Are Trait–State Fit and State–Situation Fit Informative of Within-Person Processes of Personality State Expression?

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Draft version 1.0, November 25, 2021. This paper has not been peer reviewed.

Thank you for your interest. We welcome your feedback.

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Materials, analysis scripts, data sets, supplementary materials as well as a reproducible manuscript can be found on the [Open Science Framework](#). Because we used existing data in both studies, we refer readers to those original publications (Study 1: Kritzler et al., 2020; Study 2: Horstmann et al., 2021) for preregistrations of the study designs, raw data, and lists of all measures. For Study 2, we initially preregistered hypotheses and an analysis plan based on the findings from Study 1 (which can be accessed on the [Open Science Framework](#)), but due to major changes in the focus of the manuscript, we do not adhere closely to his preregistration anymore.

We have no known conflict of interest to disclose.

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Abstract

Choosing the right behavior can oftentimes be an act of balance between one's own preferences or tendencies and momentary situational affordances. How do people navigate these potentially different requirements? One way would be to choose the behavior that makes one feel good. Specifically, we argue that fit between personality traits and personality states and fit between personality states and situation characteristics should be associated with positive affect. Thereby, fit may provide feedback to within-person processes of personality state expression. In two experience sampling studies (Study 1: $N = 194$, 4,244 observations; Study 2: $N = 254$, 7,667 observations), we employed moderated multilevel polynomial regressions and response surface analysis to examine whether trait–state fit and state–situation fit were associated with state affect. We found a consistent pattern of interactions between personality traits, personality states, and situation characteristics predicting state affect, but did not find evidence for the hypothesized trait–state fit patterns or state–situation fit patterns. These findings have two main implications. First, the results suggest that fit patterns are not involved in associations between personality traits, personality states, situation characteristics, and state affect. However, because theories proposing fit are often imprecise regarding the operationalization of fit, it is difficult to draw concrete conclusions about these theories. Second, the large number of interactions between personality traits, personality states, and situation characteristics suggests that these three constructs should be studied together. The specific role of these interactions for personality processes needs to be further determined in future research.

Keywords: person-environment fit; personality processes; personality states; situation characteristics; response surface analysis

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Personality represents stable interindividual differences in thinking, feeling, and behaving (Baumert et al., 2017; Diener & Lucas, 2020). Personality traits describe differences between persons and predict important life outcomes such as well-being (Lucas, 2018; Ozer & Benet-Martínez, 2006; Soto, 2019), occupational attainment (Beck & Jackson, 2020; Ozer & Benet-Martínez, 2006; Roberts et al., 2007; Soto, 2019), life events (Beck & Jackson, 2020; Roberts et al., 2007), or longevity (Beck & Jackson, 2020; Roberts et al., 2007). However, accounts of personality at the trait level such as the Big Five have mostly been descriptive, and it mostly remains unclear why personality traits are associated with such life outcomes (Baumert et al., 2017; Fleeson & Law, 2015; Hampson, 2012).

One way personality traits may affect relevant outcomes is by how they are expressed in daily life (Horstmann & Ziegler, 2020; Wilt et al., 2012). For example, conscientiousness may be associated with better health because conscientious people act conscientiously (e.g., getting enough sleep, attending doctor’s appointments) more frequently (Bogg & Roberts, 2004; Shanahan et al., 2014). As another example, the positive association between trait extraversion and well-being (e.g., DeNeve & Cooper, 1998; Soto, 2015; Steel et al., 2008) is mediated by momentary extraversion: People who score high on trait extraversion act on average more extravertedly in their daily lives. People who act more extravertedly experience more positive affective states, and people who experience more positive affective states report higher well-being (Howell et al., 2017; Kritzler et al., 2020; Wilt et al., 2012). However, little is known about the processes that drive the momentary expressions of personality traits in daily life. What makes a person act more or less conscientiously or extravertedly in any given moment? A better

understanding of personality traits and their effects on relevant outcomes therefore requires gaining a better understanding of their momentary expressions in daily life, that is, of *personality states* (Baumert et al., 2017; Fleeson & Law, 2015; Hampson, 2012).

Personality states are momentary manifestations of personality traits—they describe how people think, feel, and behave in a given moment (Baumert et al., 2017; Fleeson & Law, 2015; Heller et al., 2007). By definition, the average of all personality states a person displays should correspond to a person's personality trait. If a person scores high on extraversion, they are likely to think, feel, and behave, on average, more extravertedly (Fleeson & Gallagher, 2009). This means that people have a tendency to *act in character*, that is, to enact personality states in line with their personality trait level (Danvers et al., 2020; Sosnowska et al., 2020). However, people also vary in their personality states, and these varying personality states should mostly fulfill the need or press of situational forces or affordances (Funder, 2016; Murray, 1936). If a person is at a party, they are likely to be talkative and cheerful, at least more so than at a funeral (Funder, 2016; Horstmann et al., 2021; Sherman et al., 2015). This means that people have a tendency to *behave appropriately*, that is, to enact personality states according to the demands and characteristics of the situation. These tendencies of enacting personality states in line with the trait and according to the situation can also be described as “fit” (e.g., Rauthmann, 2021; van Vianen, 2018). *Trait–state fit* describes the fit between personality traits and personality states; *state–situation fit* describes the fit between personality states and characteristics of the situation.

Because people generally should be motivated to enact personality states that feel good (Baumeister et al., 2007; Zelenski et al., 2013), fit may serve as a source of feedback for personality processes involved in personality state expression. Many modern personality theories such as whole trait theory (Fleeson & Jayawickreme, 2015; Jayawickreme et al., 2019), trait activation theory (Tett et al., 2021; Tett & Burnett, 2003), and cybernetic big five theory

(DeYoung, 2015) propose that acting in character and behaving appropriately is associated with positive outcomes: On the one hand, personality states that fit with personality traits should lead to positive affect or homeostasis (Fleeson & Jayawickreme, 2015; Moskowitz & Côté, 1995; Tett & Burnett, 2003) and on the other hand, personality states that fit with characteristics or demands of the situation should lead to positive consequences (e.g., survival, goal fulfillment, or social acceptance) and thus ultimately to positive affect and satisfaction (Diener & Emmons, 1984; Funder, 2016; Moskowitz & Côté, 1995; Tett & Burnett, 2003).

In the current article, we analyzed data from two experience sampling studies to examine whether fluctuations in state affect can indeed be predicted by trait–state fit and state–situation fit. We address important gaps in the literature (1) by using response surface analyses (J. R. Edwards, 2002; Humberg, Nestler, et al., 2019; Nestler et al., 2019) to test the fit hypotheses, (2) by examining trait–state fit and state–situation fit—which must operate simultaneously— together, and (3) by examining multiple personality trait and personality state dimensions.

Fit as a Source of Feedback for Personality Processes

Fit generally represents the idea that if a certain response matches a certain request, a positive outcome occurs (e.g., Humberg et al., 2020; Rauthmann, 2021; van Vianen, 2018). The concept of fit can be found in a variety of psychological disciplines and theories, for example as person–environment fit (J. R. Edwards et al., 1998; Rauthmann, 2021), regulatory fit (Higgins, 2005; Motyka et al., 2014), or partner similarity in romantic relationships (Gonzaga et al., 2007; Wilson & Cousins, 2003). So far, fit has mostly been used to describe differences between persons. For example, people who live in cities or regions that fit their personality have higher well-being and self-esteem than people living in misfitting regions (Bleidorn et al., 2016; Götz et

al., 2018), and people who work in jobs that fit their personality have a higher income than people in misfitting jobs (Denissen et al., 2018).

However, fit may also be informative of within-person processes of personality that are involved in the expression of personality states over time within individuals. As discussed above, personality states that fit closely with personality traits or with characteristics of the situation should be associated with positive affect. If people are motivated to enact personality states that feel good (Baumeister et al., 2007), fit between personality traits and personality states, *trait–state fit*, and fit between personality states and the situation, *state-situation fit*, may thus serve as a source of feedback for personality processes involved in personality state expression.

So far, trait–state fit and state–situation fit have mostly been discussed in isolation. However, trait–state fit and state–situation fit must operate simultaneously. Indisputably, people always have a personality and people are always in a situation. Sometimes personality trait and situation may align, making it possible for a person to act in character *and* appropriately at the same time. For example, an extraverted person at a party—a situation typically characterized by high sociability and the opportunity to be outgoing and social—can easily achieve fit with both personality and situation by being talkative, enthusiastic and “the life of the party.” Clearly, people should experience the most positive affect in such moments of fit.

In other moments, however, personality trait and situation may *not* align and the personality state cannot fit with both of them. In these moments, three broad options are possible: The personality state may fit with the trait but not the situation, it may fit with the situation but not the trait, or it may fit with neither trait nor situation (of course these are all dimensional constructs and therefore all constellations in between are conceivable). For example, an introverted person—someone with a tendency to be reserved and quiet—at a party cannot easily

achieve fit with both their personality traits and the situational demands. This person may either be talkative, enthusiastic and “the life of the party” and achieve fit with the situation but not with their personality trait, or this person may be rather quiet and withdrawn and achieve fit with their personality trait but not with the situation. Or, this person may choose the golden mean by behaving somewhere in between and thus not differ too much from the trait or the situation—but also fit with neither of them. Clearly, people should experience less positive affect in such moments of low(er) fit.

Modeling Fit With Response Surface Analyses

Fit hypotheses have a long history in psychological research (see Rauthmann, 2021; van Vianen, 2018). Modeling fit adequately in statistical models has proven to be quite challenging. In the past, fit hypotheses were often examined using difference scores or statistical interactions between two predictor variables, but these approaches have been criticized for not adequately testing fit (J. R. Edwards, 1993, 2001; Humberg, Nestler, et al., 2019; Rauthmann, 2021). Currently, the best-practice method for examining fit hypotheses seems to be response surface analysis based on polynomial regressions (Cronbach, 1958; J. R. Edwards, 2002, 2007; Humberg, Nestler, et al., 2019).

Generally speaking, response surface analysis examines how three variables are related to one another, taking into account main effects, squared effects, and statistical interactions in polynomial regressions. In these analyses, fit is operationalized as a specific pattern of associations (called a *fit pattern*) that involves both interactions and squared effects. To facilitate the interpretation of these parameters, the predicted values are typically plotted as a three-dimensional surface. To demonstrate how response surface analysis can be used to investigate

trait–state fit and state–situation fit, Figure 1 presents three hypothetical response surface plots of the association between state extraversion, perceived sociality of the situation, and state affect.

Figure 1A represents a plane-like surface that is the product of two main effects without significant interactions or fit patterns. Because there are no interaction and squared effects, the surface has no curvature and resembles a kite. This surface indicates that people would experience more positive state affect when enacting higher levels of state extraversion. Additionally, people would experience more positive state affect in situations that are high in sociality. These two effects are additive and independent from each other. Overall, people would therefore experience the most positive state affect when enacting high levels of state extraversion in situations high in sociality and the most negative state affect when enacting low levels of state extraversion in situations low in sociality.

Figure 1B represents a surface produced by main effects and an interaction effect. In contrast to the plane-like pattern in Figure 1A, this surface is not completely even but is slightly twisted. That is, the strength of the association between state extraversion and state affect depends on the level of state sociality, and vice versa. For example, higher levels of state sociality are not associated with more positive state affect at low levels of state extraversion, but they are associated with more positive state affect at high levels of state extraversion. Overall, people would thus experience the most positive state affect when enacting high levels of state extraversion in situations high in sociality and the most negative state affect when either state sociality, state extraversion, or both are low.

Figure 1C represents a surface produced by main effects and a fit pattern. The most important difference between the fit pattern and the other two surfaces is that the fit pattern has a ridge (indicated by the solid grey line). This ridge represents the combinations of state extraversion and state sociality for which the highest levels of state affect are predicted, the

optimal combinations, so to speak. True to the idea of fit, these optimal combinations are equal levels of state extraversion and state sociality. However, because there are also main effects of state extraversion and state sociality, the ridge rises linearly which means that it matters whether state extraversion and state sociality fit with each other at high levels or at low levels. Therefore, people would experience more positive state affect at fitting high levels of state extraversion and state sociality (e.g., behaving extravertedly at a party) than at fitting low levels (e.g., behaving introvertedly at a library).

Comparing the surface of the fit pattern (Figure 1C) with the surface of the interaction (Figure 1B), two important points become visible: First, both interactions and fit patterns provide information about whether and how associations between personality states and state affect depend on people's personality traits or on characteristics of the situation and thereby may be informative of personality processes. We therefore examined both interactions and fit patterns in our studies. Second, however, interactions and fit patterns are conceptually distinct. For example, the positive association between state extraversion and state affect in Figure 1B becomes stronger—and the surface thus steeper—when the situation is perceived as more social. This is a significant interaction but it does not represent a fit effect, because even at low levels of sociality, high levels of state extraversion are related to more positive state affect than low levels of state extraversion. For a fit effect, we would expect the opposite, as shown in Figure 1C. Therefore, we examined both interactions and fit patterns, but we treated them as conceptually distinct (Kritzler & Luhmann, 2021; Rauthmann, 2021).

Figure 1

Exemplary response surfaces (A–C) and moderated response surfaces (D–F) of associations between state extraversion, state sociality and state affect

Note. Panels A–C represent non-moderated response surfaces created by only main effects (A), main effects and an interaction effect (B), and a fit pattern as defined in the response surface approach (C). Panels D–F represent moderated response surfaces created by a moderated state-situation fit pattern at low levels of trait extraversion (D), medium levels of trait extraversion (E), and high levels of trait extraversion (F). The solid grey line represents the line of congruence (i.e., where $X = Y$), that is, the line of maximal fit between the two predictors. The dashed grey line represents the line of incongruence (i.e., where $X = -Y$).

Modeling Trait–State Fit and State–Situation Fit Simultaneously

We have argued that trait–state fit and state–situation fit must operate simultaneously. But as far as we are aware, it is currently not possible to model trait–state fit and state–situation at the same time in response surface analyses. However, a useful approximation may be to control for and include the missing third predictor as a moderator in the polynomial regressions (Nestler et al., 2019). For example, personality traits may be included in the analyses of state–situation fit to examine whether state–situation fit effects only emerge at specific levels of the personality trait. Or situation characteristics may be included in the analyses of trait–state fit to examine whether trait–state fit effect only emerge at specific levels of the situation characteristics. Similar to simple slopes in moderated linear multiple regression, response surface plots can then be examined at different levels of the moderator.

To illustrate how such moderated response surface analyses aid the study of trait–state fit and state–situation fit, Figures 1D to 1F present a hypothetical (but conceivable) example of such a moderation effect of trait extraversion on the associations between state extraversion, state sociality, and state affect. There are three response surfaces, one pertaining to low levels of trait extraversion, one pertaining to moderate levels of trait extraversion, and one pertaining to high levels of trait extraversion. In all cases, the association between state extraversion, state sociality, and state affect represents a fit pattern as discussed for Figure 1C. However, the shape of the ridge depends on the level of trait extraversion.

For people characterized by low levels of trait extraversion (Figure 1D), the ridge declines linearly. Thus, more positive state affect would be predicted for fitting low levels of state extraversion and state sociality than for fitting high levels—introverts would experience more positive affect when behaving introvertedly in a library than when behaving extravertedly at a

party. For people characterized by moderate levels of trait extraversion (Figure 1E), the ridge is flat. Thus, equal levels of state affect would be predicted for all fitting levels of state extraversion and state sociality. For people characterized by high levels of trait extraversion (Figure 1F), the ridge rises linearly. Thus, more positive state affect would be predicted for fitting high levels of state extraversion and state sociality than for fitting low levels—extraverts would experience more positive affect when behaving extravertedly at a party than when behaving introvertedly in a library.

Overview of the Present Studies

We argued that trait–state fit and state–situation fit should be associated with positive outcomes and thereby may serve as sources of feedback for within-person processes of personality state expression. In the current studies, we put this idea to the test: In order to examine whether trait–state fit and state–situation fit play an important role for personality processes involved in personality state expression, it is essential to first demonstrate that fit is related to positive affect. In two large experience sampling studies, we thus examined whether fluctuations in state affect can be predicted by trait–state fit and state–situation fit. Both studies used the experience sampling methodology (ESM; Larson & Csikszentmihalyi, 1983; Csikszentmihalyi & Hunter, 2003) to collect data on everyday situations, personality states, and affect in mainly student samples.

We used moderated multilevel response surface analyses to test these hypotheses. In response surface analyses, fit is represented by a complex pattern of associations in regression parameters that includes a statistical interaction but is not the same as a statistical interaction (Kritzer & Luhmann, 2021; Rauthmann, 2021). However, because much of the previous research on fit focused on interactions (e.g., Gallagher et al., 2011; Götz et al., 2018; Moskowitz & Côté,

1995), we also examined interactions between personality trait and personality state and between personality state and situation characteristics—but we explicitly do not refer to them as fit. We first exploratively analyzed associations between trait–state fit, state–situation fit, and positive affect as well as associations between trait–state interactions, state–situation interactions, and positive affect in Study 1 and then replicated the findings in Study 2.

Methods

We analyzed data from two ESM studies on people’s everyday lives. For both studies, we used existing data: Data from Study 1 have originally been published in Kritzler et al. (2020). Kritzler and colleagues examined how personality states, perceived situation characteristics and state affect mediate the relation between personality traits and trait affect. Interactions between personality states and situation characteristics in predicting state affect were already reported in this paper, however, no curvilinear effects, response surface analyses, or interactions involving personality traits were computed. Data from Study 2 have originally been published in Horstmann et al. (2021). Horstmann and colleagues examined how personality traits, perceived situation characteristics and momentary affect predicted personality states. Some interactions between personality traits and situation characteristics were already reported in this paper, however, no curvilinear effects, response surface analyses, or interactions involving personality states were computed. Both studies were conducted in line with the ethical standards for treating human research participants at their local universities.

Procedure

For Study 1, data were collected with the Expimetrics App (Tay, 2015). Participants were recruited at German universities and compensated with partial course credit. Having provided

informed consent, participants completed a baseline questionnaire containing measures of Big Five personality traits, demographic questions, and measures for other research projects. During the following experience sampling phase, participants were prompted to complete the ESM questionnaire on five pseudo-random occasions between 10 a.m. and 9 p.m. each day for seven consecutive days. The ESM questionnaire contained measures of personality states, perceived situation characteristics, and state affect. Following the seven days of experience sampling, participants completed a follow-up questionnaire with measures for other research projects.

For Study 2, data were collected using the open-source platform formr.org (Arslan et al., 2019). Participants were recruited at a German university. Having provided informed consent, participants completed a baseline questionnaire containing measures of HEXACO personality traits and demographic questions. During the following experience sampling phase, participants were prompted to complete the ESM questionnaire every 3 hours until they had completed 50 questionnaires or had opted out of the study. The ESM questionnaire contained measures of assessing personality states, perceived situation characteristics, and state affect. Participants were debriefed after completing the 50 ESM questionnaires or opting out of the study.

Participants

Study 1 included 194 participants who provided a total of 4,244 ESM reports ($M = 21.88$, $SD = 10.97$, $Q_1 = 13.25$, $Q_2 = 26.00$, $Q_3 = 30.00$). Participants were on average 25.03 years old ($SD = 7.94$). Thirty (15%) of the participants were male, 158 (81%) female, and the remaining did not indicate their gender. Most participants (80.75%) were students receiving partial course credit for participating.

Study 2 included 254 participants who provided a total of 7,667 ESM reports ($M = 30.19$, $SD = 17.43$, $Q_1 = 12.25$, $Q_2 = 31.00$, $Q_3 = 50.00$). Participants were on average 24.31 years old ($SD = 6.49$). Forty (16%) of the participants were male, 213 (84%) female, and the remaining did not indicate their gender. Most participants were university students receiving partial course credit for participating.

Both samples were collected for other research projects and the sample sizes were thus not specifically determined for the purposes of the present paper. However, simulations with the R package *simr* (Green & MacLeod, 2016) showed that the analyses were adequately powered to detect unstandardized Level 1 effects as small as 0.04, Level 2 effects as small as 0.09, and cross-level interactions as small as 0.03 with a power of .80 at a significance level of .01 in Study 1. As the sample in Study 2 was even larger, we concluded that both studies were adequately powered for the planned analyses.

Measures

Personality Traits and Personality States

In Study 1, personality traits and personality states were operationalized as self-reported traits or states from the Big Five trait taxonomy (John et al., 2008). The German version of the Ten Item Personality Inventory (TIPI; Gosling et al., 2003; German version: Muck et al., 2007) was used to assess Big Five personality traits and an adapted version was used to assess corresponding Big Five personality states. Each dimension was represented by two items which consist of the statement “I see myself as...” for traits or “In the current situation, I am...” for states, followed by two adjectives (e.g., for trait extraversion, one item was “I see myself as extraverted, enthusiastic.”). Participants indicated on a scale from 1 (*disagree strongly*) to 7 (*agree strongly*) how much they agreed with each statement. Items were reverse-coded when

applicable and personality trait scores and personality state scores were computed as the mean of the two items belonging to the respective dimension. Trait neuroticism and state neuroticism were reverse-coded as trait and state emotional stability to have higher values indicate more socially desirable trait levels. Personality trait scores and personality state scores were centered on their scale midpoints.

In Study 2, personality traits and personality states were operationalized as self-reported traits or states from the HEXACO model (Ashton et al., 2014; Ashton & Lee, 2007; Lee & Ashton, 2008). Personality traits were assessed with the German version of the HEXACO-60 questionnaire (Ashton & Lee, 2009; German version: Moshagen et al., 2014). Participants indicated on a scale from 1 (*not at all*) to 6 (*totally*) how much trait descriptive statements applied to them (e.g., for trait extraversion, one item was “On most days, I feel cheerful and optimistic.”). HEXACO personality states were assessed with bipolar items adopted from Sherman et al. (2015). Participants indicated on a scale from 1 to 8 how they were behaving in the reported situation. Each pole of the bipolar scale was anchored by two adjectives representing high and low levels of the corresponding state, respectively (e.g., for agreeableness, the scale ranged from 1 = *warm, agreeable* to 8 = *cold, quarrelsome*). Extraversion was assessed with two items representing the sociability and the dominance aspect, respectively. All other dimensions were assessed with one item. Items were reverse-coded when applicable and personality trait scores and personality state scores were computed as the mean of all items belonging to the respective dimension. Trait emotionality and state emotionality were reverse-coded to have higher values indicate more socially desirable trait levels and will henceforth be referred to as emotional stability. Personality trait scores and personality state scores were centered on their scale midpoints.

Situation Characteristics

Situation characteristics were operationalized as subjectively perceived characteristics of situations from the Situational Eight DIAMONDS taxonomy (Rauthmann et al., 2014; Rauthmann & Sherman, 2016a) in both studies. The Situational Eight DIAMONDS comprise the dimensions *Duty* (Does work need to be done?), *Intellect* (Is deep cognitive processing necessary?), *Adversity* (Is someone being threatened?), *Mating* (Is there an opportunity to attract mates?), *pOsitivity* (Is the situation enjoyable?), *Negativity* (Can negative feelings taint the situation?), *Deception* (Is someone deceptive?), and *Sociality* (Is meaningful social interaction possible?).

In Study 1, perceived situation characteristics were assessed using the German version of the S8-II questionnaire (Rauthmann & Sherman, 2016b). Each dimension was represented by one statement for which participants indicated on a scale from 1 (*not at all*) to 7 (*totally*) to what extent their current situation contained certain qualities (e.g., for sociality the item is “The situation contains communication, interaction, social relationships”). Situation characteristics with a negative valence (i.e., duty, adversity, negativity, and deception) were reverse-coded for the analyses to facilitate comparison of the results between the different domains. Reverse-coded situation characteristics will henceforth be signaled by adding (r) to their name such that duty(r), for example, refers to reverse-coded duty with higher values representing less dutiful situations. All situation characteristics were centered on their scale midpoints.

In Study 2, perceived situation characteristics were assessed using the German version of the S8-I (Rauthmann & Sherman, 2016b). Each dimension was represented by one statement for which participants indicated on a scale from 1 (*not at all*) to 8 (*totally*) how much it applied to the current situation. Situation characteristics with negative valence (i.e., duty, adversity, negativity,

and deception) were reverse-coded for the analyses (signaled by adding (r) to their name) to facility comparability. All situation characteristics were centered on their scale midpoints.

State Affect

In Study 1, state affect was operationalized as self-reported momentary levels of positive affect as conceptualized in circumplex models of affect (e.g., Posner et al., 2005; Yik et al., 2011), that is, as high positive valence with moderate arousal. We used an adjusted version of the German version (Berend & Vogt, 2015) of the Scale of Positive and Negative Experience (SPANE; Diener, 2009) as a measure of state affect. To measure state instead of trait affect, the items were adjusted to measure participants' current feelings, using a scale from 1 (*not at all*) to 5 (*completely*). Additionally, to decrease participant burden, we selected only 4 of the original 12 items (i.e., "positive," "negative," "happy" and "sad"). Because state positive affect and state negative affect were on average highly negatively correlated within persons ($r = -.46$), we calculated an overall mean state affect score within each occasion (e.g., Dejonckheere et al., 2018; Russell & Carroll, 1999). High values of this state affect score thus indicate positive affective states, whereas low values indicate negative affective states.

In Study 2, state affect was measured in two ways: with a one-item measure of happiness ranging from 1 (*happy, positive*) to 8 (*sad, negative*) and with a six-item affect measure adopted from Hampel (1977). We aimed to use an operationalization of state affect that was close to the operationalization in Study 1 (i.e., items from the SPANE). The happiness item seemed to have the advantage of face validity, whereas the multi-item solution had the advantage of a more detailed, fine-grained, and most likely more reliable measurement. Because the happiness items and the mean score of the multi-item measure correlated within persons at $r = .70$, we combined

these two measures into one composite state affect score. High values of this state affect score thus indicate positive affect, whereas low values indicate negative affect.

Analytic Strategy

The data were analyzed using R (Version 4.0.3; R Core Team, 2018) and the R-packages *lme4* (Version 1.1.27.1; Bates et al., 2015), *lmerTest* (Version 3.1.3; Kuznetsova et al., 2017), *RSA* (Version 0.10.4; Schönbrodt & Humberg, 2018), *simr* (Version 1.0.5; Green & MacLeod, 2016), and *tidyverse* (Version 1.3.1; Wickham, Averick, et al., 2019).¹ For the multilevel response surface analyses, we used code provided by Nestler et al. (2021, May 24).

To examine trait–state fit, we matched each personality trait only with its corresponding personality state of the same dimension (e.g., trait extraversion and state extraversion, but not trait extraversion and state conscientiousness) because the personality dimensions are independent of each other (Ashton et al., 2009; De Vries, 2011). In contrast, it is less clear which personality dimensions are associated with which situation characteristics because empirical findings often differed from theoretical expectations (Horstmann et al., 2021; Rauthmann et al., 2015, 2016; Sherman et al., 2015). To examine state–situation fit, we therefore paired each

¹ We, furthermore, used the R-packages *citr* (Aust, 2019), *corrplot2017* (Wei & Simko, 2017), *cowplot* (Version 1.1.1; Wilke, 2019), *dplyr* (Version 1.0.7; Wickham, François, et al., 2019), *forcats* (Version 0.5.1; Wickham, 2021a), *ggplot2* (Version 3.3.5; Wickham, 2016), *gridExtra* (Version 2.3; Auguie, 2017), *kableExtra* (Version 1.3.4; Zhu, 2021), *lattice* (Version 0.20.41; Sarkar, 2008), *lavaan* (Version 0.6.9; Rosseel, 2012), *lemon* (Version 0.4.5; S. M. Edwards, 2020), *Matrix* (Version 1.2.18; Bates & Maechler, 2019), *papaja* (Version 0.1.0.9997; Aust & Barth, 2018), *patchwork* (Version 1.1.1; Pedersen, 2020), *plyr* (Wickham, 2011; Version 1.8.6; Wickham, François, et al., 2019), *psych* (Version 2.1.9; Revelle, 2019), *purrr* (Version 0.3.4; Henry & Wickham, 2020), *readr* (Version 2.1.0; Wickham & Hester, 2020), *readxl* (Version 1.3.1; Wickham & Bryan, 2019), *stringr* (Version 1.4.0; Wickham, 2019), *tibble* (Version 3.1.6; Müller & Wickham, 2021), *tidyr* (Version 1.1.4; Wickham, 2021b), and *tinylabels* (Version 0.2.1; Barth, 2021).

personality state with each situation characteristic. As we also aimed to examine trait–state fit and state–situation fit simultaneously, we thus analyzed 40 triads (5 Big Five trait and state pairs x 8 DIAMONDS dimensions = 40 triads) of personality trait, personality state, and perceived situation characteristic. To account for the large number of estimated parameters and significance tests, we set the significance level at $\alpha = .01$.

The following analyses were conducted separately for each triad. We first estimated two non-moderated multilevel polynomial regression models to examine trait–state fit and state–situation fit independently from each other. These models included the polynomial terms (i.e., main effects, interaction, and squared effects) of personality state and situation characteristic but not personality traits or, respectively, the polynomial terms of personality trait and personality state but not situation characteristic. Personality traits, personality states, and situation characteristics were centered on the midpoints of their scales as recommended for response surface analyses (Humbert, Nestler, et al., 2019; Nestler et al., 2019). To ensure that fixed effects of Level 1 variables are pure Level 1 effects (Enders & Tofighi, 2007), the models additionally included polynomial terms of within-person aggregated means of personality state and situation characteristic. Measurement occasions were nested in persons, and we estimated random-intercept models because random-slope models did not converge consistently. We then examined the polynomial regression coefficients for trait–state interactions and state–situation interactions and the response surface parameters for trait–state fit and state–situation fit. The response surface parameters a_1 to a_5 describe the shape of the surface above the line of congruence (i.e., where $X = Y$; a_1 is the linear slope coefficient of this line and a_2 is the quadratic slope coefficient) and above the line of incongruence (i.e., where $X = -Y$; a_3 is the linear slope coefficient of this line and a_4 is the quadratic slope coefficient) and compare it to the position of the ridge of the surface. To fulfill criteria for a fit pattern, the surface above the line of incongruence must take an inverted-U

form with the vertex on the line of congruence (i.e., $a_4 < 0$ and $a_3 = 0$; see Figure 1C) and the ridge must lie on the line of congruence (i.e., $a_5 = 0$; see Figure 1C). For a fit pattern in a strict sense, that is, without additional main effects of the predictors, the surface must additionally have no slope above the line of congruence (i.e., $a_1 = 0$ and $a_2 = 0$; compare Figures 1D and 1E). Finally, we also examined response surface plots to visualize the associations.

In a second step, we then estimated the moderated multilevel polynomial regression model to examine trait–state fit and state–situation fit while controlling for the third-variable. These models included the polynomial terms of personality trait and personality state and their interactions with situation characteristics or, respectively, the polynomial terms of personality state and situation characteristics and their interactions with the personality trait. Again, the moderated multilevel polynomial regression models additionally included polynomial terms of the within-person aggregated means of the personality state and the situation characteristic to ensure that fixed effects of non-aggregated variables are pure Level 1 effects (Enders & Tofighi, 2007). Measurement occasions were nested in persons, and we estimated random-intercept models because random-slope models did not converge consistently. We then examined the polynomial regression coefficients for trait–state interactions and state–situation interactions and the response surface parameters for trait–state fit or state–situation fit. Additionally, we conducted regions of significance analyses to determine at which trait levels response surface parameters fulfilled conditions for a fit pattern of state–situation fit and at which situation levels response surface parameters fulfilled conditions for a fit pattern of trait–state (Nestler et al., 2019). Finally, we used response surface plots to visualize the associations.

Transparency and Openness

All data, analysis code, and research materials as well as a reproducible manuscript are available at the [Open Science Framework](#). Because we used existing data in both studies, we only provide clean data files needed to reproduce the analyses in our project. For the raw data as well as preregistrations of the study designs, we refer readers to the respective original publications (i.e., Study 1: Kritzler et al., 2020; Study 2: Horstmann et al., 2021).

We had originally derived and preregistered hypotheses from the findings in Study 1 and then tested them in Study 2. However, since this preregistration was created, the focus of this paper has changed significantly, and the preregistration is no longer a good fit. Therefore, we do not adhere closely to this preregistration anymore. However, for the sake of transparency, the preregistration can be accessed at the [Open Science Framework](#).

Results

Table 1 entails descriptive statistics for all relevant variables in Study 1 and Study 2. Tables with intercorrelations of all variables can be found in the [Online Supplementary Materials \(OSM\)](#) available on the [Open Science Framework](#).

As described in the analytic strategy, we conducted the analyses separately for 40 triads of personality trait, corresponding personality state, and corresponding situation characteristics independently for the two studies, yielding a multitude of regression parameters, response surface parameters, and response surface plots. In order to present this set of results in a comprehensible way, we discuss only the general pattern of results in the main body of this article. The detailed results from each model are presented in the [OSM](#).

Table 1

Descriptive statistics of all personality traits, personality states, situation characteristics, and state affect in the two studies

	Study 1						Study 2					
	<i>M</i>	<i>SD</i>	Median	Min	Max	<i>N</i>	<i>M</i>	<i>SD</i>	Median	Min	Max	<i>N</i>
Duty(r)	3.24	2.33	2.00	1.00	7.00	4,233	4.63	2.63	4.00	1.00	8.00	7,654
Intellect	3.08	1.94	3.00	1.00	7.00	4,227	3.75	2.38	3.00	1.00	8.00	7,642
Adversity(r)	1.75	1.45	1.00	1.00	7.00	4,231	7.47	1.35	8.00	1.00	8.00	7,657
Mating	2.11	1.74	1.00	1.00	7.00	4,231	2.56	2.48	1.00	1.00	8.00	7,650
pOsitivity	4.27	2.01	5.00	1.00	7.00	4,233	4.64	1.92	5.00	1.00	8.00	7,648
Negativity(r)	2.26	1.65	2.00	1.00	7.00	4,233	6.04	2.09	7.00	1.00	8.00	7,653
Deception(r)	1.67	1.42	1.00	1.00	7.00	4,230	7.68	1.06	8.00	1.00	8.00	7,639
Sociality	3.86	2.37	4.00	1.00	7.00	4,232	4.30	2.64	5.00	1.00	8.00	7,652
State Openness	4.46	1.33	4.50	1.00	7.00	4,226	5.41	1.64	6.00	1.00	8.00	7,617
State Conscientiousness	4.90	1.37	5.00	1.00	7.00	4,226	5.22	1.84	5.00	1.00	8.00	7,617
State Extraversion	4.18	1.45	4.00	1.00	7.00	4,226	5.25	1.32	5.50	1.00	8.00	7,625
State Agreeableness	5.09	1.37	5.50	1.00	7.00	4,231	6.21	1.53	6.00	1.00	8.00	7,611
State Emotional Stability	5.25	1.52	5.50	1.00	7.00	4,229	4.98	1.92	5.00	1.00	8.00	7,636
State Positive Affect	3.72	0.95	4.00	1.00	5.00	4,231	5.56	1.39	5.71	1.00	8.00	7,630
Trait Openness	4.75	1.29	5.00	1.00	7.00	185	4.42	0.78	4.55	1.90	6.00	254
Trait Conscientiousness	5.00	1.44	5.50	1.50	7.00	185	4.16	0.83	4.20	1.80	5.90	254
Trait Extraversion	4.19	1.32	4.00	1.00	7.00	186	3.81	0.86	3.90	1.30	5.60	254
Trait Agreeableness	4.92	1.32	5.00	1.00	7.00	186	3.75	0.75	3.80	1.60	5.40	254
Trait Emotional Stability	4.55	1.25	4.50	1.00	7.00	185	3.15	0.84	3.10	1.20	5.90	254

Note. (r) indicated that the respective situation characteristics were reverse-coded such that higher values represent more desirable characteristics (e.g., higher values of adversity(r) indicate less adversity).

Fit patterns

First, we used multilevel response surface analyses to separately test for trait–state fit patterns and state–situation fit patterns in the two studies. We tested for fit patterns both in a broad sense (i.e., with additional main effects of the two predictors) and in a strict sense (i.e., without main effects). We did not find any evidence for trait–state fit patterns when disregarding situation characteristics or for state–situation fit patterns when disregarding personality traits in either study. For example, conditions for a fit pattern between state agreeableness and sociality were not fulfilled in Study 1 because the surface rose significantly above the line of incongruence, $a_3 = 0.21$, $p < .001$, $a_4 = 0.02$, $p = .003$, instead of having an inverted U-shape (Figure 2C). Thus, instead of having the typical shape that represents a fit pattern, this surface was mostly steep along the state-agreeableness axis, indicating that high levels of state agreeableness were associated with the most positive affect regardless of the sociality of the situation (Figure 2C). The same was also true for fit between state agreeableness and sociality in Study 2 and for fit between trait agreeableness and state agreeableness in both studies (Figure 2). Tables displaying the individual response surface parameters that were used to test for fit patterns can be found in the [OSM](#).

Figure 2

Response surface plots for fit between state agreeableness and sociality in Study 1 (A) and Study 2 (B) and between trait agreeableness and state agreeableness in Study 1 (C) and Study 2 (D)

Note. The solid line represents the line of congruence, that is, the line of maximal congruence between the two predictors. The dashed line represents the line of incongruence.

However, as argued in the introduction, trait–state fit and state–situation fit must operate simultaneously and could influence each other. Therefore, it is important to examine them together. To do so, we used moderated multilevel response surface analyses to test for situation-

moderated trait–state fit patterns and for trait-moderated state–situation fit in the two studies.

These models allowed us to control for the third variable (e.g., personality traits) while testing the fit between two variables (e.g., personality states and situation characteristics) and therefore provide an approximation to the analysis of trait–state fit and state–situation fit simultaneously.

Regions of significance analyses were employed to determine whether criteria for a fit pattern might be fulfilled at specific values of the moderator. Table 2 summarizes the findings on regions of significance for trait-moderated state–situation fit and situation-moderated trait–state fit.

Table 2

Summary of regions of significance analyses indicating at which intervals of situation characteristic values conditions for a trait–state fit patterns and at which intervals of personality trait values conditions for a state–situation fit pattern were fulfilled

Trait-State-Situation Pairing	State–Situation Fit				Trait–State Fit			
	Fit Pattern in a Strict Sense		Fit Pattern in a Broad Sense		Fit Pattern in a Strict Sense		Fit Pattern in a Broad Sense	
	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2
Openness - Duty(r)	-	-	-	-	-	-	[1.40,3.00]	-
Openness - Intellect	-	-	-	-	-	-	[-1.22,3.00]	[0.13,1.77]
Openness - Adversity(r)	-	-	-	-	-	-	[2.19,3.00]	[0.92,1.32]
Openness - Mating	-	-	-	-	-	-	[-1.16,-0.05]	o/r
Openness - pOsitivity	-	-	-	-	-	o/r	[0.02,2.57]	[-0.20,3.50]
Openness - Negativity(r)	-	-	-	-	-	-	[1.64,2.36]	[2.04,3.50]
Openness - Deception(r)	-	-	-	-	-	-	[2.00,3.00]	[0.39,1.51]
Openness - Sociality	-	-	-	-	-	-	-	[-3.50,-2.93]
Conscientiousness - Duty(r)	-	-	-	-	-	-	[1.36,2.84]	-
Conscientiousness - Intellect	-	-	-	-	-	-	-	-
Conscientiousness - Adversity(r)	-	-	-	-	-	-	-	-
Conscientiousness - Mating	-	-	-	-	-	-	-	o/r
Conscientiousness - pOsitivity	-	-	-	-	-	-	-	-
Conscientiousness - Negativity(r)	-	-	-	-	-	-	-	-
Conscientiousness - Deception(r)	-	o/r	-	o/r	-	-	-	-

Conscientiousness - Sociality	-	-	-	-	-	o/r	-	-
Extraversion - Duty(r)	-	-	-	-	-	-	-	-
Extraversion - Intellect	-	-	-	-	-	-	-	-
Extraversion - Adversity(r)	-	-	-	-	-	-	-	-
Extraversion - Mating	-	-	-	-	-	-	-	-
Extraversion - pOsitivity	-	-	-	o/r	-	-	-	-
Extraversion - Negativity(r)	-	-	-	-	o/r	-	-	-
Extraversion - Deception(r)	-	-	-	-	-	-	-	-
Extraversion - Sociality	-	-	-	-	-	-	-	-
Agreeableness - Duty(r)	-	-	-	-	-	-	-	-
Agreeableness - Intellect	-	-	-	-	-	-	-	-
Agreeableness - Adversity(r)	-	-	-	-	-	-	-	-
Agreeableness - Mating	-	-	-	-	-	-	-	-
Agreeableness - pOsitivity	-	-	-	[-1.68,-1.56]	-	-	-	-
Agreeableness - Negativity(r)	-	-	-	-	-	o/r	-	o/r
Agreeableness - Deception(r)	-	-	-	-	-	-	o/r	-
Agreeableness - Sociality	-	-	-	-	-	-	-	-
Emotional Stability - Duty(r)	-	-	-	-	-	-	-	-
Emotional Stability - Intellect	-	-	-	-	-	-	-	-
Emotional Stability - Adversity(r)	-	-	-	-	o/r	-	-	-
Emotional Stability - Mating	-	o/r	-	o/r	-	-	-	-
Emotional Stability - pOsitivity	-	-	-	-	o/r	-	o/r	-
Emotional Stability - Negativity(r)	o/r	-	o/r	-	-	-	-	-
Emotional Stability - Deception(r)	-	-	-	o/r	-	-	-	-
Emotional Stability - Sociality	-	-	-	-	-	o/r	-	[2.83,0.59]

Note. ‘-’ indicates that the criteria for a fit pattern (either on average or across all moderator values) were not fulfilled; ‘out of bounds’ indicated that criteria for a fit pattern were only fulfilled at situation characteristic values outside the possible range of values; intervals indicate the range of situation characteristic values for which criteria for a fit pattern were fulfilled. Fit patterns in a strict sense do not allow for main effects of personality trait and personality state, whereas fit patterns in a broad sense do allow such main effects.

The only consistent finding in these regions of significance analyses were a series of broad fit patterns between trait openness and state openness. For example, fit between trait openness and state openness was associated with more positive affect in situations that were perceived as

relatively positive (regions of significance for positivity were [0.02,2.57] in Study 1 and [-0.20,3.50] in Study 2) but not in situations that were perceived as less positive. Because these were fit patterns in a broad sense, there were also main effects of trait openness and state openness, indicating that fit at high levels of trait and state openness was associated with more positive affect than fit at low levels of trait and state openness. Figure 3 compares response surface plots at positivity levels that fulfilled criteria for a fit pattern (Figure 3A and 3C) to response surface plots at positivity levels that did not fulfil criteria for a fit pattern (Figure 3B and 3D) in the two studies.

Beyond these fit patterns between trait openness and state openness, we did not find any consistent evidence for other moderated trait–state fit patterns or state–situation fit patterns. In few cases, regions of significance analyses revealed that criteria for a fit pattern were fulfilled for certain values of the moderator but these values were often outside the possible range of values (Table 2). In summary, we therefore did not find evidence that trait–state fit and state–situation fit are simultaneously associated with positive affect. Though we found significant fit patterns between trait openness and state openness, these were (a) not accompanied by corresponding state–situation fit patterns, (b) occurred only under certain circumstances, that is, in certain ranges of values of the situation characteristics, and (c) were relatively weak compared to the main effects of personality traits and personality states.

Figure 3

Response surface plots of trait–state fit between trait openness and state openness being associated with more positive affect at high levels of pOstivity (Panels A and B) and at moderate levels of Intellect (Panels C to F) in the two studies

Note. The dashed black lines represent the first principal axis (i.e., the ridge of the surface or the line of optimal combinations) and the solid grey lines represent the line of congruence (i.e., where trait and state have equal values). For a fit pattern, the first principal axis should not significantly differ from the line of congruence.

Statistical Interactions

In addition to fit patterns as defined in response surface analyses, we also examined trait–state interactions and state–situation interactions. Such interactions have been used in the past as conceptualizations of fit (e.g., Diener & Emmons, 1984; Gallagher et al., 2011; Moskowitz & Côté, 1995), and although we believe that fit and interactions should be conceptually separated, interactions may still be informative of personality processes involved in personality state expression. Therefore, we also examined interactions in the polynomial regressions underlying response surface analysis.

Figures 4 and 5 summarize the regression coefficients from the polynomial regressions examining trait-moderated state–situation fit in the two studies. Most importantly, we found a consistent pattern of interactions in Study 1 which largely replicated in Study 2. In particular, the pattern of interactions was characterized by three main findings: First, trait openness and trait agreeableness significantly positively interacted with the linear coefficients of state openness and state agreeableness, respectively, across the situation dimensions and in both studies. Thus, associations between state openness and state affect as well as between state agreeableness and state affect became significantly stronger with increasing levels of their respective personality traits.

Second, both trait conscientiousness did not interact with state conscientiousness and trait emotional stability did not interact with state emotional stability. Instead, trait conscientiousness and trait emotional stability interacted with a number of situation characteristics. Thus, associations between situation characteristics and state affect often became stronger the more conscientious and emotionally stable people were in general or behaved in the moment. For example, perceiving a situation as positive was associated more strongly with positive affect the more conscientiously and emotionally stable people behaved in a given moment.

Figure 4

Summary of regression coefficients in the moderated multilevel polynomial regressions used to model state–situation fit in Study 1

Note. Each column represents a separate regression model. Each square represents a standardized regression coefficient with darker colors representing higher values. Shaded squares represent coefficients that were not significant at $p < .01$, fully colored squares marked with an asterisk represent significant coefficients. D, I, A, M, O, N, D, and S represent the Situational Eight DIAMONDS dimensions (duty, adversity, negativity, and deception were reverse-coded as indicated but the subscript r).

Figure 5

Summary of regression coefficients in the moderated multilevel polynomial regressions used to model state–situation fit in Study 2

Note. Each column represents a separate regression model. Each square represents a standardized regression coefficient with darker colors representing higher values. Shaded squares represent coefficients that were not significant at $p < .01$, fully colored squares marked with an asterisk represent significant coefficients. D, I, A, M, O, N, D, and S represent the Situational Eight DIAMONDS dimensions (duty, adversity, negativity, and deception were reverse-coded as indicated but the subscript r).

Third, trait extraversion significantly interacted with state extraversion, but the associations differed between the two studies. In Study 1, trait extraversion significantly positively interacted with the curvilinear effect of state extraversion, that is, the association became more U-shaped with higher trait extraversion levels. In Study 2, trait extraversion significantly positively interacted with the linear coefficient of state extraversion, that is, the association became steeper with higher trait extraversion levels.

Figure 6 depicts exemplary moderated response surfaces to visualize the effects of the interactions. The top row represents associations between state openness, intellect and state affect at different levels of trait openness in Study 1. In this case, there was mainly an interaction between trait openness and state openness such that the positive associations between state openness and state affect became stronger with increasing levels of trait openness. This is evident in the surfaces from the fact that the surfaces looked different at different trait levels—they became steeper along the personality state axis as the trait level increases. In contrast, there were no interactions between state openness and intellect, so the surfaces were not twisted but relatively even. The middle row represents associations between state conscientiousness, duty, and state affect at different levels of trait conscientiousness in Study 1. In this case, there were no interactions between trait and state conscientiousness (and also not between trait conscientiousness and duty), so the surfaces were almost identical at different trait levels. However, there was an interaction between state conscientiousness and duty such that the association between state conscientiousness and state affect became stronger at higher levels of duty(r). This is evident in the surfaces from the fact that the surfaces were twisted. Finally, the bottom row represents associations between state extraversion, sociality, and state affect at different levels of trait extraversion in Study 1. In this case, trait extraversion significantly positively interacted with the curvilinear coefficient of state extraversion such that the association

between state extraversion and state affect took a stronger U-shape with increasing trait extraversion levels. This is evident in the surfaces from the fact that with increasing trait levels, the surfaces became more upwards bent. Additionally, there was also a small but significant interaction between state extraversion and sociality yielding a slightly twisted shape of the surfaces.

In summary, we found a consistent pattern of interactions in the polynomial regressions in which trait–state interactions were most prevalent in the openness, extraversion, and agreeableness domains, whereas trait–situation interactions and state–situation interactions were most prevalent in the conscientiousness and emotional stability domains. The pattern mostly replicated in Study 2, although interactions were generally weaker in this sample. Overall, these interactions suggest that associations between personality states and state affect depended on personality traits and situation characteristics but this dependence did not take the exact shape of a fit pattern.

Figure 6

Moderated response surface plots demonstrating the different types of interactions observed in the polynomial regressions

Note. The top row visualizes trait–state interactions, the middle row visualizes state–situation interactions, and the bottom row visualizes trait–state interactions with the curvilinear coefficient. State O, State C, and State E represent state openness, state conscientiousness, and state extraversion, respectively. (r) indicates that situation characteristics were reverse-coded such that higher levels represent more desirable levels (e.g., less duty).

Discussion

To understand how personality is associated with important life outcomes such as life events or health, it is important to understand what guides the manifestations of personality traits in daily life (Baumert et al., 2017; Fleeson & Law, 2015; Hampson, 2012). Therefore, processes that determine which personality states are enacted in a given moment must be better understood (Fleeson & Law, 2015; Hampson, 2012). We proposed that trait–state fit and state–situation fit may be involved in these within-person processes of personality state expression by providing feedback about which personality states have positive consequences. To test this idea, we examined whether trait–state fit and state–situation fit were associated with positive state affect.

We used moderated multilevel polynomial regressions and response surface analyses to examine whether fit patterns and interactions between personality traits, personality states, and situation characteristics were associated with state affect, with two central findings. First, we did not find any consistent evidence for fit patterns between personality traits and personality states or between personality states and situation characteristics. Although there were some significant regions of fit between trait openness and state openness at certain levels of certain moderating situation characteristics (e.g., at high positivity), this cannot be considered convincing evidence for the associations we hypothesized. Second, we found many significant interactions between personality traits, personality states, and situation characteristics. These interactions seemed to follow a pattern that was consistent across personality domains but varied between situation characteristics. For example, we found significant trait–state interactions for openness, agreeableness, and extraversion but not for conscientiousness and emotional stability. Furthermore, this pattern mostly replicated in the second study, although the relative strength of

the interactions (i.e., the size of standardized interaction coefficients compared to the size of the respective standardized linear coefficients) was smaller in Study 2 compared to Study 1.

Are Trait–State Fit and State–Situation Fit Informative of Within-Person Processes of Personality State Expression?

We argued that trait–state fit and state–situation fit may be involved in personality processes by providing feedback about which personality states feel good (Baumeister et al., 2007; Fleeson & Jayawickreme, 2015; Tett & Burnett, 2003). A prerequisite for this argument is that trait–state fit and state–situation fit are associated with state affect. However, against our expectations, neither trait–state fit nor state–situation fit were significantly associated with state affect in our two experience sampling studies. These findings therefore seem to indicate that trait–state fit and state–situation fit may not be involved in personality processes guiding personality state expression by providing feedback about which personality states feel good. However, there are also some possible alternative explanations that should be considered.

First, trait–state fit and state–situation fit may be conceptualized and measured in different ways. For example, trait–state fit may be examined by separately measuring personality trait and personality state and statistically modeling their fit as we did in the current studies. But trait–state fit could also be measured for example by directly asking participants to estimate the fit between personality trait and personality state (e.g., “How much were you acting like yourself?”) and these different conceptualizations may also yield different results regarding the prevalence and consequences of fit (J. R. Edwards et al., 2006; Jongman-Sereno & Leary, 2019). For example, research on perceived authenticity (which can be viewed as such a direct estimation of trait–state fit) demonstrated that the associations with positive affect differed considerably between perceived authenticity and the actual correspondence between trait and state (e.g., Cooper et al.,

2018; Fleeson & Wilt, 2010; Wilt et al., 2021). Moreover, personality traits, personality states, and situation characteristics could also be measured using methods other than self-reports, for example other-reports or passive sensing data (e.g., Harari et al., 2017, 2019; Rügger et al., 2020). Future research may thus expand and compare different conceptualizations and measurements of fit and the different constructs involved.

Second, as already discussed in the introduction, fit has been statistically operationalized in different ways such as difference scores, interactions, correlations, or response surface analyses (J. R. Edwards, 2002; Rauthmann, 2021). At present, it seems that response surface analysis is the best-practice method to operationalize fit (J. R. Edwards, 2002; Humberg, Nestler, et al., 2019). However, fit patterns as defined by response surface analyses are a very specific pattern of associations that require fulfilment of multiple conditions. Therefore, it may be particularly difficult to find fit patterns in real-world scenarios. This difficulty is reflected in the fact that most articles employing these analyses did not find evidence for a fit pattern (e.g., Askew et al., 2019; Brauner et al., 2020; Cemalcilar et al., 2018; He & Côté, 2019; Kim et al., 2019; Kritzler & Luhmann, 2021; Mota et al., 2020; Pickett et al., 2020; Tafvelin et al., 2019; Terwiel et al., 2021; Wolf et al., 2019) whereas only very few did (Cemalcilar et al., 2018; Humberg, Dufner, et al., 2019). Perhaps this conceptualization of a fit pattern—though matching the theoretical idea of fit extremely well—is not ideal for examining fit in real-world data. Real-world data might be too noisy and the fit pattern might be too complex of a pattern to be detectable in the typical datasets in psychological science. The experience sampling method has the advantage that situations, experiences, and behaviors can be measured in an ecologically valid way (Horstmann, 2021; Larson & Csikszentmihalyi, 2014), but this also means that these situations are very little controlled. In such uncontrolled situations, there may be many different influences on the current personality states, situation characteristics, and affective states which

makes it more difficult to find fit patterns. Future research should therefore consider examining trait–state fit and state–situation fit in controlled, high-powered laboratory experiments or controlled environments. Thereby it might be possible to establish whether there really are no fit patterns associating trait–state fit and state–situation fit with state affect or whether they might be extremely difficult to detect with response surface analyses in real-world data.

Third, our outcome measures of state affect were rather broad measures combining positively and negatively valenced adjectives. We chose such global, context-free measures of state affect to be able to broadly capture the different affective experience of different individuals in different situations. However, such globality of the measure (particularly in combination with the demand for short scales in experience sampling studies) also entails a certain non-specificity. It has for example been shown that people differ in what types of affect they prefer and strive for (Rusting & Larsen, 1995; Scollon et al., 2009; Tsai, 2007) such that individuals with high levels of extraversion tend to prefer activated pleasant affect (e.g., euphoric, elated) whereas individuals with low levels of extraversion tend to prefer unactivated pleasant affect (e.g., relaxed, content; Rusting and Larsen, 1995). Therefore, our measure might not have captured the kinds of affect people desire to experience (or at least not for everyone) and thereby also not have captured the kinds of affect that may guide people's behaviors (Baumeister et al., 2007). Future research should thus aim to measure different types of affect in more detail when examining personality states and fit.

Lastly, it may be important to consider the time-frame in which fit may be associated with affect. In our studies, we measured personality states, situation characteristics, and state affect at the same time and therefore could only examine concurrent associations. However, it has been argued that effects of fit may not be immediate but rather emerge after some delay. Effects of fit might be delayed on a shorter time-frame because they only emerge (or become detectable) after

immediate contradictory effects have ended. Leikas and Ilmarinen (2017), for example, argued that in the moment, behaving extravertedly is in its very core strongly tied to positive affect and energy. Therefore, negative consequences of counterdispositional extraversion such as tiredness may only emerge after the immediate effects of behaving extravertedly ended. Additionally, effects of fit might also be delayed on a longer time-frame. People are of course able to work on long-term goals (e.g., Duckworth et al., 2007; Roberts et al., 2014) and this may include enduring phases of negative affect in order to reach their goals and ultimately experience positive affect later. For example, for students just before an exam, behaving appropriately may mean that they have to study a lot. Studying in itself, although appropriate behavior, may not be immediately associated with positive affect, but it may lead to positive affect once the studying has led to a good grade in the exam. Therefore, future research should expand the time-frame in which fit is examined beyond concurrent associations of fit and state affect.

Are Statistical Interactions Informative of Within-Person Processes of Personality?

We found that associations between personality states and state affect depended on characteristics of the situation and on personality traits in many cases. However, these dependencies did not take the form of fit patterns as we had expected. Instead, we found a number of significant statistical interactions between personality traits, personality states, and situation characteristics. These findings have several important implications.

First, this study is among the first to examine personality traits, personality states, and situation characteristics together (see also Horstmann et al., 2021; Roemer et al., 2021; Sherman et al., 2015). We have argued that because people always have a personality and are always in a situation, both personality traits and situation characteristics must be considered when investigating personality states. The results of our studies strongly support this argument: We

found statistical interactions between personality traits and personality states, between personality states and situation characteristics, and also between personality traits and situation characteristics. Therefore, at least when examining associations with state affect, these three constructs must be studied together (Funder, 2006, 2009). Future research should examine whether there are as many interactions between personality traits, personality states, and situation characteristics when considering other outcomes.

Second, our study is the first to provide evidence for trait–state interactions across different personality domains and in two studies. Previous studies have only found mixed evidence, if any, for trait-state interactions. Most previous studies, particularly with experimental designs (e.g., Fleeson et al., 2002; Howell et al., 2017; Margolis & Lyubomirsky, 2020; McNiel et al., 2010), did not find any trait–state interactions. Only some recent studies using the experience sampling method provided growing evidence of such interactions (Jacques-Hamilton et al., 2018; Pickett et al., 2020; van Allen & Zelenski, 2018). One possible explanation for the differences in findings regarding trait–state interactions between those early experimental studies and more recent experience sampling studies could be that most experimental studies had fairly small samples. Because the effect sizes of the interactions are typically relatively small, most experimental studies may have been underpowered to detect them (Kritzer & Luhmann, 2021). The effect sizes of the interactions were also quite small in our studies—though, interestingly, they differed quite a bit between our two studies. Yet, small effects do not necessarily mean that the effects are practically irrelevant. Particularly within-person effects such as trait–state interactions may accumulate over many situations in everyday life and in their sum become quite powerful in the long run (Funder & Ozer, 2019). Therefore, future research should further investigate such trait–state interactions and determine the size of their effects and their practical relevance.

Third, it still remains mostly unclear why personality traits, personality states, and situation characteristics interact and what role these interactions play in personality processes. Future research should therefore further investigate how these interactions are involved in personality processes. For example, even though fit as measured here does not seem to be providing feedback to personality processes involved in personality state expression, the general idea that people might be motivated to enact personality states that feel good (Baumeister et al., 2007; Tett & Burnett, 2003) may still be valid and worth pursuing further. The interactions we found might then contribute to these processes. For example, interactions between personality states and situation characteristics may suggest that certain personality states only feel good (and thus may be repeated more often) in certain situations—or more precisely, when the situation is perceived in a certain way. If these interactions were to guide people's behaviors, a pattern resembling if-then patterns proposed by Mischel and Shoda (1995) should emerge. However, this is by now mostly speculation. Future research should therefore examine whether the experience of state positive affect increases and decreases the likelihood of certain levels of personality states for certain people in certain situations.

In summary, our study is among the first to examine personality traits, personality states, and situation characteristics together. The large number of interactions we found clearly emphasizes that these constructs must be studied together. However, future research should further determine which roles these interactions might play in personality processes and how prevalent and impactful they really are.

Differences in Patterns of Trait–State Interactions Across Personality Domains

The pattern of interactions differed among the personality domains such that, for example, trait–state interactions were found in the openness, extraversion, and agreeableness domains but

not in the conscientiousness and emotional stability domains. Neither previous studies nor our theoretical considerations suggested that trait–state interactions should exist only for some personality domains. Therefore, we were surprised to find this specific pattern of trait–state interactions. Yet, because this pattern replicated (with the exception of extraversion) in Study 2, it seems reasonable to reflect on possible explanations.

One possible explanation is that these patterns are due to structural differences among the personality domains. Conscientiousness and emotional stability might differ in some way from the rest of the personality domains, for example in the ways they manifest in everyday life and are related to other constructs. For example, emotional stability has a much more pronounced affective component than the other personality domains (Wilt & Revelle, 2015). Therefore, state emotional stability may already be so strongly related to state affect that little variance remains to be explained by the interaction (Howell et al., 2017). Indeed, the main effects of state emotional stability were among the strongest effects from all models, particularly in Study 1. However, these are only speculations that should be tested in future studies.

Another possible explanation is that the differences in the prevalence of trait–state interactions are due to some distinctive feature in the methods or samples. For conscientiousness, for example, it is possible that our student samples were unique in some way and that explained the observed differences. However, the descriptive statistics and distributions of the personality traits and states (see [OSM](#)) provided little evidence of any methodologically relevant differences among the personality domains.

In summary, the pattern of interactions—particularly the trait–state interactions—were quite surprising and should therefore be further replicated in future research. If future research

were indeed to further replicate these differences among personality domains, theoretical explanations for these differences must be developed.

Limitations

In addition to the widespread limitations of self-report measures and WEIRD samples (Henrich et al., 2010), the two studies were subject to some more specific limitations. First, both studies used student samples. Student samples are typically quite homogenous (at least more than representative sample), in terms of both their personality and the situations they typically experience. Student samples may therefore not represent the general population all too well (Corker et al., 2017; Hanel & Vione, 2016).

Second, although the sample sizes were comparatively large (or at least in the typical range for ESM studies) in terms of both number of participants and number of ESM reports, and both studies were thus well-powered, we were unable to estimate random slopes in the multilevel polynomial regressions. As several recent articles have demonstrated and argued, the strength and even the direction of within-person associations can vary greatly between individuals (e.g., Church et al., 2013; Heisig & Schaeffer, 2019; Howell et al., 2017). Therefore, future studies should attempt to model random slopes to examine how much the estimated interactions vary among individuals.

Third, although the theoretical reasoning was that trait-state fit and state-situation fit act simultaneously and therefore should also be studied simultaneously, it is not possible to perform response surface analyses for trait-state fit and state-situation fit simultaneously within one statistical model. In an effort to approximate the simultaneous analysis of trait-state fit and state-situation fit, we controlled for the missing construct (e.g., situation characteristics for trait-state fit) and included it as a moderator, but this is not the same as analyzing trait-state fit and state-

situation fit together. If a statistical method is developed in the future that makes it possible to conduct response surface analyses for two fit patterns at the same time, it might be worthwhile to revisit these research questions.

Conclusion

We argued that trait–state fit and state–situation fit might be informative of within-person processes of personality state expression (i.e., which personality states are enacted in which situations) by providing feedback about which personality states are associated with the most positive affective states. However instead of the hypothesized fit patterns, we found a consistent pattern of interactions between personality traits, personality states, and situation characteristics being associated with state affect. These interactions strongly suggest that personality traits, personality states, and situation characteristics should be studied together in future research. However, more research is needed to further examine the prevalence and effect size of these interactions and to understand how they are involved in personality processes such as processes of personality state expression.

References

- Arslan, R. C., Walther, M. P., & Tata, C. S. (2019). Formr: A study framework allowing for automated feedback generation and complex longitudinal experience-sampling studies using r. *Behavior Research Methods*. <https://doi.org/10.3758/s13428-019-01236-y>
- Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review*, 11(2), 150–166. <https://doi.org/10.1177/1088868306294907>
- Ashton, M. C., & Lee, K. (2009). The HEXACO-60: A short measure of the major dimensions of personality. *Journal of Personality Assessment*, 91(4), 340–345. <https://doi.org/10.1080/00223890902935878>
- Ashton, M. C., Lee, K., & De Vries, R. E. (2014). The HEXACO honesty-humility, agreeableness, and emotionality factors: A review of research and theory. *Personality and Social Psychology Review*, 18(2), 139–152. <https://doi.org/10.1177/1088868314523838>
- Ashton, M. C., Lee, K., Goldberg, L. R., & De Vries, R. E. (2009). Higher order factors of personality: Do they exist? *Personality and Social Psychology Review*, 13(2), 79–91. <https://doi.org/10.1177/1088868309338467>
- Askew, K. L., Ilie, A., Bauer, J. A., Simonet, D. V., Buckner, J. E., & Robertson, T. A. (2019). Disentangling how coworkers and supervisors influence employee cyberloafing: What normative information are employees attending to? *Journal of Leadership & Organizational Studies*, 26(4), 526–544. <https://doi.org/10.1177/1548051818813091>
- Auguie, B. (2017). *gridExtra: Miscellaneous functions for "grid" graphics*. <https://CRAN.R-project.org/package=gridExtra>
- Aust, F. (2019). *Citr: 'RStudio' add-in to insert markdown citations*. <https://CRAN.R-project.org/package=citr>
- Aust, F., & Barth, M. (2018). *papaja: Create APA manuscripts with R Markdown*. <https://github.com/crsh/papaja>
- Barth, M. (2021). *tinylabels: Lightweight variable labels*. <https://github.com/mariusbarth/tinylabels>

- Bates, D., & Maechler, M. (2019). *Matrix: Sparse and dense matrix classes and methods*.
<https://CRAN.R-project.org/package=Matrix>
- Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, 67(1), 1–48.
<https://doi.org/10.18637/jss.v067.i01>
- Baumeister, R. F., Vohs, K. D., DeWall, C. N., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Review*, 11(2), 167–203.
<https://doi.org/10.1177/1088868307301033>
- Baumert, A., Schmitt, M., Perugini, M., Johnson, W., Blum, G., Borkenau, P., Costantini, G., Denissen, J. J. A., Fleeson, W., Grafton, B., Jayawickreme, E., Kurzius, E., MacLeod, C., Miller, L. C., Read, S. J., Roberts, B., Robinson, M. D., Wood, D., & Wrzus, C. (2017). Integrating personality structure, personality process, and personality development. *European Journal of Personality*, 31(5), 503–528. <https://doi.org/10.1002/per.2115>
- Beck, E. D., & Jackson, J. J. (2020). *A mega-analysis of personality prediction: Robustness and boundary conditions*. <https://doi.org/10.31234/osf.io/7pg9b>
- Berend, B., & Vogt, D. (2015). *German translation of the scale of positive and negative experience (SPANE): Unpublished manuscript*.
- Bleidorn, W., Schönbrodt, F., Gebauer, J. E., Rentfrow, P. J., Potter, J., & Gosling, S. D. (2016). To live among like-minded others: Exploring the links between person-city personality fit and self-esteem. *Psychological Science*, 27(3), 419–427.
<https://doi.org/10.1177/0956797615627133>
- Bogg, T., & Roberts, B. W. (2004). Conscientiousness and health-related behaviors: A meta-analysis of the leading behavioral contributors to mortality. *Psychological Bulletin*, 130(6), 887–919. <https://doi.org/10.1037/0033-2909.130.6.887>
- Brauner, C., Wöhrmann, A. M., & Michel, A. (2020). Congruence is not everything: A response surface analysis on the role of fit between actual and preferred working time arrangements for work-life balance. *Chronobiology International*, 37(9-10), 1287–1298.
<https://doi.org/10.1080/07420528.2020.1803897>

- Cemalcilar, Z., Baruh, L., Kezer, M., Kamiloglu, R. G., & Nigdeli, B. (2018). Role of personality traits in first impressions: An investigation of actual and perceived personality similarity effects on interpersonal attraction across communication modalities. *Journal of Research in Personality*, 76, 139–149. <https://doi.org/10.1016/j.jrp.2018.07.009>
- Church, T. A., Katigbak, M. S., Ching, C. M., Zhang, H., Shen, J., Arias, R. M., Rincon, B. C., Morio, H., Tanaka-Matsumi, J., Takaoka, S., Mastor, K. A., Roslan, N. A., Ibáñez-Reyes, J., Vargas-Flores, J. de J., Locke, K. D., Reyes, J. A. S., Wenmei, S., Ortiz, F. A., & Alvarez, J. M. (2013). Within-individual variability in self-concepts and personality states: Applying density distribution and situation-behavior approaches across cultures. *Journal of Research in Personality*, 47(6), 922–935. <https://doi.org/10.1016/j.jrp.2013.09.002>
- Cooper, A. B., Sherman, R. A., Rauthmann, J. F., Serfass, D. G., & Brown, N. A. (2018). Feeling good and authentic: Experienced authenticity in daily life is predicted by positive feelings and situation characteristics, not trait-state consistency. *Journal of Research in Personality*, 77, 57–69. <https://doi.org/10.1016/j.jrp.2018.09.005>
- Corker, K. S., Donnellan, M. B., Kim, S. Y., Schwartz, S. J., & Zamboanga, B. L. (2017). College student samples are not always equivalent: The magnitude of personality differences across colleges and universities. *Journal of Personality*, 85(2), 123–135. <https://doi.org/10.1111/jopy.12224>
- Cronbach, L. J. (1958). Proposals leading to analytic treatment of social perception scores. *Person Perception and Interpersonal Behavior*, 353(379).
- Csikszentmihalyi, M., & Hunter, J. (2003). Happiness in everyday life: The uses of experience sampling. *Journal of Happiness Studies*, 5, 185–199. <https://doi.org/10.1023/A:1024409732742>
- Danvers, A. F., Wundrack, R., & Mehl, M. (2020). Equilibria in personality states: A conceptual primer for dynamics in personality states. *European Journal of Personality*, 4, 665. <https://doi.org/10.1002/per.2239>
- De Vries, R. E. (2011). No support for a general factor of personality in a reanalysis of van der linden et al. (2010). *Personality and Individual Differences*, 50(4), 512–516. <https://doi.org/10.1016/j.paid.2010.11.020>

- Dejonckheere, E., Mestdagh, M., Houben, M., Erbas, Y., Pe, M., Koval, P., Brose, A., Bastian, B., & Kuppens, P. (2018). The bipolarity of affect and depressive symptoms. *Journal of Personality and Social Psychology*, 114(2), 323–341.
<https://doi.org/10.1037/pspp0000186>
- DeNeve, K. M., & Cooper, H. (1998). The happy personality: A meta-analysis of 137 personality traits and subjective well-being. *Psychological Bulletin*, 124(2), 197–229.
- Denissen, J. J. A., Wiebke Bleidorn, Marie Hennecke, Maike Luhmann, Ulrich Orth, Jule Specht, & Julia Zimmermann. (2018). Uncovering the power of personality to shape income. *Psychological Science*, 29(1), 3–13.
- DeYoung, C. G. (2015). Cybernetic big five theory. *Journal of Research in Personality*, 56, 33–58. <https://doi.org/10.1016/j.jrp.2014.07.004>
- Diener, E. (Ed.). (2009). *Assessing well-being* (Vol. 39). Springer.
- Diener, E., & Emmons, R. A. (1984). The independence of positive and negative affect. *Journal of Personality and Social Psychology*, 47(5), 1105–1117.
- Diener, E., & Lucas, R. E. (2020). Personality traits. In R. Biswas-Diener & E. Diener (Eds.), *Noba textbook series: psychology*. DEF Publishers.
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087–1101. <https://doi.org/10.1037/0022-3514.92.6.1087>
- Edwards, J. R. (1993). Problems with the use of profile similarity indices in the study of congruence in organizational research. *Personnel Psychology*, 46, 641–665.
- Edwards, J. R. (2001). Ten difference score myths. *Organizational Research Methods*, 4(3), 265–287.
- Edwards, J. R. (2002). Alternatives to difference scores: Polynomial regression analysis and response surface methodology. In F. Drasgow & N. Schmitt (Eds.), *Measuring and analyzing behavior in organizations: Vols. Advances in Measurement and Data Analysis* (pp. 350–400). Jossey-Bass.

- Edwards, J. R. (2007). Polynomial regression and response surface methodology. *Perspectives on Organizational Fit*, 361–372.
- Edwards, J. R., Cable, D. M., Williamson, I. O., Lambert, L. S., & Shipp, A. J. (2006). The phenomenology of fit: Linking the person and environment to the subjective experience of person-environment fit. *The Journal of Applied Psychology*, 91(4), 802–827.
<https://doi.org/10.1037/0021-9010.91.4.802>
- Edwards, J. R., Caplan, R. D., & Harrison, R. V. (1998). Person-environment fit theory: Conceptual foundations, empirical evidence, and directions for future research. In C. L. Cooper (Ed.), *Theories of organizational stress* (pp. 28–67). Oxford University Press.
- Edwards, S. M. (2020). *Lemon: Freshing up your 'ggplot2' plots*. <https://CRAN.R-project.org/package=lemon>
- Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods*, 12(2), 121–138.
<https://doi.org/10.1037/1082-989X.12.2.121>
- Fleeson, W., & Gallagher, P. (2009). The implications of big five standing for the distribution of trait manifestation in behavior: Fifteen experience-sampling studies and a meta-analysis. *Journal of Personality and Social Psychology*, 97(6), 1097–1114.
<https://doi.org/10.1037/a0016786>
- Fleeson, W., & Jayawickreme, E. (2015). Whole trait theory. *Journal of Research in Personality*, 56, 82–92. <https://doi.org/10.1016/j.jrp.2014.10.009>
- Fleeson, W., & Law, M. K. (2015). Trait enactments as density distributions: The role of actors, situations, and observers in explaining stability and variability. *Journal of Personality and Social Psychology*, 109(6), 1090–1104. <https://doi.org/10.1037/a0039517>
- Fleeson, W., Malanos, A. B., & Achille, N. M. (2002). An intraindividual process approach to the relationship between extraversion and positive affect: Is acting extraverted as good as being extraverted? *Journal of Personality and Social Psychology*, 83(6), 1409–1422.
<https://doi.org/10.1037/0022-3514.83.6.1409>
- Fleeson, W., & Wilt, J. (2010). The relevance of big five trait content in behavior to subjective authenticity: Do high levels of within-person behavioral variability undermine or enable

- authenticity achievement? *Journal of Personality*, 78(4), 1353–1382.
<https://doi.org/10.1111/j.1467-6494.2010.00653.x>
- Funder, D. C. (2006). Towards a resolution of the personality triad: Persons, situations, and behaviors. *Journal of Research in Personality*, 40(1), 21–34.
<https://doi.org/10.1016/j.jrp.2005.08.003>
- Funder, D. C. (2009). Persons, behaviors and situations: An agenda for personality psychology in the postwar era. *Journal of Research in Personality*, 43(2), 120–126.
<https://doi.org/10.1016/j.jrp.2008.12.041>
- Funder, D. C. (2016). Taking situations seriously. *Current Directions in Psychological Science*, 25(3), 203–208. <https://doi.org/10.1177/0963721416635552>
- Funder, D. C., & Ozer, D. J. (2019). Evaluating effect size in psychological research: Sense and nonsense. *Advances in Methods and Practices in Psychological Science*, 2(2), 156–168.
<https://doi.org/10.1177/2515245919847202>
- Gallagher, P., Fleeson, W., & Hoyle, R. H. (2011). A self-regulatory mechanism for personality trait stability. *Social Psychological and Personality Science*, 2(4), 335–342.
<https://doi.org/10.1177/1948550610390701>
- Gonzaga, G. C., Campos, B., & Bradbury, T. (2007). Similarity, convergence, and relationship satisfaction in dating and married couples. *Journal of Personality and Social Psychology*, 93(1), 34–48. <https://doi.org/10.1037/0022-3514.93.1.34>
- Gosling, S. D., Rentfrow, P. J., & Swann, W. B., Jr. (2003). A very brief measure of the big five personality domains. *Journal of Research in Personality*, 37, 504–528.
- Götz, F. M., Ebert, T., & Rentfrow, P. J. (2018). Regional cultures and the psychological geography of switzerland: Person-environment-fit in personality predicts subjective wellbeing. *Frontiers in Psychology*, 9, 517. <https://doi.org/10.3389/fpsyg.2018.00517>
- Green, P., & MacLeod, C. J. (2016). Simr: An r package for power analysis of generalised linear mixed models by simulation. *Methods in Ecology and Evolution*, 7(4), 493–498.
<https://doi.org/10.1111/2041-210X.12504>

- Hampel, R. (1977). Adjektiv-skalen zur einschätzung der stimmung (SES). *Diagnostica*, 23, 43–60.
- Hampson, S. E. (2012). Personality processes: Mechanisms by which personality traits get outside the skin. *Annual Review of Psychology*, 63, 315–339.
<https://doi.org/10.1146/annurev-psych-120710-100419>
- Hanel, P. H. P., & Vione, K. C. (2016). Do student samples provide an accurate estimate of the general public? *PloS One*, 11(12), e0168354.
<https://doi.org/10.1371/journal.pone.0168354>
- Harari, G. M., Müller, S. R., Aung, M. S. H., & Rentfrow, P. J. (2017). Smartphone sensing methods for studying behavior in everyday life. *Current Opinion in Behavioral Sciences*, 18, 83–90. <https://doi.org/10.1016/j.cobeha.2017.07.018>
- Harari, G. M., Müller, S. R., & Gosling, S. D. (2019). Naturalistic assessment of situations using mobile sensing methods. In J. F. Rauthmann, R. A. Sherman, D. C. Funder, J. F. Rauthmann, R. A. Sherman, D. C. Funder, J. F. Rauthmann, K. T. Horstmann, & R. A. Sherman (Eds.), *The oxford handbook of psychological situations*. Oxford University Press.
- He, J. C., & Côté, S. (2019). Self-insight into emotional and cognitive abilities is not related to higher adjustment. *Nature Human Behaviour*, 3(8), 867–884.
<https://doi.org/10.1038/s41562-019-0644-0>
- Heisig, J. P., & Schaeffer, M. (2019). Why you should always include a random slope for the lower-level variable involved in a cross-level interaction. *European Sociological Review*, 35(2), 258–279. <https://doi.org/10.1093/esr/jcy053>
- Heller, D., Komar, J., & Lee, W. B. (2007). The dynamics of personality states, goals, and well-being. *Personality and Social Psychology Bulletin*, 33(6), 898–910.
<https://doi.org/10.1177/0146167207301010>
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Beyond WEIRD: Towards a broad-based behavioral science. *Behavioral and Brain Sciences*, 33(2-3), 111–135.
<https://doi.org/10.1017/S0140525X10000725>

- Henry, L., & Wickham, H. (2020). *Purrr: Functional programming tools*. <https://CRAN.R-project.org/package=purrr>
- Higgins, E. T. (2005). Value from regulatory fit. *Current Directions in Psychological Science*, 14(4), 209–213. <https://doi.org/10.1111/j.0963-7214.2005.00366.x>
- Horstmann, K. T. (2021). Experience sampling and daily diary studies: Basic concepts, designs, and challenges. In *The handbook of personality dynamics and processes* (pp. 791–814). Elsevier. <https://doi.org/10.1016/B978-0-12-813995-0.00030-3>
- Horstmann, K. T., Rauthmann, J. F., Sherman, R. A., & Ziegler, M. (2021). Unveiling an exclusive link: Predicting behavior with personality, situation perception, and affect in a preregistered experience sampling study. *Journal of Personality and Social Psychology*, 120(5), 1317–1343. <https://doi.org/10.1037/pspp0000357>
- Horstmann, K. T., & Ziegler, M. (2020). Assessing personality states: What to consider when constructing personality state measures. *European Journal of Personality*. <https://doi.org/10.1002/per.2266>
- Howell, R. T., Ksendzova, M., Nestingen, E., Yerahian, C., & Iyer, R. (2017). Your personality on a good day: How trait and state personality predict daily well-being. *Journal of Research in Personality*, 69, 250–263. <https://doi.org/10.1016/j.jrp.2016.08.001>
- Humberg, S., Dufner, M., Schönbrodt, F. D., Geukes, K., Hutteman, R., Küfner, A. C. P., van Zalk, M. H. W., Denissen, J. J. A., Nestler, S., & Back, M. D. (2019). Is accurate, positive, or inflated self-perception most advantageous for psychological adjustment? A competitive test of key hypotheses. *Journal of Personality and Social Psychology*, 116(5), 835–859. <https://doi.org/10.1037/pspp0000204>
- Humberg, S., Nestler, S., & Back, M. D. (2019). Response surface analysis in personality and social psychology: Checklist and clarifications for the case of congruence hypotheses. *Social Psychological and Personality Science*, 10(3), 409–419. <https://doi.org/10.1177/1948550618757600>
- Humberg, S., Schönbrodt, F. D., Back, M. D., & Nestler, S. (2020). Cubic response surface analysis: Investigating asymmetric and level-dependent congruence effects with third-order polynomial models. *Psychological Methods*. <https://doi.org/10.1037/met0000352>

- Jacques-Hamilton, R., Sun, J., & Smillie, L. D. (2018). Costs and benefits of acting extraverted: A randomized controlled trial. *Journal of Experimental Psychology. General*.
<https://doi.org/10.1037/xge0000516>
- Jayawickreme, E., Zachry, C. E., & Fleeson, W. (2019). Whole trait theory: An integrative approach to examining personality structure and process. *Personality and Individual Differences*, 136, 2–11. <https://doi.org/10.1016/j.paid.2018.06.045>
- John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative big five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality* (pp. 114–158). Guilford Press.
- Jongman-Serenio, K. P., & Leary, M. R. (2019). The enigma of being yourself: A critical examination of the concept of authenticity. *Review of General Psychology*, 23(1), 133–142. <https://doi.org/10.1037/gpr0000157>
- Kim, J., Eys, M., Robertson-Wilson, J., Dunn, E., & Rellinger, K. (2019). Subjective norms matter for physical activity intentions more than previously thought: Reconsidering measurement and analytical approaches. *Psychology of Sport and Exercise*, 43, 359–367. <https://doi.org/10.1016/j.psychsport.2019.04.013>
- Kritzler, S., Krasko, J., & Luhmann, M. (2020). Inside the happy personality: Personality states, situation experience, and state affect mediate the relation between personality and affect. *Journal of Research in Personality*, 85, 103929. <https://doi.org/10.1016/j.jrp.2020.103929>
- Kritzler, S., & Luhmann, M. (2021). Be yourself and behave appropriately: Exploring associations between incongruent personality states and positive affect, tiredness, and cognitive performance. *Collabra: Psychology*, 7(1).
<https://doi.org/10.1525/collabra.27386>
- Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2017). lmerTest package: Tests in linear mixed effects models. *Journal of Statistical Software*, 82(13), 1–26.
<https://doi.org/10.18637/jss.v082.i13>
- Larson, R., & Csikszentmihalyi, M. (1983). The experience sampling method. *New Directions for Methodology of Social & Behavioral Science*, 15, 41–56.

- Larson, R., & Csikszentmihalyi, M. (2014). The experience sampling method. In M. Csikszentmihalyi (Ed.), *Flow and the foundations of positive psychology* (pp. 21–34). Springer Netherlands. <https://doi.org/10.1007/978-94-017-9088-8>
- Lee, K., & Ashton, M. C. (2008). The HEXACO personality factors in the indigenous personality lexicons of english and 11 other languages. *Journal of Personality*, 76(5), 1001–1054. <https://doi.org/10.1111/j.1467-6494.2008.00512.x>
- Leikas, S., & Ilmarinen, V.-J. (2017). Happy now, tired later? Extraverted and conscientious behavior are related to immediate mood gains, but to later fatigue. *Journal of Personality*, 85(5), 603–615. <https://doi.org/10.1111/jopy.12264>
- Lucas, R. E. (2018). Exploring the associations between personality and subjective well-being. In E. Diener, S. Oishi, & L. Tay (Eds.), *Handbook of well-being*. DEF Publishers.
- Margolis, S., & Lyubomirsky, S. (2020). Experimental manipulation of extraverted and introverted behavior and its effects on well-being. *Journal of Experimental Psychology. General*, 149(4), 719–731. <https://doi.org/10.1037/xge0000668>
- McNiel, J. M., Lowman, J. C., & Fleeson, W. (2010). The effect of state extraversion on four types of affect. *European Journal of Personality*, 24(1), 18–35. <https://doi.org/10.1002/per.738>
- Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review*, 102(2), 246–268. <https://doi.org/10.1037/0033-295X.102.2.246>
- Moshagen, M., Hilbig, B. E., & Zettler, I. (2014). Faktorenstruktur, psychometrische eigenschaften und messinvarianz der deutschsprachigen version des 60-item HEXACO persönlichkeitsinventars. *Diagnostica*, 60, 86–97. <https://doi.org/10.1026/0012-1924/a000112>
- Moskowitz, D. S., & Côté, S. (1995). Do interpersonal traits predict affect? A comparison of three models. *Journal of Personality and Social Psychology*, 69(5), 915–924. <https://doi.org/10.1037/0022-3514.69.5.915>

- Mota, S., Humberg, S., Krause, S., Fatfouta, R., Geukes, K., Schröder-Abé, M., & Back, M. D. (2020). Unmasking narcissus: A competitive test of existing hypotheses on (agentic, antagonistic, neurotic, and communal) narcissism and (explicit and implicit) self-esteem across 18 samples. *Self and Identity*, 19(4), 435–455.
<https://doi.org/10.1080/15298868.2019.1620012>
- Motyka, S., Grewal, D., Puccinelli, N. M., Roggeveen, A. L., Avnet, T., Daryanto, A., Ruyter, K. de, & Wetzels, M. (2014). Regulatory fit: A meta-analytic synthesis. *Journal of Consumer Psychology*, 24(3), 394–410. <https://doi.org/10.1016/j.jcps.2013.11.004>
- Muck, P. M., Hell, B., & Gosling, S. D. (2007). Construct validation of a short five-factor model instrument. *European Journal of Psychological Assessment*, 23(3), 166–175.
<https://doi.org/10.1027/1015-5759.23.3.166>
- Murray, H. A. (1936). Basic concepts for a psychology of personality. *Journal of General Psychology*, 15, 241.
- Müller, K., & Wickham, H. (2021). *Tibble: Simple data frames*. <https://CRAN.R-project.org/package=tibble>
- Nestler, S., Humberg, S., & Schönbrodt, F. D. (2019). Response surface analysis with multilevel data: Illustration for the case of congruence hypotheses. *Psychological Methods*, 24(3), 291–308. <https://doi.org/10.1037/met0000199>
- Nestler, S., Humberg, S., & Schönbrodt, F. D. (2021, May 24). *Multilevel response surface analysis*. osf.io/jhyu9
- Ozer, D. J., & Benet-Martínez, V. (2006). Personality and the prediction of consequential outcomes. *Annual Review of Psychology*, 57, 401–421.
<https://doi.org/10.1146/annurev.psych.57.102904.190127>
- Pedersen, T. L. (2020). *Patchwork: The composer of plots*. <https://CRAN.R-project.org/package=patchwork>
- Pickett, J., Hofmans, J., Debusscher, J., & Fruyt, F. de. (2020). Counterdispositional conscientiousness and wellbeing: How does acting out of character relate to positive and negative affect at work? *Journal of Happiness Studies*, 21(4), 1463–1485.
<https://doi.org/10.1007/s10902-019-00139-1>

- Posner, J., Russell, J. A., & Peterson, B. S. (2005). The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology. *Development and Psychopathology*, 17, 715–734.
- R Core Team. (2018). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. <https://www.R-project.org/>
- Rauthmann, J. F. (2021). Capturing interactions, correlations, fits, and transactions: A person-environment relations model. In J. F. Rauthmann (Ed.), *Handbook of personality dynamics and processes*. Academic Press.
- Rauthmann, J. F., Gallardo-Pujol, D., Guillaume, E. M., Todd, E., Nave, C. S., Sherman, R. A., Ziegler, M., Jones, A. B., & Funder, D. C. (2014). The situational eight DIAMONDS: A taxonomy of major dimensions of situation characteristics. *Journal of Personality and Social Psychology*, 107(4), 677–718. <https://doi.org/10.1037/a0037250.suppl>
- Rauthmann, J. F., Jones, A. B., & Sherman, R. A. (2016). Directionality of person-situation transactions: Are there spillovers among and between situation experiences and personality states? *Personality and Social Psychology Bulletin*, 42(7), 893–909. <https://doi.org/10.1177/0146167216647360>
- Rauthmann, J. F., & Sherman, R. A. (2016a). Measuring the situational eight DIAMONDS characteristics of situations. *European Journal of Psychological Assessment*, 32(2), 155–164. <https://doi.org/10.1027/1015-5759/a000246>
- Rauthmann, J. F., & Sherman, R. A. (2016b). Ultra-brief measures for the situational eight DIAMONDS domains. *European Journal of Psychological Assessment*, 32(2), 165–174. <https://doi.org/10.1027/1015-5759/a000245>
- Rauthmann, J. F., Sherman, R. A., Nave, C. S., & Funder, D. C. (2015). Personality-driven situation experience, contact, and construal: How people's personality traits predict characteristics of their situations in daily life. *Journal of Research in Personality*, 55, 98–111. <https://doi.org/10.1016/j.jrp.2015.02.003>
- Revelle, W. (2019). *Psych: Procedures for psychological, psychometric, and personality research*. Northwestern University. <https://CRAN.R-project.org/package=psych>

- Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes. *Perspectives on Psychological Science : A Journal of the Association for Psychological Science*, 2(4), 313–345. <https://doi.org/10.1111/j.1745-6916.2007.00047.x>
- Roberts, B. W., Lejuez, C., Krueger, R. F., Richards, J. M., & Hill, P. L. (2014). What is conscientiousness and how can it be assessed? *Developmental Psychology*, 50(5), 1315–1330. <https://doi.org/10.1037/a0031109>
- Roemer, L., Horstmann, K. T., & Ziegler, M. (2021). Sometimes hot, sometimes not: The relations between selected situational vocational interests and situation perception. *European Journal of Personality*, 35(2), 212–233. <https://doi.org/10.1002/per.2287>
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36. <http://www.jstatsoft.org/v48/i02/>
- Russell, J. A., & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin*, 125(1), 3–30.
- Rusting, C. L., & Larsen, R. J. (1995). Moods as sources of stimulation: Relationships between personality and desired mood states. *Personality and Individual Differences*, 18(3), 321–329.
- Rüegger, D., Stieger, M., Nißen, M., Allemand, M., Fleisch, E., & Kowatsch, T. (2020). How are personality states associated with smartphone data? *European Journal of Personality*, 34(5), 687–713. <https://doi.org/10.1002/per.2309>
- Sarkar, D. (2008). *Lattice: Multivariate data visualization with r*. Springer. <http://lmdvr.r-forge.r-project.org>
- Schönbrodt, F. D., & Humberg, S. (2018). *RSA: An r package for response surface analysis (version 0.9.13)*. <https://cran.r-project.org/package=RSA>
- Scollon, C. N., Howard, A. H., Caldwell, A. E., & Ito, S. (2009). The role of ideal affect in the experience and memory of emotions. *Journal of Happiness Studies*, 10(3), 257–269. <https://doi.org/10.1007/s10902-007-9079-9>

- Shanahan, M. J., Hill, P. L., Roberts, B. W., Eccles, J., & Friedman, H. S. (2014). Conscientiousness, health, and aging: The life course of personality model. *Developmental Psychology*, 50(5), 1407–1425. <https://doi.org/10.1037/a0031130>
- Sherman, R. A., Rauthmann, J. F., Brown, N. A., Serfass, D. G., & Jones, A. B. (2015). The independent effects of personality and situations on real-time expressions of behavior and emotion. *Journal of Personality and Social Psychology*, 109(5), 872–888. <https://doi.org/10.1037/pspp0000036>
- Sosnowska, J., Kuppens, P., Fruyt, F. de, & Hofmans, J. (2020). New directions in the conceptualization and assessment of personality—a dynamic systems approach. *European Journal of Personality*, 139. <https://doi.org/10.1002/per.2233>
- Soto, C. J. (2015). Is happiness good for your personality? Concurrent and prospective relations of the big five with subjective well-being. *Journal of Personality*, 83(1), 45–55. <https://doi.org/10.1111/jopy.12081>
- Soto, C. J. (2019). How replicable are links between personality traits and consequential life outcomes? The life outcomes of personality replication project. *Psychological Science*, 30(5), 711–727. <https://doi.org/10.1177/0956797619831612>
- Steel, P., Schmidt, J., & Shultz, J. (2008). Refining the relationship between personality and subjective well-being. *Psychological Bulletin*, 134(1), 138–161.
- Tafvelin, S., Nielsen, K., Abildgaard, J. S., Richter, A., Thiele Schwarz, U. von, & Hasson, H. (2019). Leader-team perceptual distance affects outcomes of leadership training: Examining safety leadership and follower safety self-efficacy. *Safety Science*, 120, 25–31. <https://doi.org/10.1016/j.ssci.2019.06.019>
- Tay, L. (2015). *Expimetrics [computer and smartphone software]*. <https://www.expimetrics.com>
- Terwiel, S., Kritzler, S., Rauthmann, J. F., & Luhmann, M. (2021). *Person-environment fit in the context of sports and its association with subjective well-being*. <https://doi.org/10.31234/osf.io/7rxp9>
- Tett, R. P., & Burnett, D. D. (2003). A personality trait-based interactionist model of job performance. *The Journal of Applied Psychology*, 88(3), 500–517. <https://doi.org/10.1037/0021-9010.88.3.500>

- Tett, R. P., Toich, M. J., & Ozkum, S. B. (2021). Trait activation theory: A review of the literature and applications to five lines of personality dynamics research. *Annual Review of Organizational Psychology and Organizational Behavior*, 8(1), 199–233.
<https://doi.org/10.1146/annurev-orgpsych-012420-062228>
- Tsai, J. L. (2007). Ideal affect: Cultural causes and behavioral consequences. *Perspectives on Psychological Science*, 2(3), 242–259.
- van Allen, Z. M., & Zelenski, J. M. (2018). Testing trait-state isomorphism in a new domain: An exploratory manipulation of openness to experience. *Frontiers in Psychology*, 9, 1964.
<https://doi.org/10.3389/fpsyg.2018.01964>
- van Vianen, A. E. M. (2018). Person–environment fit: A review of its basic tenets. *Annual Review of Organizational Psychology and Organizational Behavior*, 5(1), 75–101.
<https://doi.org/10.1146/annurev-orgpsych-032117-104702>
- Wei, T., & Simko, V. (2017). *R package "corrplot": Visualization of a correlation matrix*.
<https://github.com/taiyun/corrplot>
- Wickham, H. (2011). The split-apply-combine strategy for data analysis. *Journal of Statistical Software*, 40(1), 1–29. <http://www.jstatsoft.org/v40/i01/>
- Wickham, H. (2016). *ggplot2: Elegant graphics for data analysis*. Springer-Verlag New York.
<https://ggplot2.tidyverse.org>
- Wickham, H. (2019). *Stringr: Simple, consistent wrappers for common string operations*.
<https://CRAN.R-project.org/package=stringr>
- Wickham, H. (2021a). *Forcats: Tools for working with categorical variables (factors)*.
<https://CRAN.R-project.org/package=forcats>
- Wickham, H. (2021b). *Tidyr: Tidy messy data*. <https://CRAN.R-project.org/package=tidyr>
- Wickham, H., Averick, M., Bryan, J., Chang, W., McGowan, L. D., François, R., Grolemund, G., Hayes, A., Henry, L., Hester, J., Kuhn, M., Pedersen, T. L., Miller, E., Bache, S. M., Müller, K., Ooms, J., Robinson, D., Seidel, D. P., Spinu, V., ... Yutani, H. (2019). Welcome to the tidyverse. *Journal of Open Source Software*, 4(43), 1686.
<https://doi.org/10.21105/joss.01686>

- Wickham, H., & Bryan, J. (2019). *Readxl: Read excel files*. <https://CRAN.R-project.org/package=readxl>
- Wickham, H., François, R., Henry, L., & Müller, K. (2019). *Dplyr: A grammar of data manipulation*. <https://CRAN.R-project.org/package=dplyr>
- Wickham, H., & Hester, J. (2020). *Readr: Read rectangular text data*. <https://CRAN.R-project.org/package=readr>
- Wilke, C. O. (2019). *Cowplot: Streamlined plot theme and plot annotations for 'ggplot2'*. <https://CRAN.R-project.org/package=cowplot>
- Wilson, G., & Cousins, J. (2003). Partner similarity and relationship satisfaction: Development of a compatibility quotient. *Sexual and Relationship Therapy*, 18(2), 161–170. <https://doi.org/10.1080/1468199031000099424>
- Wilt, J., Nofle, E. E., Fleeson, W., & Spain, J. S. (2012). The dynamic role of personality states in mediating the relationship between extraversion and positive affect. *Journal of Personality*, 80(5), 1205–1236. <https://doi.org/10.1111/j.1467-6494.2011.00756.x>
- Wilt, J., & Revelle, W. (2015). Affect, behavior, cognition, and desire in the big five: An analysis of item content and structure. *European Journal of Personality*, 29(4), 478–497. <https://doi.org/10.1002/per.2002>
- Wilt, J., Sun, J., Jacques-Hamilton, R., & Smillie, L. D. (2021). *Why does it feel authentic to be and act extraverted? Exploring the mediating role of positive affect*. PsyArXiv. <https://doi.org/10.31234/osf.io/7mj6g>
- Wolf, L. J., Weinstein, N., & Maio, G. R. (2019). Anti-immigrant prejudice: Understanding the roles of (perceived) values and value dissimilarity. *Journal of Personality and Social Psychology*, 117(5), 925–953. <https://doi.org/10.1037/pspi0000177>
- Yik, M. S. M., Russell, J. A., & Steiger, J. H. (2011). A 12-point circumplex structure of core affect. *Emotion (Washington, D.C.)*, 11(4), 705–731. <https://doi.org/10.1037/a0023980>
- Zelenski, J. M., Whelan, D. C., Nealis, L. J., Besner, C. M., Santoro, M. S., & Wynn, J. E. (2013). Personality and affective forecasting: Trait introverts underpredict the hedonic

benefits of acting extraverted. *Journal of Personality and Social Psychology*, 104(6), 1092–1108. <https://doi.org/10.1037/a0032281>

Zhu, H. (2021). *kableExtra: Construct complex table with 'kable' and pipe syntax*. <https://CRAN.R-project.org/package=kableExtra>