work environment provide what the other wants (need-demand fit). Supplementary fit denotes “that a person fits into some environmental context because he or she supplements, embellishes, or possesses characteristics which are similar to other individuals in this environment” (Muchinsky & Monahan, 1987, p. 269). Therefore this type of P–E fit is linked to the fundamental human tendency as a social being to positively evaluate similarity with others, which satisfies the need to belong (Kristof-Brow et al., 2005; van Vianen, 2018). As Kristof-Brown and Guay (2011) point out, supplementary fit underlies many P–E fit theories, such as Holland’s (1997) congruency assumption—that a worker flourishes in a work environment that matches their vocational interests—or Chatman’s (1991) congruency hypothesis, defining P–E fit as the similarity between personality of persons and corresponding characteristics of their environment. In our study we focus on supplementary P–E fit, because our focus is on person–occupation personality fit; for personality, it is less clear what an occupation’s demands are regarding specific personality traits or what a person’s needs are regarding average personality of people working in an occupation. However, the similarity of

personality characteristics of an individual and the average personality of job incumbents (i.e., occupational personality) can be assessed, and based on theoretical consideration of supplementary fit, should result in positive outcomes.

Another important distinction can be made between subjective and objective P–E fit (Edwards, Cable, Williamson, Lambert, & Shipp, 2006). Subjective fit reflects workers' overall judgement of how congruent they perceive themselves with a given occupation, whereas objective fit combines separately measured characteristics of persons and their environment (Su et al., 2015). Verquer, Beehr, and Wagner (2003) highlighted that for objective fit, the characteristics of the person stem from the worker themselves, whereas the environmental characteristics rely on an external source. Objective and subjective P–E fit are related to each other in the way that objective P–E fit predicts subjective fit (Leung & Chaturvedi, 2011), as the perception of personal and occupational characteristics originate from reality (Edwards et al., 2006; Edwards, Caplan, & Van Harrison, 1998). Yet most research has focused on subjective P–E fit, addressing characteristics of workers and work environments which are easy to perceive and compare. By contrast, objective P–E fit may refer to more complex occupational characteristics that do not depend on an individual's subjective perception of a work environment. Objective P–E fit measures may be especially useful if occupational characteristics are hard to grasp, too complex, or prone to perceptual biases (Edwards & Rothbard, 1999). We reason that a fit in personality traits reflects such a situation because basic personality traits, such as the Big Five (neuroticism, extraversion, openness, agreeableness, and conscientiousness; McCrae & Costa, 1987) comprise a variety of facets that are not easy to perceive among other workers represented in a specific work environment or occupation, and traits of others might be perceived in a biased way, depending on one's own personality (e.g., anchoring; Tversky & Kahneman, 1974). Focusing on objective fit in personality traits is thus particularly informative. In sum, in the present study, we conceptualized P–E fit as supplementary congruence of objective person–occupation fit between the personality of a worker and the personality of other job incumbents in the same occupation.

P–E fit and Personality

In our study, we focus on congruence in basic personality traits in terms of the Big Five. Although personality is prominently featured in P–E fit theories (Holland, 1997; Kristof, 1996), to our knowledge, only one recent study has examined consequences of objective fit between a worker and their work environment in terms of the Big Five personality traits. Denissen et al. (2018) had two occupational experts rate the Big Five

personality traits of an ideal candidate for a given job and found that congruence with the personality profile of job incumbents predicted income.

According to Su et al. (2015), the prevailing view in P–E fit theories is that workers with similar characteristics, such as similar personalities, are attracted by the same work environment. For example, the attraction-selection-attrition model (Schneider, Smith, & Goldstein, 2000) proposes that workers are attracted to work environments where job incumbents show similar personality characteristics to themselves. Similarity therefore plays a key role in P–E fit, leading to a situation where "birds of a feather flock together". The idea that similar people gather together in the same work environment is also reflected by the incumbent approach (Gottfredson & Richards Jr, 1999). This approach is based on the environmental assessment technique (Astin & Holland, 1961) and characterizes the environment by assessing the personality of its job incumbents (Holland, 1985). This is in line with Schneider's (1987) statement that "the people make the place" (p. 437), and Muchinsky's and Monahan's (1987) concept regarding supplementary P–E congruence that "the environment is defined primarily by the people in it" (p. 270). The incumbent approach can also be applied to occupations as one type of work environment. For example, Muchinsky and Monahan (1987) stated that workers assess if they are similar to other workers in a given occupation, and workers with similar personalities tend to gather in the same occupation (Su et al., 2015). In line with the incumbent approach, we thus define occupational personality as the average personality traits represented in an occupation based on its incumbents.

Empirical findings suggest that workers with similar personality characteristics tend to work in the same occupation. De Fruyt and Mervielde (1999) found workers' extraversion, openness, agreeableness, and conscientiousness to be predictive of their work environment beyond vocational interests. This suggests that workers with different Big Five traits tend to work in different occupation. Bradley-Geist and Landis (2012) found that "[…] occupations can be differentiated from other occupations on member personality" (p. 154) based on a measurement related to the Big Five dimensions. Similarly, King et al. (2017) found workers in the same occupation to exhibit more similar personality traits to each other in terms of their neuroticism, extraversion, and conscientiousness compared to workers in different occupations. In our study, we therefore apply this incumbent approach by taking the average Big Five profile of all job incumbents in a given occupation and thereby assessing the *environment* in P–E fit in a novel way.

P–E Fit and Job Satisfaction

A widely shared assumption of P–E fit is that better congruence between a person and their environment results in more positive work outcomes (Edwards & Shipp, 2007; Su et al., 2015). Van Vianen (2018) crystallized three basic principles regarding P–E fit and outcomes which should be met for a congruence effect. First, the combination of personal and environmental characteristics into fit is more predictive of individual work outcomes than the person or environment on its own—person and environment should therefore be considered together. Second, work outcomes are most optimal when the characteristics of the person corresponds to the environment, irrespective of how pronounced the characteristics are—the fit between person and environment is crucial regardless whether the characteristics are strong or weak. Third, the direction of misfit does not matter—it is therefore equally harmful for individual work outcomes if the personal characteristics exceed the environment (called excess) or vice versa (called deficiency).

One prominent positive work outcome of P–E fit is job satisfaction. For example, Holland's (1985) congruency assumption predicts higher satisfaction in cases of congruence between a worker's vocational interests and the work environment. Empirical findings generally confirmed that higher levels of objective and subjective P–E fit are related to higher job satisfaction (Edwards, 2008; Kristof-Brown et al., 2005).

There are several reasons why objective P–E fit positively relates to job satisfaction. One explanation comes from trait activation theory, which proposes that intrinsic satisfaction results when a work environment provides cues that trigger a worker to express their traits at work (Tett, Simonet, Walser, & Brown, 2013). Relatedly, supplementary fit implies similarity, which can satisfy the need to belong (Edwards & Shipp, 2007). As Baumeister and Leary (1995) explain, belongingness is a fundamental human need related to important life outcomes, such as satisfaction. This idea of supplementary P–E fit is reflected by the more general social identity and self-categorization perspective (Hogg & Terry, 2000), which describes how groups are represented by prototypes against which workers compare themselves and which affects their sense of belonging to a group. Higher P–E fit would mean being congruent with the occupational prototype, which is, in turn, influenced by the characteristics of its job incumbents. In the case of personality congruence, this means that the more a worker's personality resembles the prototypical average personality of their occupation, the more he or she might experience a feeling of belonging, and the higher their job satisfaction.

Personality, based on the Big Five, was not yet considered in P–E fit congruence despite the solid relation between Big Five traits and job satisfaction (e.g., Judge et al., 2002). However, based on general P–E fit assumptions and empirical findings, we presume that the congruence between a worker's Big Five and the average personality traits of job incumbents in the same occupation is related to higher job satisfaction. We assume that this is true for aggregated congruence across all Big Five traits as well as for each trait separately.

Hypothesis 1: *Congruence between a worker's and their occupation's personality is positively related to job satisfaction. This holds for personality congruence over all five personality dimensions (H1a), as well as for neuroticism (H1b), extraversion (H1c), openness (H1d), agreeableness (H1e), and conscientiousness (H1f) separately.*

Change in P–E Fit and Job Satisfaction over Time

More recent studies have extended the focus on within-person change in P–E fit and its relation to important work outcomes (Gabriel et al., 2014). This is important as fit, by itself, is something that develops over time (Boon & Biron, 2016). One prominent theoretical framework regarding changing P–E fit is the theory of work adjustment (TWA; Dawis & Lofquist, 1984). TWA describes work adjustment as an ongoing process of achieving and maintaining correspondence between a person and their work environment. Indeed, empirical evidence supports the assumption of P–E fit as changeable (DeRue & Morgeson, 2007). For example, Wille, Tracey, Feys, and De Fruyt (2014) found objective P–E fit between vocational interest and an occupation's RIASEC scores to vary over 15 years.

From a theoretical point of view, P–E fit may change due to two processes, which may affect job satisfaction differently. On the one hand, workers may adapt to their work environment, which the TWA calls the reactive mode of adjustment (Dawis & Lofquist, 1967). This reactive adjustment might for instance be due to socialization at work (Chatman, 1991). Similarly, in extension of the attraction-selection-attrition model of Schneider (1987), Roberts' (2006) transformation stage refers to the situation where a worker is changed due to their experiences at work. This is closely related to the corresponsive principle of personality development, stating that workers' personality traits change in response to their work environment and work experiences (Roberts, 2006). Further, the recently published *demands-affordances transactional* (DATA) model of personality development at work (Woods, Wille, Wu, Lievens, & De Fruyt, 2019) suggest occupational demands (affordances) can cause a change in personality traits to accommodate such demands. On the other hand, workers may change their work environment to better fit their personal characteristics, which correspond to the active mode of adjustment according to the TWA (Dawis & Lofquist, 1976). This can

occur if people engage in job crafting behaviors, changing their work environment to achieve better fit (Wrzesniewski & Dutton, 2001). Alternatively, improving fit can be achieved by changing the work environment entirely with a job change. Schneider's (1987) concept of attraction and attrition reflects this idea: People are attracted to work environments that fit their personality and change jobs in case of misfit. Similarly, Holland (1997) theorized that incongruence motivates one to improve fit by changing the work environment. Extending this reasoning to our study, one way to achieve a better fit between one's personality traits and the occupational personality traits is to change the occupation.

Despite many studies showing P–E fit to be associated with job satisfaction, most research has treated their relation as static, not considering the possibility of simultaneous change and mutual affects over time. The TWA for example states that the dynamic process of work adjustment is related to higher job satisfaction insofar as satisfaction is an indicator of work adjustment (Dawis & Lofquist, 1984). But this theory does not explicitly consider decreasing job satisfaction as driver towards job change, which would in turn likely affect P–E fit. By contrast, the DATA model considers job satisfaction as driving force behind transactions between occupational demands and affordances, with the aim of achieving fit between traits and demands (Woods et al., 2019). Examining such simultaneous changes is important because the relation between P–E fit and job satisfaction depends on the dynamics of both variables. Gabriel et al. (2014) recently examined change in P–E fit and job satisfaction simultaneously and showed that perceived person–job fit predicted an increase in job satisfaction, but job satisfaction did not predict change in perceived P–J fit. However, regarding objective person–occupation fit, we are not aware of any study that considered change in fit and job satisfaction simultaneously.

In sum, P–E fit and job satisfaction are not static, but prone to change over time due to different processes. Our study contributes to the literature by examining change in objective P–E fit and its relation to increasing or decreasing job satisfaction. Based on theoretical considerations and empirical findings, we presume:

> Hypothesis 2: *An increase in congruence between a worker's and their occupation's personality is related to an increase in job satisfaction over time. This holds for overall personality congruence (H2a), as well as for neuroticism (H2b), extraversion (H2c), openness (H2d), agreeableness (H2e), and conscientiousness (H2f).*

Apart from the simultaneous change of P–E fit and job satisfaction, we will also examine if change in congruence predicts subsequent change in job satisfaction, to arrive at a closer approximation of the temporal order.

Hypothesis 3: *An increase in congruence between a worker's and their occupation's personality predicts a subsequent increase in job satisfaction. This holds for overall personality congruence (H3a), as well as for neuroticism (H3b), extraversion (H3c), openness (H3d), agreeableness (H3e), and conscientiousness (H3f).*

In addition to seeing a change in P–E fit following a change in job satisfaction, improving fit could also be thought of as a strategy to counteract decreasing job satisfaction. If job satisfaction decreases, workers may be motivated to improve their job congruence by the two processes outlined above: On the one hand, workers could foster their job satisfaction by adapting to the occupation's personality, improving their similarity to the occupational prototype; on the other hand, workers might change their occupation to a work environment that fits their personality better. We therefore also examined if change in job satisfaction predicts subsequent change in congruence.

Hypothesis 4: *A decrease in job satisfaction predicts a subsequent increase in congruence between a worker's and their occupation's personality. This holds for overall personality congruence (H4a), as well as for neuroticism (H4b), extraversion (H4c), openness (H4d), agreeableness (H4e), and conscientiousness (H4f).*

The Present Study

The present study provides unique insight into how objective personality congruence relates to job satisfaction, relying on two complementary methods. *Latent change score modeling* (LCSM) is based on an overall congruence index, which allows one to capture change in P–E fit on a latent level. We applied the basic assumption of P–E fit, that better fit is accompanied by better work outcomes, to the longitudinal dimension, examining if changes in congruence relate to changes in job satisfaction, and vice versa. Empirical evidence confirmed that lower P–E fit is related to higher turnover (Meir, Esformes, & Friedland, 1994; O'Reilly, Chatman, & Caldwell, 1991). Hence, we consider occupational change as one major source of variation in congruence. To provide a more in-depth analysis of how congruence is related to job satisfaction, we also applied *response surface analysis* (RSA). This approach uses three-dimensional graphs based on polynomial regressions and enables one to capture complex nonlinear relations between personality congruence and job satisfaction (Edwards & Cable, 2009).

Method

Participants and Procedure

We used the German Socio-Economic Panel Study (SOEP) data from 2005, 2009, and 2013 (version 32), where the Big Five personality dimensions were assessed (Gerstorf &

Schupp, 2015). The SOEP is a longitudinal panel survey with repeated interviews of the same participants every year. Data is collected via face-to-face interviews or questionnaires based on a random sample of private households established in Germany since 1984 (Wagner, Frick, & Schupp, 2007). To be included in our analyses, participants needed to be interviewed and employed in at least two out of the three examined waves (N = 7,557)—if participants indicated being employed in two out of the three waves, but unemployed in the third wave, we excluded this data. We excluded workers in partial retirement, (vocational) education, civilian or military service, and sheltered workshops, leading to a sample size of 7,351 persons. Further, participants needed to answer at least two out of three items of each Big Five personality dimension in at least two waves—16 workers did not meet this inclusion criteria. For some participants, congruence could not be computed because there was no information on the occupation they are working in or because too few job incumbents worked in their occupation to calculate reliable congruence scores (more on this in the measurement section); we excluded 286 workers for whom the congruence score was not computable in more than one out of the three examined waves. Our final sample comprised 7,049 workers, of whom 46.7% were female, and with a mean age of 48.8 years in 2013. In 2013, 5.1% had completed primary or lower secondary education, 47.7% had accomplished upper secondary education (i.e., vocational training or high school degree), 11.6% had a post-secondary professional degree (i.e., higher vocational school degree), 25.2% had a Bachelors, and 10.4% had a Masters or Doctoral degree. Over the examined 8-year time span, workers had an organizational tenure of 12.8 years on average, and 58.2% had changed their occupation, as indicated by change of the four-digit occupational code of the International Standard Classification of Occupations from 1988 (ISCO; International Labour Organization, 1990); the ISCO groups' occupations are based on their tasks and duties, and aims at worldwide comparability of occupational data. From 2005 to 2013, most individuals worked as technicians (25.2%), professionals (21.9%), craft and related trades workers (12.2%), or clerks (11%). These percentages are similar to the labor market data provided by the Federal Statistical Office of Germany (German Federal Statistical Office, 2018), providing evidence for the representativeness of the final sample for the German working population.

Measures

Personality traits. The SOEP assesses personality traits of participants with the short-scale measure of the Big Five (BFI-S; Gerlitz & Schupp, 2005) in 2005, 2009, and 2013 (Gerstorf & Schupp, 2015). Neuroticism, extraversion, openness, agreeableness, and conscientiousness are measured by three items each on a 7-point Likert-type scale (Dehne &

Schupp, 2007), ranging from 1 (*does not apply at all*) to 7 (*applies fully*). Hahn, Gottschling, and Spinath (2012) found the BFI-S to exhibit satisfying convergent and discriminant validity based on correlations with the NEO-PI-R on dimension and facet level. Cronbach's alpha in our sample are comparable to the values found by Lang, John, Lüdtke, Schupp, and Wagner (2011) for a related subsample in the SOEP, showing relatively low coefficients for neuroticism (α_{2005} = .61; α_{2009} = .63; α_{2013} = .63), extraversion (.66; .68; .69), openness (.61; .59; .61), agreeableness (.51; .50; .48), and conscientiousness (.61; .57; .57). However, these relatively low values can be expected because Cronbach's alpha increases with item number and construct homogeneity (Cronbach, 1951). We conducted a principal axis exploratory factor analysis for our sample separately for 2005, 2009, and 2013, which confirmed the five-factor and simple structure each year. Important for our longitudinal assessment of congruence, Lang et al. (2011) showed that the herein used personality measure demonstrated robust measurement invariance over four years. All individual Big Five traits showed moderate to high rank-order stability over time. Extraversion exhibited the highest auto-correlation of all traits between 2005 and 2009 (r = .64, p < .001), between 2009 and 2013 (r = .68, p < .001) and over the whole 8-year time span (r = .63, p < .001). Conscientiousness showed the lowest auto-correlation between 2005 and 2009 (r = .52, p < .001) and over the whole 8-year time span (r = .49, p < .001).We calculated an individual's Big Five by taking the mean of all items per dimension if at least two out of three were answered.

Occupational personality. We created an occupation's personality based on the responses to the BFI-S items in 2005, 2009, and 2013 by taking the mean of all individual Big Five scores of all job incumbents sharing the same four-digit ISCO code. We aggregated data of all three years because personality is likely to change over 8 years (Specht, Egloff, & Schmukle, 2011), there was no obvious best year to choose, and the measurement tends to become more reliable with more data points. We did not consider occupations with fewer than 10 workers to avoid outlier effects and to ensure a sufficient number of job incumbents within each occupation. Occupational personality also showed moderate to high rank-order stability over time. Openness exhibited the highest auto-correlation of all traits between 2005 and 2009 (r = .76, p < .001), between 2009 and 2013 (r = .83, p < .001) and over the whole 8-year time span (r = .76, p < .001). Neuroticism showed the lowest auto-correlation between 2005 and 2009 (r = .35, p = .007), conscientiousness between 2009 and 2013 (r = .42, p < .001) and extraversion over the whole 8-year time span (r = .30, p = .023).

Congruence of personality. To assess personality P–E fit, we calculated congruence between the personality of a worker and the average personality of job incumbents in the

same occupation as the focal worker. The congruence calculation was made by summing up the absolute difference between individual and occupational Big Five scores in each of the five personality dimensions. To get a measurement of congruence instead of difference, we subtracted the observed sum of absolute distances from the theoretical maximum difference of 30. This resulted in one single comprehensive congruence index, indicating the overlap between a person's and an occupation's average personality, ranging from zero (*maximally incongruent*) to 30 (*identical*). Analogous to this overall congruence index, we calculated congruence of each Big Five dimension separately, ranging from zero (*maximally incongruent*) to 6 (*identical*).

Job satisfaction. The SOEP includes one question concerning job satisfaction ("How satisfied are you with your current work?") measured on an 11-point Likert-type scale ranging from zero (*not at all*) to ten (*completely*). According to a meta-analysis of Wanous, Reichers, and Hudy (1997), single item measures of job satisfaction correlated highly with broader scales, suggesting the one item to be sufficient to measure job satisfaction.

Occupational change. We assessed occupational change as a change in the four-digit ISCO code between 2009 and 2013. These analyses revealed that 51.6% of the sample (n = 2,708) changed their occupation at least once during the examined time period, whereas the remaining participants (n = 2,535) did not. Participants whose available ISCO codes were identical, but who did not provide occupational information at every examined wave, were coded as missing values in this variable (n = 1,806).

Control variables. We took the *variability* of the occupation's personality type into account as a control variable of congruence by taking the square root of the summed variance of all job incumbents' Big Five traits working in the same occupation. We further considered *age* as a control variable because age might be confounded with occupational congruence and job satisfaction. This assumption is based on research showing that P–E fit (Feldman & Vogel, 2009; Zacher, Feldman, & Schulz, 2014) and job satisfaction (Drabe, Hauff, & Richter, 2015) are positively related to age.

Analytic Strategy

Concerning model fit indices, we regard a root mean square error of approximation (RMSEA) of .05 or less, a comparative fit index (CFI) of at least .90, and a Tucker-Lewis index (TLI) above .95 as acceptable (Browne & Cudeck, 1993; Cheung & Rensvold, 2002; Hu & Bentler, 1999). As the chi-square test of model fit tends to be significant within large samples like ours (Hayduk, 1987), we do not rely on it.

Latent change score modeling: Congruence and job satisfaction over time. We built the LCSM (see Figure 1) according to McArdle (2009) and the neighbor-change-model of Geiser (2011) to test Hypotheses 2, 3, and 4 regarding change in P–E fit and job satisfaction over time. LCSM explicitly models within-person change over time, which is captured by latent change factors (e.g., LCS_1 congruence). We added a covariance between the concurrent latent change scores of congruence and job satisfaction to test Hypothesis 2, whether change in congruence is related to a parallel change in satisfaction between 2005 and 2009 (covariance $cov_{LCS.1}$) and between 2009 and 2013 (covariance $cov_{LCS.2}$). We further tested if change in congruence (i.e., between 2005 and 2009) predicts subsequent change in satisfaction (i.e., between 2009 and 2013), indicated by the path ξ_{CS} (Taylor et al., 2004). If ξ_{CS} is significantly positive, an increase in congruence between 2005 and 2009 would predict an increase in job satisfaction between 2009 and 2013, which would support Hypothesis 3. Path ξ_{SC} tests Hypothesis 4: A negative path would support this hypothesis, meaning that a decrease in job satisfaction between 2005 and 2009 is followed by an increase in congruence between 2009 and 2013.

Multi-group analyses. To distinguish the two modes of adjustment proposed by the TWA as sources of change in P–E fit (i.e., active and reactive adjustment), we considered the LCSM for occupational changers and non-changers separately. Occupational change is one type of active adjustment insofar as the person changes the work environment entirely, which is likely to result in a change in overall P–E fit. Conversely, people who stay in their occupations are more likely to engage in reactive adjustment to existing work conditions. We therefore compared the path ξ for occupational changers vs. non-changers with multi-group analyses to test to what extent change in job satisfaction might have resulted from a change in occupation.

Response surface analysis: Congruence of single traits in relation to job satisfaction. We built one response surface plot based upon polynomial regression results for each of the Big Five dimensions with the individual Big Five score of the worker on the *X*-axis, the occupational Big Five score on the *Y*-axis, and job satisfaction on the *Z*-axis (Shanock, Baran, Gentry, Pattison, & Heggestad, 2010). To obtain the most representative results, we aggregated data of all three waves into one plot. We calculated a polynomial regression, including the X and Y variable, with their squared and interaction terms as predictors of job satisfaction based on the formula from Edwards and Parry (1993).

To analyze these three-dimensional graphs, we compared the surface visually against an idealized congruence effect (see Figure 2a). A perfect congruence surface is concave,

curved downward like a fingernail, with the ridge along the congruence line (see solid line in Figure 2a). As Edwards and Cable (2009) indicated, the surface necessarily needs to be downward curved along the incongruence line (see dashed line in Figure 2a). We test this assumption statistically based on the procedure and tools developed by Shanock et al. (2010): Parameter a_4 captures the curvature along the incongruence line and needs to be significantly negative to indicate a congruence effect. Further, for a perfect congruence effect, the surface along the congruence line should be flat (Edwards & Cable, 2009; Edwards & Parry, 1993), indicating the level of job satisfaction to be independent of the absolute individual and occupational personality. Parameter a_1 capturing the slope, and parameter a_2 reflecting upwards or downwards curvature along the congruence line should be non-significant. The direction of the discrepancy (if the individual exceeds the occupational Big Five, called *excess*, or the individual's personality is lower than their occupation's, called *deficiency*) should not affect the level of job satisfaction. Parameter a_3, reflecting the slope along the incongruence line, should therefore be non-significant, too.

Results

Hypothesis 1a, that higher congruence is related to higher job satisfaction, received mixed support, as congruence in 2009 was positively related to job satisfaction in 2009 ($r = .03$, $p = .017$) and 2013 ($r = .05$, $p < .001$), whereas all other correlations were not significant (Table 1). As age was not significantly related to congruence and satisfaction in our sample in any year, we did not consider this variable in the final LCSM.

Latent Change Score Modeling: Congruence and Job Satisfaction over Time

We built the LCSM (Figure 1, Table 2) to test Hypothesis 2, 3, and 4 regarding change in congruence and job satisfaction over time. LCS analyses were conducted with Mplus version 7.4 using robust maximum likelihood estimation (Muthén & Muthén, 2010) to estimate missing data. Hypothesis 2a postulated that change in congruence is related to change in job satisfaction, which was supported by the positive covariance of the latent change scores between 2005 and 2009, but the covariance was not significant at the later time span. The positive covariance implies that the more congruence increased between 2005 and 2009, the more job satisfaction increased over the same time span. We tested if $cov_{LCS.1}$ and $cov_{LCS.2}$ were statistically different by setting them to be equal and compared this model with the unrestricted model, where both were freely estimated. The Satorra-Bentler scaled difference chi-square test statistics (Satorra & Bentler, 2001) showed that the models did not significantly differ, χ_2 (1, $N = 7049$) = 2.95, $p = .086$, and we thus selected the more parsimonious model with equal covariances. Covariance in this model was not significant

(cov_{LCS} = .01, p = .150); not supporting Hypothesis 2a. To test Hypotheses 2b to 2f we tested the model in Figure 1 for each of the Big Five traits separately (see Table 2). Covariance between the latent change scores were not significant for any of the five personality traits at any time point, not supporting Hypothesis 2b to 2f.

We tested Hypothesis 3a—if change in congruence between 2005 and 2009 predicts subsequent change in satisfaction between 2009 and 2013—indicated by the path ξ_{CS} in Figure 1. Path ξ_{CS} was not significant (ξ_{CS} = .02, p = .164), neither for occupational changer (ξ_{CS} = .03, p = .082) nor non-changer (ξ_{CS} = .006, p = .737), not supporting Hypothesis 3a. Including the variability of an occupation's personality type as a control variable did not change these results. To assess Hypotheses 3b to 3f, we tested each of the Big Five traits separately. Path ξ_{CS} only was significant for neuroticism (ξ_{CS} = .03, p = .030), meaning that the more congruent individual and occupational neuroticism got between 2005 and 2009, the more job satisfaction increased between 2009 and 2013. However, we could not replicate this finding with multi-group analysis: Change in congruence of neuroticism did not predict change in job satisfaction for occupational changers (ξ_{CS} = .04, p = .055) or non-changers (ξ_{CS} = .02, p = .240). Hypothesis 3b regarding neuroticism therefore received mixed support. Hypotheses 3c to 3f were not supported.

Hypothesis 4a postulated that change in job satisfaction predicts subsequent change in congruence. As path ξ_{SC} was not significant (ξ_{SC} = -.002, p = .857), this hypothesis was not supported in the entire sample or within occupational changers (ξ_{SC} = .02, p = .356) nor non-changers (ξ_{SC} = -.02, p = .257) separately. Taking an occupation's personality variability into account did not change these results. Hypotheses 4b to 4f address each of the Big Five dimensions separately. Path ξ_{SC} was only significant for neuroticism (ξ_{SC} = -.03, p = .039), meaning that the more job satisfaction decreased between 2005 and 2009, the more congruence in terms of neuroticism increased between 2009 and 2013. We moreover found that this was only true for non-changers (ξ_{SC} = -.04, p = .024) but not occupational changers (ξ_{SC} = -.01, p = .436). Therefore, if a person's job satisfaction declined between 2005 and 2009 but they stayed in the same occupation, congruence in terms of neuroticism increased between 2009 and 2013. Hypothesis 4b therefore received support for non-changers, but not for changers. Hypotheses 4c to 4f were not supported.

Response Surface Plots: Congruence of Single Traits in Relation to Job Satisfaction

Figure 2b to 2f show the results of the surface plots, based on polynomial regression with SPSS version 24. Participants with missing individual or occupational Big Five values were excluded from this analysis. Coefficients of the polynomial regression in combination

with parameters of the statistical surface tests are provided in Table 3, the response surface plots in Figure 2b to 2f.

The visual comparison of the surface of the five plots against an idealized congruence surface (Figure 2a) did not support a congruence effect for any of the Big Five traits, because the ridge of all surfaces did not run along the congruence line. The RSA of *neuroticism* (Figure 2b) refuted Hypothesis 1b, because parameter a_4 was not significant. The overall picture of the graph showed that deficiency was beneficial for a worker's job satisfaction. For *extraversion* (Figure 2c) we also found no congruence effect, therefore not supporting Hypothesis 1c, as parameter a_4 was not significant. The overall picture of the graph showed an excess effect, with workers being more satisfied the more their occupation's extraversion was lower than their own level of extraversion. For *openness* (Figure 2d) parameter a_4 was significant, suggesting a significant congruence effect. However, the surface was not flat along the congruence line, indicated by a positive slope parameter a_1 and a downward curvature according to parameter a_2. Deficiency was beneficial for job satisfaction, indicated by a negative parameter a_3. Therefore, Hypothesis 1d was partially supported. For *agreeableness* (Figure 2e) and *conscientiousness* (Figure 2f) we found no congruence effect, indicated by a non-significant parameter a_4, therefore not supporting Hypothesis 1e and 1f. Excess in conscientiousness was beneficial for job satisfaction, indicated by the significant positive parameter a_3.

Discussion

P–E fit and Job Satisfaction

The present study assessed the longitudinal and nonlinear relations between P–E fit and job satisfaction. To assess P–E fit, we considered personality characteristics of workers and occupations, relying on the Big Five traits. Our results based on correlations and RSA generally did not support our assumption that higher personality congruence is related to higher job satisfaction. In contrast to our findings, the meta-analysis of Assouline and Meir (1987) found a mean correlation of .29 between objective personality congruence with others in the environment and vocational satisfaction. However, the meta-analysis of Kristof-Brown et al. (2005) found a considerably lower correlation (r = .07) between personality-based person–organization fit and job satisfaction. The difference to our results might be due to different operationalizations of fit, nonlinear relations between fit and satisfaction, or contradictory relations on the level of specific personality traits, which cancel each other out.

RSA showed that individual and occupational personality were relevant for job satisfaction, but largely independent of congruence. Generally, job satisfaction changed more

depending on an occupation's than a worker's Big Five score. Therefore, the average personality level of other occupational incumbents seems to be important for job satisfaction. Only openness met the necessary condition of downwards curving along the incongruence line. However, openness also failed to meet all three basic principles of a congruence effect proposed by van Vianen (2018), because job satisfaction varied depending on the level of individual and occupational openness and the direction of misfit did matter. For openness and neuroticism deficiency seems beneficial as lower individual compared to occupational openness and neuroticism is related to higher job satisfaction. The BFI-S measure of openness is strongly positively correlated with fantasy (Hahn et al., 2012), which overlaps with daydreaming (Zhiyan & Singer, 1997). Workers with higher openness might thus envision and aspire to possible aspects of their jobs that are currently not fulfilled, leading to reduced job satisfaction. A lower level of neuroticism might be beneficial for job satisfaction because neuroticism is linked to negative affectivity (Watson, 2000). Conversely, for extraversion and conscientiousness, excess seems beneficial, as higher individual compared to occupational extraversion and conscientiousness is related to higher job satisfaction. This might be due to the association of extraversion with positive affect (for the BFI-S measurement see: Hahn et al., 2012), which could result in increased job satisfaction (Sutin, Costa, Miech, & Eaton, 2009). Conscientiousness in the BFI-S was measured by three items tapping into being effective and efficient in completing tasks, which might lead to more satisfaction.

Change in P–E fit and Job Satisfaction over Time

Our study did not find change in P–E fit to be associated with change in job satisfaction for any Big Five trait. The cross-sectional finding of previous studies that higher personality congruence is linked to higher job satisfaction could thereby not be generalized to longitudinal within-person change. This finding runs counter to what could be expected based on trait activation theory—that intrinsic satisfaction results when an environment provides cues that trigger a worker to express their traits at work (Tett et al., 2013).

We also did not find that change in personality congruence predicted subsequent change in job satisfaction, except for neuroticism, where improved congruence predicted improved job satisfaction during the next four years. All other results were contrary to a previous finding from Gabriel et al. (2014), who found perceived person–job fit to predict an increase in job satisfaction. However, they assessed perceived instead of objective fit and considered the level instead of change in P–E fit. Up to now, no study considered within-person change in P–E fit as predictor of subsequent within-person change in work

outcomes—our study therefore offers first insights into longitudinal dynamics of personality congruence and job satisfaction.

We also assessed if change in job satisfaction predicted subsequent change in personality congruence. However, we found no support for such effects, except for neuroticism and only among participants who did not change their occupation. This indicates that if someone becomes less satisfied with their work and stays in the same occupation, their neuroticism congruence improves. However, in the case of neuroticism, better congruence might not be beneficial, because this might be due to an increase in individual neuroticism. Maybe workers with low job satisfaction who remain in the same occupation increased in their tendency to worry, be nervous, and experience stress. This finding is in favor of the reactive mode of adjustment proposed by the TWA, where P–E fit changes due to the person adapting to the work environment. Overall, we found little support in our data for the notion proposed by the DATA model (Woods et al., 2019) that when experiencing lowering job satisfaction, people might be motivated to adjust their personality traits to better meet the demands of their occupation.

Limitations and Future Research

Some limitations need to be considered when interpreting the findings of this study. First, one possible reason why we were not able to confirm most of the hypotheses might be that we relied on the aggregated occupational personality to assess congruence. Because this approach aggregates potentially considerable differences in the traits that people working in the same occupation possess, the resulting measure of occupational personality might be too broad to have strong predictive value. We addressed this concern by considering the variability of an occupation's personality type as a control in our analyses. However, other measures of occupational personality, such as expert ratings of an occupation's personality demands (see for example Denissen et al., 2018), might lead to different results. Future research is thus needed to examine if the results of the present study can be replicated with other measurements of the occupational environment generally, and personality demands of occupations more specifically.

Second, a focus on occupational personality is meaningful, because person–occupation fit usually precedes other types of fit, as educational or vocational choices often take place before working in a concrete job in a specific organization or team (Bradley-Geist & Landis, 2012). However, future studies could test the possibility that personality congruence with the more immediate work environment (e.g., personality traits within the team) is a stronger predictor of job satisfaction than more general occupational congruence.

Relatedly, we relied on an objective measure of the occupational environment. While this has the advantage of avoiding potential biases of self-assessments, subjectively perceived personality congruence at the occupational and team level might be a stronger predictor of subjective outcomes such as job satisfaction.

Third, the present study used general measures of personality and occupations. The applied BFI-S measures each Big Five dimension by only three items. More items would be necessary to cover all facets of each Big Five dimension. Restricted by the available data, looking at different personality facets was therefore out of scope for our study. We moreover examined occupational personality at the occupational level and did not focus on potentially more specific differences in personality profiles across jobs within occupations (e.g. being a social worker in a hospital versus a social worker in a public health agency). The relation between personality congruence and job satisfaction might vary depending on the specific type of job considered.

Finally, we were not able to fully tear the sources of change in personality congruence apart. We included occupational change as one major source of change in personality congruence, because a change of the work environment likely affects P–E fit. However, we did not distinguish the reasons for occupational change. Further research is needed to investigate if voluntary differ from involuntary occupational change regarding how job satisfaction is affected. Moreover, there are other sources of change in a person's environment, such as changing jobs within an occupation, through job crafting, or the assignment of new tasks, which we could not consider. Personality congruence is further affected by changes of the person, for example, when a worker adapts to or is transformed by experiences at work (Roberts, 2006). If and how the source of change in personality congruence affects work outcomes, like job satisfaction, remains an open question to address in future research.

Conclusions

Overall, our study provides a nuanced and critical picture of if and how working in an occupation that "fits" one's personality leads to increased satisfaction. Research on change in P–E fit and change in work outcomes are sparse and our study offered insights on the relation of objective personality congruence and job satisfaction over several years. Contrary to our expectations, change in personality congruence was not related to simultaneous change in job satisfaction and did not predict subsequent change in job satisfaction, except for neuroticism, where improved congruence predicted improved job satisfaction during the next four years. Further, the findings of our study indicate that both individual and occupational personality

are relevant regarding the level of job satisfaction, but not as the concept of congruence would predict. Notably, job satisfaction did not peak when individual and occupational personality were equal for any of the Big Five traits. Instead individual and occupational traits each explained unique variance in job satisfaction and these effects different between traits.

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Tables

Table 1

Means (M), standard deviations (SD), and correlations between all variables included in Latent Change Score Modelling.

Measure	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1 Congruence 2005	25.79	1.61										
2 Congruence 2009	25.80	1.62	.41***									
3 Congruence 2013	25.86	1.58	.37***	.43***								
4 Job satisfaction 2005	7.07	1.95	-.003	.01	.01							
5 Job satisfaction 2009	6.96	1.98	-.004	.03*	.01	.38***						
6 Job satisfaction 2013	7.04	1.94	.03	.05***	.02	.35***	.39***					
7 Occupational Change[a]	0.52	0.50	.01	-.02	-.01	.003	-.03*	-.002				
8 Variability 2005[b]	2.36	0.10	-.06***	-.07***	-.08***	-.03*	-.04**	-.03	.02			
9 Variability 2009[b]	2.36	0.11	-.08***	-.11***	-.10***	-.04**	-.04**	-.05***	.02	.64***		
10 Variability 2013[b]	2.36	0.10	-.07***	-.11***	-.13***	-.03	-.04**	-.04**	.01	.58***	.66***	
11 Age in 2005	40.69	9.68	-.01	.000	-.002	-.02	-.01	-.004	-.06***	-.005	.004	.03*

[a]Occupational change between 2009 and 2013 (0 = non-changer; 1 = changer).

[b]Occupational personality variability: Standard deviation of an occupation's Big Five scores.

*p < .05. **p < .01. ***p < .001.

Table 2

Standardized coefficients and model fit for the Latent Change Score Model for overall personality congruence and separate for congruence of each Big Five dimension.

	Overall Big Five	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Parameter						
β_{C1}	-.54***	-.58***	-.54***	-.58***	-.57***	-.57***
β_{C2}	-.61***	-.61***	-.60***	-.61***	-.60***	-.63***
β_{S1}	-.55***	-.55***	-.55***	-.55***	-.55***	-.55***
β_{S2}	-.61***	-.61***	-.61***	-.61***	-.61***	-.61***
$cov_{LCS.1a}$	.03*	.02	.02	.01	.02	.002
$cov_{LCS.2a}$	-.003	-.02	.02	.004	.02	-.03
ξ_{CS}	.02	.03*	.01	.000	-.001	.004
ξ_{SC}	-.002	-.03*	.01	.01	.02	-.01
Model fit						
$\chi^2(df)$	12.02(5)*	8.96(5)	9.20(5)	5.26(5)	2.62(5)	7.04(5)
CFI	.998	.999	.999	1.000	1.000	.999
TLI	.994	.996	.997	1.000	1.003	.998
RMSEA	.014	.011	.011	.003	.000	.008

Note. N = 7,049. χ^2 = chi-square test statistic; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation.

[a]Covariances $cov_{LCS.1}$ and $cov_{LCS.2}$ are not set to be equal.

*p < .05. ***p < .001.

Table 3

Unstandardized coefficients of the response surface plot based on polynomial regression and surface tests based on t-Test, separate for congruence of each Big Five dimension. Standard errors are displayed in parentheses.

	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Constant	6.90(.03)***	7.24(.11)***	6.67(.04)***	5.50(.50)***	9.23(1.30)***
Individual Big Five (X)[a]	-.34(.02)***	.17(.05)**	.13(.03)***	.25(.11)*	.17(.21)
Occupational Big Five (Y)[a]	.25(.13)	-.96(.27)***	.71(.11)***	1.65(.78)*	-2.66(1.39)
Squared Individual Big Five (X_2)	.02(.01)*	.00(.01)	.00(.01)	.04(.01)**	.06(.02)***
Individual x Occupational Big Five (XY)	.15(.05)**	.05(.06)	.00(.04)	-.06(.08)	-.03(.11)
Squared Occupational Big Five (Y_2)	.40(.20)	.55(.17)**	-.23(.08)**	-.55(.30)	.64(.38)
R_2	.06***	.02***	.01***	.02***	.02***
Surface tests					
a_1	-.09(.13)	-.80(.27)**	.84(.11)***	1.90(.78)*	-2.48(1.41)
a_2	.57(.20)**	.60(N/A)	-.23(.08)**	-.57(.29)	.67(.36)
a_3	-.59(.13)***	1.13(.29)***	-.57(.12)***	-1.40(.80)	2.83(1.41)*
a_4	.27(.22)	.49(.34)	-.23(.11)*	-.44(.33)	.72(.52)

Note. *N* ranged from 17,953 to 17,959. Standard error in parentheses. R_2 = explained total variance. $a_1 = X + Y$; $a_2 = X_2 + XY + Y_2$; $a_3 = X - Y$; $a_4 = X_2 - XY + Y_2$.

[a]Variable centered around the midpoint of the scale.

*$p < .05$. **$p < .01$. ***$p < .001$.

Figures

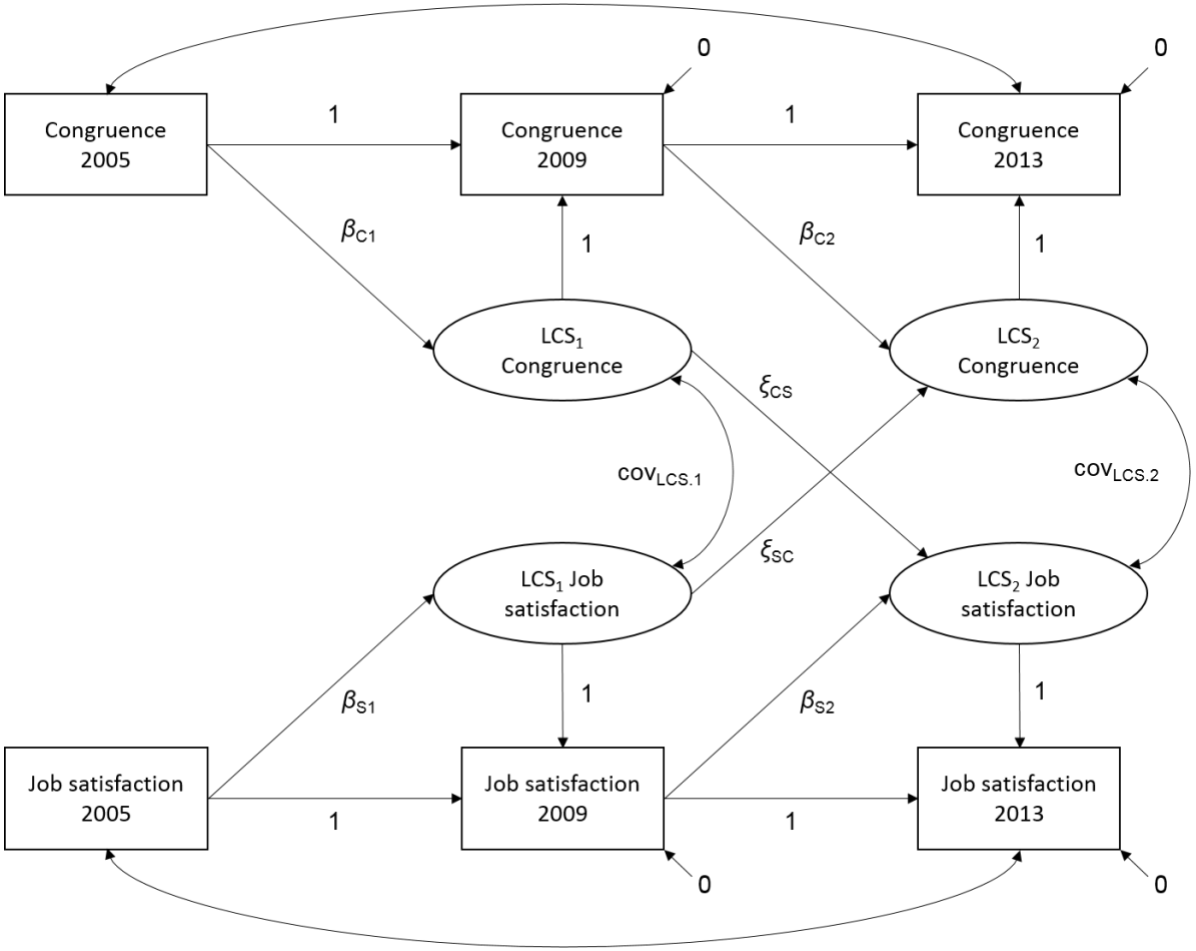

Figure 1. Latent change score model applied in the present study, with latent change in congruence relating to latent change in job satisfaction over 8 years.

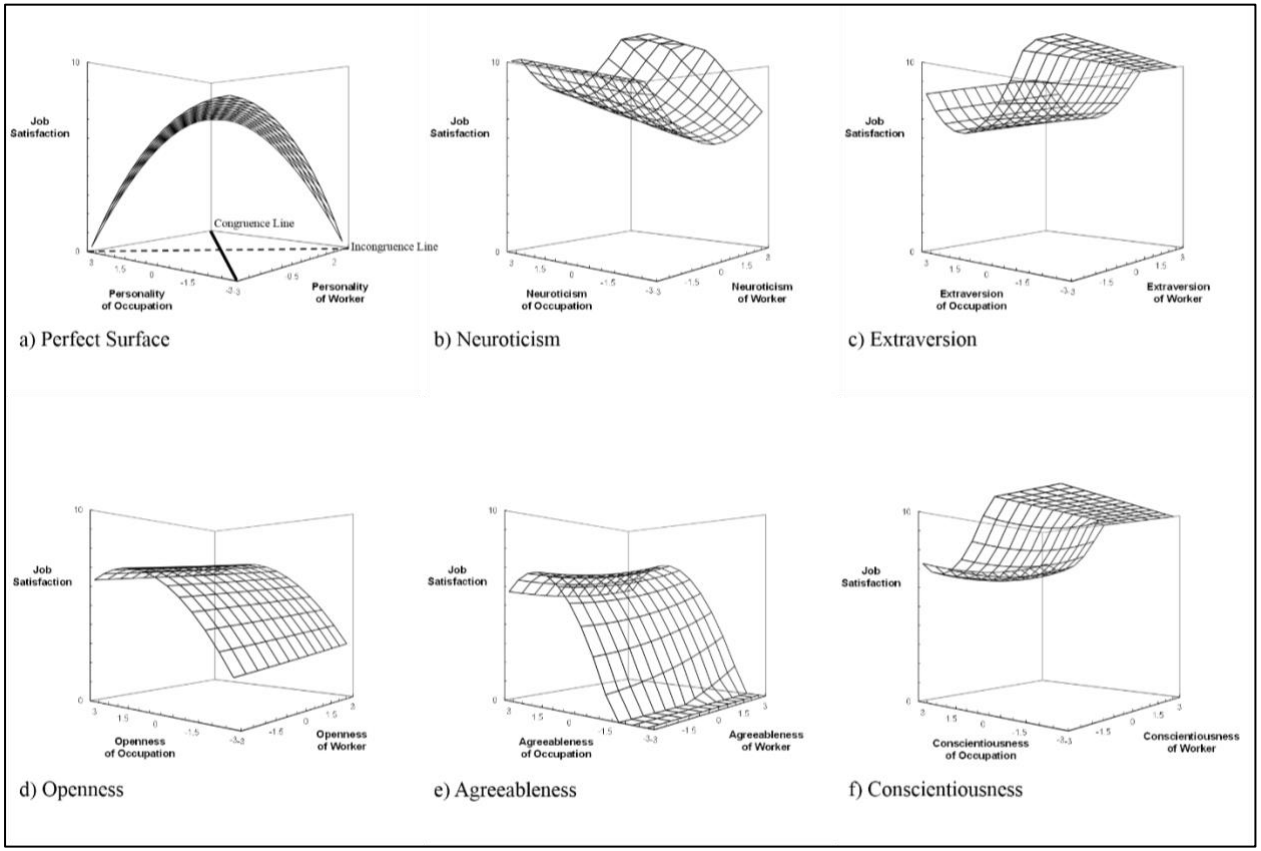

Figure 2. Example of a response surface analysis of a perfect congruence effect (a) based on polynomial regression, where job satisfaction is predicted by the individual and occupational Big Five. Response surface plots based on polynomial regression where job satisfaction is predicted by the (b) neuroticism, (c) extraversion, (d) openness, (e) agreeableness, and (f) conscientiousness of a worker and their occupation's Big Five level; SOEP data set of 2005, 2009, and 2013 are combined into one.