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Toward understanding the relationship between personality and well-being states and traits

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Abstract

Objective: Although there is a robust connection between dispositional personality traits and well-being, relatively little research has comprehensively examined the ways in which all Big Five personality states are associated with short-term experiences of well-being within individuals. We address three central questions about the nature of the relationship between personality and well-being states: First, to what extent do personality and well-being states covary within individuals? Second, to what extent do personality and well-being states influence one another within individuals? Finally, are these within-person relationships moderated by dispositional personality traits and well-being?

Method: Two experience sampling studies ($N = 161$ and $N = 146$) were conducted over 2 weeks.

Results: Across both studies, all Big Five personality states were correlated with short-term experiences of well-being within individuals. Individuals were more extraverted, emotionally stable, conscientious, agreeable, and open in moments when they experienced higher well-being (greater self-esteem, life satisfaction and positive affect, and less negative affect). Moreover, personality and well-being states dynamically influenced one another over time within individuals, and these associations were not generally moderated by dispositional traits or well-being.

Conclusions: Behavior and well-being are interconnected within the context of the Big Five model of personality.

KEYWORDS
adjustment, experience sampling, personality, well-being

1 | INTRODUCTION

Dispositional personality traits have been shown to be consistently associated with psychological adjustment and well-being: Individuals who are more emotionally stable, extraverted, conscientious, and agreeable report higher levels of life satisfaction, positive affect, and self-esteem, and lower levels of negative affect and depressive symptoms (DeNeve & Cooper, 1998; Diener, Oishi, & Lucas, 2003; Kling, Ryff, Love, & Essex, 2003). Emotional stability and Extraversion exhibit the strongest associations with well-being, followed

by Conscientiousness and then Agreeableness. Although Openness to Experience has been less consistently associated with subjective well-being, self-esteem, and depressive symptomatology, it is substantially associated with other well-being indicators such as psychological well-being (i.e., positive relations, autonomy, environmental mastery, personal growth, purpose in life, and self-acceptance; e.g., Anglim & Grant, 2016). Altogether, Big Five personality traits account for between 39% and 48% of the variance in subjective well-being, 34% of the variance in self-esteem, and 55% of the variance in psychological well-being (Anglim &

Grant, 2016; Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001; Steel, Schmidt, & Shultz, 2008).

1.1 | Personality and well-being states

Given the robust connection between dispositional personality traits and well-being, a major research question is whether personality and well-being states are similarly associated within individuals in daily life. Personality states measure content similar to that measured by personality traits, but they pertain to cognitions and behavior over a shorter time period (Fleeson, Malanos, & Achille, 2002; Heller, Komar, & Lee, 2007). For example, whereas trait Extraversion describes individuals' general tendencies to behave in an extraverted manner, measures of state Extraversion assess the extent to which individuals' behavior in a shorter window of time (e.g., 30 min) is extraverted. Similarly, measures of state well-being represent individuals' experiences of well-being in a given moment, rather than in general.

The present research investigates the nature of the relationship between short-term variations in state personality and fluctuations in well-being within individuals. Correlations between dispositional personality traits and well-being demonstrate that certain types of people tend to experience higher well-being than others. However, they do not assess whether cognitions and behaviors reflective of personality trait content are associated with short-term fluctuations in well-being within individuals in daily life (Fleeson et al., 2002). For example, although between-person correlations demonstrate that more conscientious individuals experience higher well-being, they do not test whether behaving conscientiously is associated with experiencing higher well-being in daily life.

The question of whether personality and well-being states are correlated within individuals is important for a number of reasons. First, by describing the within-person patterning of personality and well-being states, we gain important insights into when and why individuals may engage in particular types of behaviors and experience particular thoughts and feelings. This description of the ongoing, psychological functioning of individuals is a central goal of psychology (Allport, 1937; Epstein, 1982; Fleeson et al., 2002; Larsen, 1989), which cannot be adequately addressed by between-person correlations of dispositional measures. Second, within-person connections between personality and well-being states may have important implications for understanding the relationship between dispositional personality and well-being. Specifically, if personality and well-being states are correlated within individuals, this may indicate that personality and well-being states dynamically influence one another within individuals: That is, the enactment of certain types of behaviors (i.e., personality states) may lead individuals to experience higher or lower levels of well-being, just as

their momentary experiences of well-being may influence their subsequent expression of behavior (i.e., personality states). Moreover, the existence of such relationships may indicate that dispositional well-being may be increased through sustained change in behaviors, or that dispositional personality traits (i.e., individuals' tendencies to think and behave in particular ways) may be impacted through sustained change in well-being.

A number of experience sampling studies have examined within-person correlations between personality and well-being states. The majority of these studies have demonstrated that state Extraversion is positively correlated with state positive affect within individuals (Fleeson et al., 2002; Lischetzke, Pfeifer, Crayen, & Eid, 2012; McNiel & Fleeson, 2006; McNiel, Lowman, & Fleeson, 2010; Wilt, Noftle, Fleeson, & Spain, 2012). For example, Fleeson et al. (2002) had participants report on their state Extraversion and state positive affect five times per day for a period of 13 days and found that individuals experienced higher positive affect (e.g., excited, enthusiastic, proud, alert) in moments when their behavior was more extraverted (e.g., talkative, energetic, assertive, adventurous). In addition, Heller et al. (2007) measured state Extraversion, Neuroticism, life satisfaction, positive affect, and negative affect three times per day for 10 days using interval-contingent diary recordings. They found that individuals experienced higher positive affect and life satisfaction when their behavior was more extraverted and higher negative affect and lower life satisfaction when their behavior was more neurotic. Thus, while the existing literature has demonstrated that a number personality states co-occur with indicators of well-being within individuals, research that examines within-person relations between all Big Five personality states and multiple indicators of well-being is needed.

1.2 | Directions of association between personality and well-being states

Within-person correlations between concurrent (i.e., measured at the same time) personality and well-being states demonstrate that personality states and well-being states co-occur within individuals (Figure 1, path *e*). That is, they demonstrate that individuals tend to experience higher well-being (e.g., higher positive affect) in moments when they are engaged in particular types of cognitions and behaviors (e.g., more extraverted behavior). However, concurrent associations do not examine the extent to which personality states influence subsequent well-being states or whether well-being states influence subsequent personality states.

There are two main methods by which directions of influence between personality and well-being states may be evaluated. The first is through the use of experimental designs in which either the personality or well-being state is
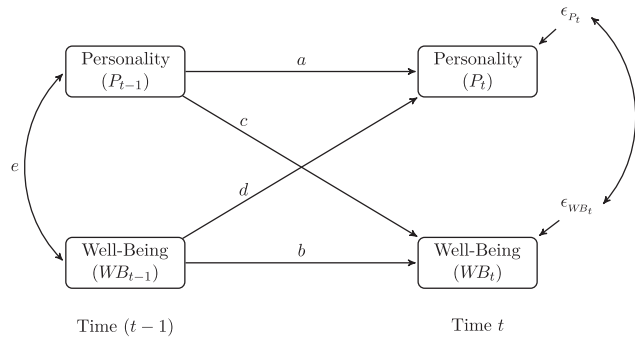
FIGURE 1 Cross-lagged model between personality and well-being state assessments

manipulated and the effect on the other is measured. The second method is to use cross-lagged analyses in experience sampling studies in which personality and well-being states are measured multiple times per day. Cross-lagged analyses allow for the examination of the extent to which (a) personality states in one moment predict change in well-being at the next measurement occasion (Figure 1, path c) and whether (b) well-being in one moment predicts change in personality states at the next measurement occasion (Figure 1, path d). While experimental studies have the advantage of controlling the independent variable, thus enabling the researcher to draw stronger conclusions about causation (see West & Thoemmes, 2010, for a review), cross-lagged analyses in experience sampling studies provide a more ecologically valid examination of how personality and well-being states may influence one another within individuals in daily life and provide insight into directions of influence (Rauthmann, Jones, & Sherman, 2016).

A number of experimental studies have demonstrated that enacting extraverted states leads to higher positive affect, compared to enacting introverted states (e.g., Fleeson et al., 2002; McNiel & Fleeson, 2006; McNiel et al., 2010; Smillie, Wilt, Kabbani, Garratt, & Revelle, 2015; Wilt et al., 2012; Zelenski, Santoro, & Whelan, 2012). For instance, Fleeson et al. (2002) instructed participants to behave in either an extraverted or introverted way during a group conversation and then measured their positive affect. They found that individuals reported higher positive affect after being instructed to exhibit extraverted behavior compared to when they were instructed to exhibit introverted behavior. In addition, McNiel & Fleeson (2006) used a similar design to assess the effect of emotionally stable versus neurotic behavior on negative affect. They found that individuals reported higher levels of negative affect after being instructed to behave in a neurotic manner compared to when they were instructed to behave in an emotionally stable manner. Finally, Lischetzke et al. (2012) measured state Extraversion and pleasant affect seven times per day for 1 week and employed cross-lagged analyses to assess the extent to which state Extraversion predicted change in pleasant affect. They found that following

moments when individuals behaved in a more extraverted manner, they experienced an increase in pleasant affect by the next measurement occasion.

Just as personality states may influence later well-being states, there are a number of reasons to expect that well-being states may influence later personality states. For instance, Fredrickson's (1998) broaden and build theory of positive emotion suggests that positive emotions and well-being more generally function as a cognitive resource that better enables individuals to engage in positive cognitions and behaviors. Similarly, clinical frameworks of depression suggest that depressed mood reinforces tendencies to socially withdraw (low Extraversion), be irritable (low Agreeableness, low Emotional Stability), be less able to keep up with day-to-day activities (low Conscientiousness), and have less interest in hobbies/activities previously enjoyed (low Openness; American Psychiatric Association, 2013; Hirschfeld, 2001).

Little to no research has examined whether momentary experiences of well-being influence Big Five personality states per se. However, a large body of experimental work has demonstrated that mood can impact a variety of cognitions and behaviors, many of which map onto Big Five trait content. For instance, positive affect has been shown to increase cognitive flexibility, creativity (Isen, 1987, 2008), and interest in leisure activities (Cunningham, 1988b), as well as exploratory, sociable (Cunningham, 1988a; Isen, 1970), cooperative (e.g., Baron, Fortin, Frei, Hauver, & Shack, 1990; Carnevale & Isen, 1986; Forgas, 1998), and altruistic behavior (Cunningham, Steinberg, & Grev, 1980; O'Malley & Andrews, 1983). Additionally, negative affect has also been found to increase helping behavior under certain circumstances (e.g., Manucia, Baumann, & Cialdini, 1984), increase impulsiveness (Leith & Baumeister, 1996), and reduce cognitive capacity and task performance (Abele-Brehm, 1992). These behaviors map broadly onto Big Five dimensions of Openness (cognitive flexibility, creativity, interest in leisure activities), Extraversion (exploratory, sociable behavior), Agreeableness (cooperative, altruistic behavior), and Conscientiousness (impulsiveness, task performance). Lyubomirsky, King, and Diener (2005) provide a comprehensive review of research examining the downstream effect of happiness on various behaviors.

In sum, there are numerous reasons to expect that personality and well-being states dynamically influence one another within individuals. A number of studies have demonstrated that enacting extraverted and neurotic states leads to increases in positive and negative affect, respectively. In addition, a wealth of experimental work has shown that positive and negative mood influence a variety of behaviors and cognitions, many of which map onto Big Five trait content. However, research is needed that more systematically and

comprehensively examines the relative influence of all Big Five personality states and multiple indicators of well-being.

1.3 | Are within-person relationships between personality and well-being states moderated by dispositional levels of traits or well-being?

An important question regarding the nature of the relationship between personality and well-being states is whether these relations are moderated by dispositional traits or by dispositional well-being. For example, is it the case that highly conscientious individuals exhibit a stronger or weaker relationship between conscientious behavior and state well-being, compared to individuals low on dispositional Conscientiousness? Do relations between momentary experiences of well-being and Big Five behaviors differ for high well-being individuals compared to low well-being individuals? In other words, do average levels of well-being moderate paths c and d in Figure 1? These questions are important because they assess the generalizability of any observed within-person relationships (Fleeson et al., 2002).

There are a number of reasons to expect that personality and well-being states may be moderated by dispositional traits (i.e., dispositional trait levels moderate paths c and d in Figure 1). For example, it may be the case that individuals who are dispositionally high on a given trait engage in behaviors associated with that trait more often because they experience greater well-being benefits from doing so. For example, highly conscientious individuals may experience a boost in well-being when engaged in conscientious behavior, which less conscientious individuals do not experience. Such a relationship might help explain why certain individuals engage in particular types of behaviors more often than others. Similarly, theories of authenticity (McGregor & Little, 1998; Roberts & Donahue, 1994; Sheldon, Ryan, Rawsthorne, & Ilardi, 1997), behavioral concordance (Moskowitz & Coté, 1995), and situational congruence (Emmons, Diener, & Larsen, 1986) would suggest that individuals will feel more authentic, and thus experience higher well-being, when engaging in behaviors in line with their dispositional traits (Fleeson et al., 2002).

Just as personality traits may moderate within-person relationships between personality and well-being states, it may also be the case that dispositional levels of well-being may exert a moderating influence. For example, it may be the case that individuals higher in dispositional well-being experience greater boosts in well-being when engaging in more positive behaviors (i.e., behaviors that are more extraverted, emotionally sable, conscientious, agreeable, and open) or that individuals who are dispositionally low on well-being experience greater dips in well-being when engaging in less socially desired behaviors (i.e., less extraverted, emotionally stable, conscientious, agreeable, and

open). Thus, higher well-being individuals may be more reactive to positive situations or to the benefits of engaging in more positive behaviors, whereas low well-being individuals may be more reactive to negative situations or to the effects of negative behaviors. Alternatively, it may be the case that high and low well-being individuals are differentially reactive to all types of stimuli. For instance, studies have shown that low self-esteem individuals react more strongly to both positive and negative feedback about themselves, compared to high self-esteem individuals (Campbell & Lavallee, 1993; Jones, 1973; Shrauger, 1975; Swann, Pelham, & Krull, 1989).

In brief, there are many theoretically plausible reasons to expect that personality traits and dispositional well-being may moderate within-person relationships between personality and well-being states. However, it may also be the case that most individuals exhibit similar relations between personality and well-being states. Theories of state–trait isomorphism suggest that states and traits function similarly and that relationships observed between individuals on dispositional variables will also be observed within individuals when such variables are measured at the state level (Fleeson, 2001; Fleeson et al., 2002). Thus, such theories predict that just as more extraverted, emotionally stable, conscientious, and agreeable individuals exhibit higher well-being, all individuals will experience higher well-being in moments when their behavior is more extraverted, emotionally stable, conscientious, and agreeable.

Past research that has examined these questions in the context of the Five-Factor Model of personality appears to support state–trait isomorphism. For example, Fleeson & Wilt (2010) found that all Big Five personality states were positively correlated with felt authenticity—individuals felt more authentic when they were more extraverted, emotionally stable, conscientious, agreeable, and open. Moreover, they found that these relationships were not moderated by dispositional traits. For example, even individuals who were dispositionally introverted felt more authentic when they behaved in a more extraverted way. In terms of the personality–well-being link specifically, a subset of the studies that have examined relations between state Extraversion and positive affect have tested whether trait Extraversion moderates the within-person relationship (Fleeson et al., 2002; Lischetzke et al., 2012; McNiel & Fleeson, 2006; McNiel et al., 2010; Zelenski et al., 2012). These studies have generally not found reliable evidence of trait Extraversion's exerting a moderating influence.

In sum, past research seems to suggest that dispositional traits do not moderate within-person relations between personality and well-being states. However, the only studies to examine this question with regard to personality and well-being states have exclusively examined the Extraversion–positive affect link, and these studies have only tested

whether trait Extraversion has a moderating influence. Research is needed to examine whether within-person relationships between all five personality states and well-being states are moderated by the corresponding personality traits. In addition, research is needed to examine whether these within-person relationships are moderated by dispositional well-being, as little to no research has addressed this latter question.

1.4 | The present study

The present article examines two experience sampling studies in which individuals reported on all Big Five personality states (i.e., state Extraversion, Emotional Stability, Conscientiousness, Agreeableness, and Openness) and numerous indicators of well-being (e.g., state life satisfaction, self-esteem, positive affect, and negative affect) multiple times per day for a period of 2 weeks. Multilevel modeling and cross-lagged analyses were used to examine three central questions regarding the nature of the relationship between personality and well-being states:

1. To what extent do personality and well-being states covary within individuals? That is, do individuals tend to experience higher well-being in moments of higher state Extraversion, Emotional Stability, Conscientiousness, Agreeableness, and Openness? This question corresponds to path *e* in Figure 1.

2. To what extent do personality states predict change in well-being states, and do well-being states predict change in personality states? This question corresponds to paths *c* and *d* in Figure 1.

3. To what extent do dispositional personality traits and dispositional well-being moderate within-person associations? This question corresponds to moderation of paths *c* and *d* in Figure 1.

2 | METHOD

2.1 | Overview

The present research examines two experience sampling studies that were conducted in 2007–2008 and in 2013–2014. In both studies, participants first completed a battery of questionnaires assessing their dispositional personality traits and well-being. Next, participants completed an experience sampling portion of the study in which they reported on their personality and well-being states multiple times per day for 2 weeks. Subsets of these data have been analyzed previously addressing different research questions (Magee, Buchtel, Human, Murray, & Biesanz, 2016).

2.2 | Participants

2.2.1 | Sample 1

A total of 161 participants from first-year undergraduate courses participated as part of a larger study and were compensated with $50 for their time. Participants ranged in age from 17 to 36 (median = 19); 69% were female, 30% were male, and 1% of the sample did not identify their gender. Participants were asked to identify their "heritage culture" or the culture that "influenced them the most" other than North American, and 38% of participants indicated that their heritage culture was East Asian, 34% English, and 27% other.

2.2.2 | Sample 2

A total of 146 participants from the University of British Columbia's Psychology Department Human Subject Pool who were enrolled in another unrelated research project were compensated with $50 for their involvement in the experience sampling study. Participants ranged in age from 15 to 39 (median = 21); 76% were female, 24% were male, and 1% were unknown. The participants self-identified as East Asian (70%), Caucasian (20%), or other (10%).

2.3 | Procedure

Participants reported on their personality and well-being states through the use of palm pilots (Sample 1) and iPod touch devices (Sample 2), which they carried around with them in their daily lives. Participants were prompted to complete surveys multiple times per day via the Experience Sampling Program (ESP 4.0; Barrett & Feldman Barrett, 2006) in Sample 1 and by text messages in Sample 2. In both samples, participants were prompted to fill out a survey five times per day at random times between 10 a.m. and 10 p.m., with at least 1 hr between prompts. On average, prompts were 2.59 hr apart ($SD = 1.08$) in Sample 1 and 3.00 hr apart ($SD = 1.58$) in Sample 2. Prompts included one initial practice session, for an ideal total of 71 prompts per participant across 2 weeks. In Sample 1, the average number of completed reports was 42.85 ($SD = 15.88$, median = 44, range = 4 to 84), as participants often continued the experience sampling until they could return the palm pilot to the laboratory. Similarly, in Sample 2, the average number of completed reports was 46.75 ($SD = 14.14$, median = 49, range = 3 to 73) of the ideal 71 prompts, or around 65.8% of the prompts actually given by each participant's iPod touch.

2.4 | Personality and Well-Being Measures

All measures in Samples 1 and 2 were rated on scales ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

2.4.1 | Dispositional Personality

In Sample 1, composite measures of individuals' Big Five personality traits were calculated based on the average of self-, roommate, and parent reports of personality traits. All three observer types rated individuals' personality on both the 44-item Big Five Inventory (BFI; John & Srivastava, 1999) and Goldberg's (1992) list of 100 trait adjectives. The BFI assesses each of the Big Five personality dimensions with 8–9 items, including "is outgoing, sociable" (Extraversion), "is depressed, blue" (Emotional Stability, reversed), "is original, comes up with new ideas" (Openness), "is helpful, unselfish with others" (Agreeableness), and "does a thorough job" (Conscientiousness). Similarly, Goldberg's list of 100 trait adjectives measures each personality dimension with 20 adjectives (10 of which are reverse coded). Items include *talkative* (Extraversion), *cooperative* (Agreeableness), *disorganized* (Conscientiousness, reversed), *anxious* (Emotional Stability, reversed), and *creative* (Openness). In Sample 2, composite measures of Big Five personality traits were calculated based on the average of self-reports, the reports of two peers, and parent reports on the 44-item BFI. In Samples 1 and 2, the intraclass correlations (ICCs) were, respectively, .77 and .53 for Agreeableness, .82 and .63 for Conscientiousness, .91 and .71 for Extraversion, .82 and .56 for Emotional Stability, and .83 and .59 for Openness. Note that these reliabilities reflect consensus across informant reports at the scale level, not internal reliability at the item level within a single informant report.

2.4.2 | Personality States

In Sample 1, personality states were assessed multiple times per day during the experience sampling period with 22 trait adjectives selected from Goldberg's (1992) list of 100 trait adjectives. Four to five trait adjectives were selected based on factor loadings to represent each of the Big Five personality dimensions and balance positively and negatively phrased items. For example, state Conscientiousness was measured with both *organized* and *careless*, and state Emotional Stability was measured with both *relaxed* and *nervous*. Participants were instructed to rate the extent to which each of these trait adjectives described their behavior in the past 30 min. For example, the experience sampling survey would prompt participants to rate the extent to which participants agreed with the statement "during the past 30 minutes I was relaxed" (Emotional Stability).

Personality states were assessed in a different manner in Sample 2. Rather than using trait adjectives, personality states were measured with a 31-item version of the BFI, with instructions modified for experience sampling. For each item, participants were instructed to rate how someone else would describe their behavior in the past 30 min. For example, participants rated the extent to which, during the past 30 min, someone else would describe them as "outgoing, sociable." The change in phrasing from asking participants to describe their own behavior to asking participants to consider how someone else would describe their behavior was intended to encourage participants to more objectively report on their behavior in a given moment. Reliabilities across the experience sampling assessments were excellent, with ICCs ranging from .94 to .96 across the Big Five for both samples based on 40 assessments.

2.4.3 | Dispositional Well-Being

In both samples, dispositional self-esteem was measured at baseline with the Rosenberg Self-Esteem Scale (Rosenberg, 1965; ICC = .90 and .88, respectively, for the two samples), which comprises 10 items including "at times I think I'm no good at all" (reversed) and "I feel that I am a person of worth, at least on an equal basis with others." In addition to dispositional self-esteem, Sample 2 included measures of dispositional life satisfaction (ICC = .84) and relationship well-being (ICC = .87) measured at baseline. Dispositional life satisfaction was measured with the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), and dispositional relationship well-being was measured with the Relationship Well-Being Scale (RWBS), which is a 14-item subscale of Ryff's Psychological Well-Being Scale (1989). The SWLS includes items such as "the conditions of my life are excellent" and "I am satisfied with my life." The RWBS measures sense of loneliness and social support (e.g., "I often feel lonely because I have few close friends with whom to share my concerns"), as well as ease of relating to others and quality of relationships (e.g., "I find it difficult to really open up when I talk with others").

2.4.4 | Well-Being States

In Sample 1, participants were instructed to evaluate their state self-esteem and state life satisfaction at each measurement occasion of the experience sampling period "in the context of the past 30 minutes." State self-esteem was measured with the full 10-item Rosenberg Self-Esteem Scale (ICC = .99), and state life satisfaction was measured with the full five-item Satisfaction With Life Scale (ICC = .99) at each measurement occasion.

In Sample 2, state self-esteem and state life satisfaction were assessed with single items ("I have high self-esteem" and "I am satisfied with my life," respectively), with ICCs of .98 based on 40 assessments. State positive affect was measured with three positive emotion items (*happy, cheerful, excited*), and state negative affect was measured with four negative emotion items (*sad, unhappy, angry, anxious*) sampled from the Positive and Negative Affect Schedule–

Expanded Form (PANAS-X; Watson & Clark, 1999), with ICCs of .97 and .98, respectively, based on 40 assessments. Participants were instructed to answer state well-being items "in the context of the past 30 minutes."

2.5 | Data Analytic Strategy

The present study examines three central questions: First, to what extent are personality and well-being states correlated within individuals? Second, to what extent do personality states predict change in well-being states, and to what extent do well-being states predict change in personality states? Third, to what extent do dispositional personality traits and dispositional well-being moderate these within-person relationships? Answers to these questions are addressed by pathways in the cross-lagged model depicted in Figure 1. In this model, paths a and b represent autocorrelations of personality and well-being variables, path c how personality states predict change in well-being states, path d how well-being states predict change in personality states, and path e the concurrent relationships between personality and well-being states.

Multilevel models in which assessments over time were nested within individuals were used to examine these within-person relationships across assessments. All experience sampling assessments were standardized within persons. Specifically, an intercept-only model was estimated for each personality state and dispositional state, illustrated in Equation (1) for Extraversion, where EX_{it} is participant i's assessment of state Extraversion at time t.

$$EX_{it} = \gamma_0 + u_i + e_{it}. \qquad (1)$$

All experience sampling data were standardized by subtracting the empirical Bayesian estimates of individuals' mean, $\hat{u}_i$, from each score, thereby centering assessments within individuals, and then dividing by the average within-person standard deviation estimate from Equation (1), $\hat{\sigma}$. Standardizing within individuals in this manner provides approximate standardized regression coefficients for the estimates of the coefficients in Figure 1 as well as providing estimates of relationships within individuals over time as opposed to between-individual relationships (Kreft & De Leeuw, 1998). Thus, estimates of the pathways in Figure 1 represent within-person changes in personality states and well-being states around individuals' mean levels on those dimensions.

To examine path e, the following model was examined for each well-being state and personality state combination:

$$WB_{it} = \beta_{20_i} + \beta_{21_i} P_{it} + e_{it}$$
$$\beta_{20_i} = \beta_{20} + u_{20_i} \qquad (2)$$
$$\beta_{21_i} = \beta_{21} + u_{21_i},$$

where WB_{it} and P_{it} are participant i's well-being and personality state measure at assessment t, respectively, standardized

within person, and β_{21_i} corresponds to path e in Figure 1. Both the intercept and slope are allowed to vary randomly across participants, and the standard deviation of u_{21_i}, estimated by $\hat{\tau}_i$, assesses individual differences in path e. Equation (2) provides estimates of the univariate relationships for each personality state, and we also examined partial relationships. Specifically, for each well-being state, we estimated

$$WB_{it} = \beta_{30_i} + \beta_{31_i} EX_{it} + \beta_{32_i} ES_{it} + \beta_{33_i} CO_{it} \\ + \beta_{34_i} AG_{it} + \beta_{35_i} OP_{it} + e_{it}. \qquad (3)$$

In Equation (3) β_{31_i} represents the partial relationship between participant i's Extraversion and his or her well-being state, holding the other four personality states constant. Equation (3) provides estimates of the partial relationship each personality state has with well-being states at the same assessment. To examine the cross-lagged relationships, two models were estimated:

$$WB_{it} = \beta_{40_i} + \beta_{41_i} WB_{i(t-1)} + \beta_{42_i} P_{i(t-1)} + e_{it} \qquad (4)$$

and

$$P_{it} = \beta_{50_i} + \beta_{51_i} WB_{i(t-1)} + \beta_{52_i} P_{i(t-1)} + e_{it}. \qquad (5)$$

In both Equations (4) and (5), WB_{it} and P_{it} represent participant i's well-being and personality state measure at assessment t, respectively, and $WB_{i(t-1)}$ and $P_{i(t-1)}$ represent participant i's well-being and personality state measure at the previous assessment $(t-1)$, respectively, with all measures standardized and centered within person. Equations (4) and (5) were estimated only with assessments made on the same day. All coefficients were allowed to vary randomly across participants, and coefficients β_{41_i}, β_{42_i}, β_{51_i}, and β_{52_i} correspond to paths b, c, d, and a in Figure 1, respectively, for participant i.

In order to summarize relations between personality states and individuals' general feelings of well-being (rather than specific well-being indicators), we created composite measures of state well-being. In Samples 1 and 2, the average of state self-esteem and life satisfaction is referred to as the *well-being composite*. In addition, as Sample 2 also included measures of state positive and negative affect, a *well-being/afffect composite* was calculated as the average of state self-esteem, life satisfaction, positive affect, and negative affect (reversed).

Concurrent and lagged relationships between personality states and well-being states are reported for all five personality states and for all indicators of state well-being (including the composites). Moderation analyses were conducted on within-person relationships between all Big Five states and composite measures of state well-being variables by including predictors (dispositional measures of personality and well-being) of the intercept and slopes in Equations (2), (4), and (5), after standardizing the dispositional measures between participants.

All reported coefficients represent approximate standardized regression coefficients (β), as all state assessments

TABLE 1 Correlations and summary statistics for dispositional and mean state personality measures in Samples 1 and 2

| Personality measure | Dispositional personality | | | | | | Mean personality state | | | | | | Sample 2 | |
	EX	ES	CO	AG	OP	WB	EX	ES	CO	AG	OP	WB	Mean	SD
Dispositional personality														
Extraversion		.27	.11	.27	.09	.52	.58	.14	.18	.28	.20	.27	4.65	0.88
Emotional Stability	.23		.33	.39	.04	.45	.19	.60	.37	.29	.20	.39	4.17	0.84
Conscientiousness	−.04	.15		.37	.15	.36	.14	.28	.49	.23	.19	.23	4.92	0.74
Agreeableness	−.02	.39	.27		.35	.33	.18	.16	.22	.45	.17	.10	5.33	0.66
Openness	.31	.18	.11	.03		.12	.09	.01	.13	.13	.39	.05	4.98	0.68
Well-being	.44	.57	.19	.13	.25		.43	.47	.49	.48	.45	.59	4.84	0.84
Mean personality state														
Extraversion	.45	.26	.14	.13	.06	.38		.44	.51	.54	.45	.51	4.17	0.58
Emotional Stability	.18	.43	.15	.23	.18	.44	.52		.68	.60	.49	.66	4.50	0.65
Conscientiousness	.15	.20	.51	.25	.08	.41	.54	.51		.61	.64	.53	4.42	0.63
Agreeableness	.19	.22	.28	.38	−.00	.22	.46	.35	.67		.61	.48	4.96	0.59
Openness	.18	.24	.31	.19	.31	.30	.39	.24	.68	.62		.58	4.68	0.68
Well-being	.39	.49	.23	.26	.23	.78	.49	.58	.57	.34	.41		4.73	0.99
Sample 1														
Mean	4.65	4.38	5.03	5.47	5.10	5.33	4.54	4.83	4.95	4.91	4.66	5.25		
SD	0.91	0.72	0.66	0.56	0.59	1.10	0.54	0.74	0.56	0.55	0.57	0.84		

Note. $N = 161$ and $N = 146$ for Samples 1 and 2, respectively. EX = Extraversion; ES = Emotional Stability; CO = Conscientiousness; AG = Agreeableness; OP = Openness; WB = well-being. In the correlational matrix, the lower diagonal corresponds to Sample 1 and the upper diagonal to Sample 2. Well-being in Sample 1 corresponds to the Rosenberg Self-Esteem Scale (1965) for both dispositional and mean state measures. Dispositional well-being in Sample 2 was the composite of self-esteem, life satisfaction, and relationship well-being; mean state well-being in Sample 2 was the composite of the single-item self-esteem and life satisfaction measures. For Samples 1 and 2, $|r| > .202$ and $|r| > .213$, respectively, have $p < .01$.

were standardized within person using the average within-person standard deviation on that state, and dispositional measures were standardized across individuals. All analyses were conducted in R (R Core Team, 2017), and all models were estimated using the lme4 package (Bates, Mächler, Bolker, & Walker, 2015). Tests of variance components (random slope standard deviations, $\hat{\tau}$) were examined using likelihood ratio tests under maximum likelihood (see West, Ryu, Kwok, & Cham, 2011).

3 | RESULTS AND DISCUSSION

Summary statistics and correlations among dispositional personality measures and mean personality states for both Samples 1 and 2 are presented in Table 1. Assessments of dispositional personality measures correlated moderately to extremely strongly with mean personality states (rs range from .31 to .78) across the 2 weeks of experience sampling.

3.1 | To what extent do personality and well-being states covary within individuals?

The first question addressed whether Big Five personality states correlate with contemporaneous indicators of well-being within individuals (i.e., path e in Figure 1). Across Samples 1

and 2, all Big Five personality states were correlated moderately with all indicators of well-being (self-esteem, life satisfaction, positive affect, and negative affect) within individuals (see Table 2). When individuals were more extraverted, emotionally stable, conscientious, agreeable, and open, they reported having higher self-esteem, life satisfaction, and positive affect, and lower negative affect. These associations remained significant while controlling for the other four personality states, indicating that each of the Big Five personality states was independently associated with well-being within individuals (see Table 3).[1]

The strength of the relationships between each personality state and state well-being differed somewhat between Samples 1 and 2. In Sample 1, standardized betas for univariate relationships between personality states and well-being states ranged from .15 to .26, with Conscientiousness exhibiting the strongest association with measures of state well-being, followed by Extraversion, Agreeableness, Emotional Stability, and Openness. These results suggest that, unlike the corresponding between-person relationships (DeNeve & Cooper, 1998; Diener et al., 2003; Robins et al., 2001; Steel et al., 2008), Emotional Stability and Extraversion are not particularly strongly associated with well-being within individuals. Rather, they indicate that *all* Big Five personality states are similarly associated with momentary feelings of well-being within individuals.

TABLE 2 Univariate relationships between personality states and well-being states (path *e* in Figure 1)

	Personality state									
	Extraversion		Emotional Stability		Conscientiousness		Agreeableness		Openness	
Well-being/affect state	β̂ (SE)	τ̂	β̂ (SE)	τ̂	β̂ (SE)	τ̂	β̂ (SE)	τ̂	β̂ (SE)	τ̂
Sample 1										
Well-being composite	.22 (.02)***	.23***	.22 (.02)***	.23***	.26 (.02)***	.26***	.23 (.03)***	.27***	.22 (.03)***	.28***
Self-esteem	.21 (.02)***	.25***	.23 (.02)***	.26***	.25 (.03)***	.27***	.21 (.03)***	.28***	.17 (.03)***	.27***
Life satisfaction	.18 (.02)***	.18***	.15 (.02)***	.19***	.20 (.02)***	.20***	.20 (.02)***	.22***	.21 (.02)***	.24***
Sample 2										
Well-being/affect composite	.44 (.02)***	.25***	.56 (.02)***	.24***	.35 (.03)***	.26***	.45 (.02)***	.23***	.39 (.03)***	.26***
Well-being composite	.37 (.03)***	.27***	.45 (.02)***	.25***	.32 (.03)***	.25***	.37 (.02)***	.25***	.38 (.03)***	.26***
Self-esteem	.32 (.02)***	.24***	.38 (.02)***	.23***	.28 (.02)***	.21***	.30 (.02)***	.21***	.34 (.02)***	.23***
Life satisfaction	.33 (.02)***	.25***	.41 (.02)***	.23***	.29 (.03)***	.25***	.34 (.02)***	.24***	.33 (.02)***	.24***
Positive affect	.47 (.02)***	.22***	.48 (.02)***	.22***	.31 (.02)***	.23***	.41 (.02)***	.20***	.38 (.02)***	.24***
Negative affect	−.31 (.02)***	.23***	−.50 (.02)***	.23***	−.28 (.02)***	.23***	−.37 (.02)***	.22***	−.28 (.02)***	.24***

Note. Sample 1 *df* = 159; Sample 2 *df* = 143. Estimates (β̂) are approximate standardized regression coefficients with random effects standard deviation estimate τ̂ across individuals. The well-being composite is the average of self-esteem and life satisfaction state measures. The well-being/affect composite is the average of self-esteem, life satisfaction, positive affect, and negative affect (reversed) state measures.

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

TABLE 3 Partial relationships between personality states and well-being states (path *e* in Figure 1) controlling for the other four personality states

| | Personality state | | | | | | | | | |
| | Extraversion | | Emotional Stability | | Conscientiousness | | Agreeableness | | Openness | |
Well-being/ affect state	β̂ (*SE*)	τ̂	β̂ (*SE*)	τ̂	β̂ (*SE*)	τ̂	β̂ (*SE*)	τ̂	β̂ (*SE*)	τ̂
Sample 1										
Well-being composite	.09 (.02)***	.17***	.16 (.02)***	.18***	.14 (.02)***	.18***	.07 (.02)***	.18***	.09 (.02)***	.18***
Self-esteem	.09 (.02)***	.18***	.17 (.02)***	.21***	.16 (.02)***	.20***	.06 (.02)**	.17***	.04 (.02)*	.17***
Life satisfaction	.07 (.02)***	.15***	.11 (.02)***	.14***	.09 (.02)***	.13***	.07 (.02)***	.15***	.11 (.02)***	.17***
Sample 2										
Well-being/affect composite	.19 (.02)***	.15***	.39 (.02)***	.19***	.02 (.02)	.12***	.14 (.02)***	.15***	.10 (.02)***	.15***
Well-being composite	.15 (.02)***	.17***	.30 (.02)***	.17***	.04 (.02)*	.13***	.08 (.02)***	.16***	.15 (.02)***	.18***
Self-esteem	.14 (.02)***	.16***	.25 (.02)***	.19***	.03 (.02)	.11***	.04 (.02)*	.12***	.15 (.02)***	.18***
Life satisfaction	.13 (.02)***	.16***	.27 (.02)***	.14***	.03 (.02)	.13***	.09 (.02)***	.19***	.11 (.02)***	.16***
Positive affect	.27 (.02)***	.16***	.30 (.02)***	.17***	−.01 (.02)	.12***	.12 (.02)***	.13***	.13 (.02)***	.14***
Negative affect	−.09 (.02)***	.15***	−.39 (.02)***	.20***	−.02 (.02)	.11***	−.13 (.02)***	.14***	−.02 (.02)	.11***

Note. Sample 1 *df* = 159; Sample 2 *df* = 143. Estimates (β̂) are approximate standardized regression coefficients with random effects standard deviation estimate τ̂ across individuals. The well-being composite is the average of self-esteem and life satisfaction state measures. The well-being/affect composite is the average of self-esteem, life satisfaction, positive affect, and negative affect (reversed) state measures.

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

Compared to Sample 1, in Sample 2, variation in personality states appeared to be more strongly associated with variation in well-being within individuals. Standardized betas ranged from .28 to .56, with Emotional Stability exhibiting the strongest relationship with well-being, followed by Extraversion, Agreeableness, Openness, and Conscientiousness. These results are more consistent with traditional conceptions of Emotional Stability and Extraversion as being most strongly associated with affective experience and well-being generally. However, it is interesting to note that in Sample 2, Emotional Stability and Extraversion were approximately equally correlated with positive affect.

3.2 | To what extent do personality states predict change in well-being states, and do well-being states predict change in personality states?

The next two major questions addressed in this research were whether personality states influenced change in well-being states (path c), and whether well-being states influenced change in personality states (path d). That is, we assessed whether individuals' personality states in one moment predicted their level of well-being approximately 2–3 hr later, and also whether their level of well-being in one moment predicted their state personalities approximately 2–3 hr later. In both studies, there was evidence of personality states predicting change in self-esteem and life satisfaction: In Sample 1, Conscientiousness and Openness both significantly predicted change in self-esteem and life satisfaction, and in Sample 2, all Big Five states predicted change in the well-being composite, with the exception of Agreeableness, which did not significantly predict change in life satisfaction (see Table 4). By contrast, personality states did not appear to influence change in affect in Sample 2—the only personality state to predict subsequent change in positive or negative affect was Emotional Stability, which predicted change in both positive and negative affect (see Table 4).

These results may appear to conflict with prior experimental research that has found behaving in an extraverted manner leads to heightened positive affect (Fleeson et al., 2002; McNiel et al., 2010; Smillie et al., 2015; Zelenski et al., 2012) and that behaving emotionally unstably leads to heightened negative affect (McNiel & Fleeson, 2006). However, these apparent discrepancies between the present research and these experimental studies may be due, in part, to differences in the amount of time between measurements of behavior and affect. Whereas in past experimental research, individuals' affect has been measured immediately after being instructed to exhibit extraverted, introverted, emotionally stable, or emotionally unstable behavior, the present research examined the influence of behavior on affect approximately 2–3 hr later. Thus, it may be that the behavior

has a more short-term impact on affect that cannot be detected with longer time lags. Future experience sampling research should assess personality and well-being states at shorter time intervals—for instance, varying the time intervals between assessments randomly from very short 5-min intervals to longer than 2–3 hr—in order to assess whether effects are stronger when these variables are measured closer together.

That extraverted behavior does not lead to increased positive affect also does not appear to replicate findings from Lischetzke and colleagues' (2012) study, in which they used crossed-lagged analyses to assess the influence of Extraversion on change in affect. However, Lischetzke et al. assessed low-arousal pleasant affect (*unhappy–happy, bad–good, discontented–contented, unwell–well*) as opposed to the high-arousal positive affect captured in the current research (*happy, cheerful, excited*). Thus, the difference between these findings may indicate that Extraversion is differentially related to pleasant affect compared to high-arousal positive affect. However, more research is required to fully understand whether these distinctions truly exist.

While the current research found a number of significant pathways between personality states and lagged well-being states, across Samples 1 and 2, there was even more consistent evidence for well-being states' exerting an influence on change in personality states (see Table 5). In Sample 1, life satisfaction significantly predicted positive change in Conscientiousness, Agreeableness, and Openness, and self-esteem significantly predicted positive change in Agreeableness and Openness. That is, following moments when individuals reported experiencing higher life satisfaction and higher self-esteem, their behavior became more agreeable, more open, and, in the case of life satisfaction, more conscientious. Similarly, in Sample 2, self-esteem and life satisfaction predicted positive change in Extraversion, Emotional Stability, Agreeableness, and Openness. Moreover, in Sample 2, both positive affect and negative affect predicted change in all five personality states. Specifically, following moments when individuals experienced a high degree of positive affect or a low degree of negative affect, their behavior became more extraverted, emotionally stable, conscientious, agreeable, and open.[2]

3.3 | To what extent do dispositional personality traits and dispositional well-being moderate within-person associations?

Lastly, we examined whether dispositional personality traits or dispositional well-being moderated within-person relations between personality and well-being states. We examined the moderating effect of both dispositional personality traits and dispositional well-being measured at baseline, as well as the moderating effect of individuals' mean level of exhibited personality states and well-being during the experience

TABLE 4 Personality states predicting change in well-being states (cross-lagged path *c* in Figure 1)

Well-being/affect state at time *t*	Personality state at Time *t*−1									
	Extraversion		Emotional Stability		Conscientiousness		Agreeableness		Openness	
	β̂ (*SE*)	τ̂	β̂ (*SE*)	τ̂	β̂ (*SE*)	τ̂	β̂ (*SE*)	τ̂	β̂ (*SE*)	τ̂
Sample 1										
well-being composite	.00 (.01)	.00	.03 (.02)	.08	.05 (.02)***	.06	.00 (.02)	.11***	.04 (.01)**	.03
Self-esteem	−.01 (.01)	.03	.03 (.02)	.06	.04 (.02)**	.05	−.01 (.02)	.07	.03 (.01)*	.04
Life satisfaction	.02 (.02)	.10*	.02 (.02)	.07	.04 (.02)*	.08*	.02 (.02)	.12**	.05 (.01)**	.00
Sample 2										
Well-being/affect composite	−.02 (.01)	.02	.04 (.02)*	.01	.00 (.02)	.07*	−.00 (.02)	.07	.02 (.02)	.07*
Well-being composite	.02 (.02)	.08	.08 (.02)***	.10*	.04 (.02)*	.12***	.03 (.02)	.09	.06 (.02)***	.09**
Self-esteem	.04 (.02)*	.06	.09 (.02)***	.05	.05 (.02)**	.12***	.05 (.02)**	.06	.09 (.02)***	.12***
Life satisfaction	.04 (.02)*	.12***	.08 (.02)***	.13***	.04 (.02)	.11***	.03 (.02)	.10**	.04 (.02)*	.08*
Positive affect	.01 (.02)	.04	.04 (.02)*	.08*	−.00 (.02)	.08	.00 (.02)	.08	.03 (.02)	.07
Negative affect	.00 (.01)	.01	−.06 (.02)**	.08	−.02 (.01)	.03	−.02 (.02)	.08*	−.02 (.01)	.03

Note. Sample 1 *df* = 158; Sample 2 *df* = 142. Estimates (β̂) are approximate standardized regression coefficients with random effects SD estimate τ̂ across individuals. The well-being composite is the average of self-esteem and life satisfaction state measures. The well-being/affect composite is the average of self-esteem, life satisfaction, positive affect, and negative affect (reversed) state measures. All relationships are based on observations assessed on the same day.

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

TABLE 5 Well-being states predicting change in personality states (cross-lagged path *d* in Figure 1)

Well-being/affect state at time *t* − 1	Personality state at Time *t*									
	Extraversion		Emotional Stability		Conscientiousness		Agreeableness		Openness	
	β̂ (SE)	τ̂	β̂ (SE)	τ̂	β̂ (SE)	τ̂	β̂ (SE)	τ̂	β̂ (SE)	τ̂
Sample 1										
Well-being composite	.01 (.02)	.02	−.02 (.02)	.02	.05 (.02)*	.11**	.06 (.02)**	.11**	.07 (.02)**	.12**
Self-esteem	.01 (.02)	.01	−.03 (.03)	.05	.03 (.02)	.10**	.09 (.04)*	.20*	.05 (.02)*	.12***
Life satisfaction	.01 (.02)	.04	−.01 (.02)	.02	.06 (.02)**	.10**	.05 (.02)**	.09*	.06 (.02)**	.10**
Sample 2										
Well-being/affect composite	.12 (.02)***	.09**	.14 (.02)***	.14***	.05 (.02)**	.09***	.07 (.02)***	.11***	.09 (.02)***	.07***
Well-being composite	.09 (.02)***	.09***	.09 (.02)***	.13***	.02 (.02)	.10***	.05 (.02)**	.11***	.09 (.02)***	.10***
Self-esteem	.07 (.02)***	.09**	.08 (.02)***	.12***	.03 (.02)	.11***	.05 (.02)*	.11***	.09 (.02)***	.07***
Life satisfaction	.08 (.02)***	.07***	.07 (.02)***	.11***	.01 (.02)	.09***	.04 (.02)*	.13***	.07 (.02)***	.10***
Positive affect	.13 (.02)***	.10**	.10 (.02)***	.13***	.06 (.02)***	.09***	.08 (.02)***	.11***	.10 (.02)***	.08***
Negative affect	−.08 (.02)***	.09**	−.11 (.02)***	.10***	−.04 (.02)*	.08***	−.04 (.02)**	.07***	−.04 (.02)*	.05***

Note. Sample 1 *df* = 158; Sample 2 *df* = 142. Estimates (β̂) are approximate standardized regression coefficients with random effects standard deviation estimate τ̂ across individuals. The well-being composite is the average of self-esteem and life satisfaction state measures. The well-being/affect composite is the average of self-esteem, life satisfaction, positive affect, and negative affect (reversed) state measures. All relationships are based on observations assessed on the same day.

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

sampling period. Across Samples 1 and 2, there was evidence of reliable individual differences in the within-person relationships between personality and well-being states (see $\hat{\tau}$ in Tables 2–4, and 5). However, dispositional personality traits and individuals' mean level of exhibited personality states were generally not found to moderate within-person pathways between personality and well-being states (see Table 6). This was the case for both concurrent and lagged relationships between personality and well-being states. For instance, individuals who were both high and low on Conscientiousness tended to experience higher well-being in moments when their behavior was more conscientious, and individuals who were both high and low on Openness tended to experience higher well-being in moments when their behavior was more open.

The only exception to this pattern was that in Sample 1, mean state Emotional Stability moderated within-person associations between state Emotional Stability and state well-being, and in Sample 2, dispositional Emotional Stability moderated within-person relations between state Emotional Stability and state well-being. Individuals who were more emotionally stable exhibited a weaker relationship between their state Emotional Stability and their experiences of well-being, compared to individuals who were less emotionally stable.

By contrast, dispositional well-being significantly moderated a number of pathways in Sample 1: Specifically, mean state well-being (individuals' average level of self-esteem and life satisfaction during experience sampling) and dispositional self-esteem both moderated within-person associations between four of the five personality states (Extraversion, Conscientiousness, Agreeableness, and Openness) and state well-being. The moderations were such that individuals who were dispositionally high in self-esteem, and individuals who exhibited a higher level of self-esteem and life satisfaction on average during the experience sampling period, exhibited weaker within-person relationships between personality states and momentary experiences of well-being. However, the moderating influence of well-being was generally not significant in Sample 2. In Sample 2, dispositional well-being (average of dispositional self-esteem, life satisfaction, and relationship well-being measured at baseline) and mean state well-being (average level of self-esteem, life satisfaction, positive affect, and negative affect [reversed]) only moderated within-person relations between state Extraversion and state well-being. Individuals who reported higher levels of dispositional and average well-being exhibited a weaker association between behaving in an extraverted manner and experiencing higher well-being.[3] Finally, across Samples 1 and 2, dispositional well-being generally did not appear to moderate the lagged relationships between personality and well-being states.

The finding that personality traits generally do not moderate within-person relationships between personality and well-being states replicates and extends previous work that has shown that trait Extraversion does not moderate the within-person Extraversion–positive affect link (Fleeson et al., 2002; Lischetzke et al., 2012; McNiel & Fleeson, 2006; McNiel et al., 2010; Zelenski et al., 2012). Moreover, it provides additional support for the trait–state isomorphism hypothesis, or the notion that personality traits and states operate similarly between and within individuals.

The finding that dispositional Emotional Stability and dispositional well-being moderate relations between personality and well-being states (well-being moderation of path e in Table 6) suggests that momentary experiences of well-being are more closely tied to state personality among individuals with dispositionally low well-being. Thus, it may be the case that low well-being individuals are more responsive to variations in behavior or to variations in situations. This effect appears to support prior research showing that low self-esteem individuals are more reactive to both positive and negative stimuli (Campbell & Lavallee, 1993; Jones, 1973; Shrauger, 1975; Swann et al., 1989). Similarly, higher well-being individuals may exhibit weaker associations between state well-being and state personality because their state well-being is less variable in general, although the present data do not support this hypothesis, as the association between well-being and state variability in the present experience sampling studies is quite modest (for detailed analyses, see Magee et al., 2016). However, because the present research was one of the first to examine these questions, and because these effects were generally not significant in Sample 2, more research is needed to further examine the potential role of dispositional well-being in moderating within-person relationships between personality and well-being states.

4 | IMPLICATIONS

There are a number of important implications of this research. First, the present results shed new light on how dispositional personality traits and well-being may come to be associated with one another. That individuals express more positive behaviors in moments when they are experiencing higher well-being suggests that individuals who experience higher well-being more consistently (i.e., those who are dispositionally high on well-being) will also exhibit higher levels of Big Five personality states more frequently (i.e., those who are dispositionally high on personality traits). In addition, findings from the moderation analyses in Sample 1 demonstrate that individual differences in dispositional well-being may result in or be reinforced by individual differences in the nature of the relationship between personality and

TABLE 6 Moderators of within-person relationships for concurrent and cross-lagged relationships between personality states and well-being states

	Personality state				
	Extraversion	**Emotional Stability**	**Conscientiousness**	**Agreeableness**	**Openness**
Moderator	$\hat{\beta}$ (*SE*)	$\hat{\beta}$ (*SE*)	$\hat{\beta}$ (*SE*)	$\hat{\beta}$ (*SE*)	$\hat{\beta}$ (*SE*)
Personality trait					
Dispositional trait					
Sample 1					
Path *e*	−.02 (.02)	.01 (.02)	.00 (.02)	.00 (.02)	−.02 (.03)
Path *c*	−.01 (.01)	.01 (.02)	.02 (.02)	.03 (.02)	.02 (.01)
Path *d*	−.01 (.02)	−.00 (.02)	−.01 (.02)	−.00 (.02)	.01 (.02)
Sample 2					
Path *e*	−.00 (.02)	−.07 (.02)**	−.05 (.03)	−.00 (.02)	.04 (.03)
Path *c*	.01 (.01)	−.01 (.01)	−.01 (.02)	−.01 (.02)	.00 (.01)
Path *d*	.01 (.02)	−.02 (.02)	.01 (.02)	.00 (.02)	−.01 (.02)
Mean state personality					
Sample 1					
Path *e*	.01 (.02)	−.06 (.02)**	−.03 (.03)	−.01 (.03)	−.03 (.03)
Path *c*	−.01 (.02)	−.02 (.02)	−.02 (.02)	−.01 (.02)	.02 (.02)
Path *d*	−.01 (.02)	.00 (.02)	−.00 (.02)	−.04 (.02)	−.00 (.02)
Sample 2					
Path *e*	.02 (.02)	−.04 (.02)	−.03 (.03)	−.00 (.02)	.01 (.03)
Path *c*	−.03 (.01)*	−.01 (.02)	−.02 (.02)	−.02 (.02)	−.02 (.02)
Path *d*	−.01 (.02)	−.02 (.02)	.00 (.02)	.01 (.02)	−.00 (.02)
Well-being					
Dispositional self-esteem					
Sample 1					
Path *e*	−.08 (.02)***	−.01 (.02)	−.07 (.02)**	−.06 (.02)*	−.06 (.02)**
Path *c*	−.00 (.01)	−.01 (.02)	−.05 (.01)***	.00 (.02)	−.01 (.01)
Path *d*	.01 (.01)	.01 (.01)	.01 (.02)	.00 (.02)	−.02 (.02)
Sample 2					
Path *e*	−.05 (.02)*	−.03 (.02)	−.04 (.03)	−.02 (.02)	−.00 (.03)
Path *c*	.02 (.01)	.00 (.02)	.00 (.02)	−.01 (.01)	−.02 (.01)
Path *d*	.00 (.02)	−.00 (.02)	.01 (.02)	.01 (.02)	−.00 (.02)
Mean state well-being					
Sample 1					
Path *e*	−.06 (.02)**	−.04 (.02)	−.05 (.02)*	−.06 (.02)**	−.06 (.03)*
Path *c*	.01 (.02)	−.02 (.02)	−.02 (.01)	.00 (.02)	.01 (.01)
Path *d*	.01 (.01)	−.01 (.02)	.03 (.02)	.01 (.02)	.01 (.02)
Sample 2					
Path *e*	−.06 (.02)*	−.04 (.02)	−.00 (.03)	.00 (.02)	−.02 (.03)
Path *c*	−.01 (.01)	.00 (.01)	−.01 (.01)	−.03 (.01)	−.02 (.01)
Path *d*	−.03 (.02)	−.02 (.02)	−.00 (.02)	−.00 (.02)	−.01 (.02)

Note. Sample 1 *df* = 156; Sample 2 *df* = 140. Estimates ($\hat{\beta}$) are approximate standardized regression coefficients. Dispositional trait measures are the composite of self and informant responses collected before experience sampling. Dispositional self-esteem is the Rosenberg Self-Esteem Scale (1965) measure assessed before experience sampling. Mean state personality is the empirical Bayesian estimate of the participant's average personality state across all experience sampling assessments. Mean state well-being is the empirical Bayesian estimate of the participant's average well-being composite across all experience sampling assessments in Sample 1 and the well-being/affect composite in Sample 2. Coefficients represent standardized regression coefficients of the cross-level interaction—how individual differences moderate the within-person relationships presented in Tables 2–4, and 5 for paths *e, c,* and *d*, respectively.
* *p* < .05 ** *p* < .01 *** *p* < .001

well-being states. Thus, this research suggests a bottom-up, within-person account of how personality traits and dispositional well-being develop within individuals and come to be associated with one another between individuals.

Second, findings from the cross-lagged analyses indicate that it may be possible to increase well-being through enacting certain types of behaviors. That is, individuals may be able to develop higher self-esteem and higher life satisfaction through incorporating more extraverted, emotionally stable, conscientious, agreeable, and open behaviors into their daily lives. Even more strongly, this research suggests that individuals may be able to increase the positivity or social desirability of their behavior by increasing their level of well-being. Given the importance of well-being (Ryan & Deci, 2001; Seligman & Csikszentmihalyi, 2000; Sheldon & King, 2001) and considering the wide-ranging associations between Big Five personality traits and important life outcomes (e.g., Noftle & Robins, 2007; Ozer & Benet-Martínez, 2006), such interventions would have great potential for improving individuals' daily functioning and adjustment.

5 | LIMITATIONS AND FUTURE DIRECTIONS

The relations between personality and well-being states in the present samples are correlational and consequently preclude strong causal inferences. While lagged analyses showed that state personality in one moment is associated with change in well-being and that well-being in one moment is associated with change in state personality, they do not determine with certainty that changes in behavior cause change in well-being and that changes in well-being cause change in behavior. While there have been a number of experimental studies that have examined the effect of Extraversion on positive affect (Fleeson et al., 2002; McNiel et al., 2010; Smillie et al., 2015; Zelenski et al., 2012) and the effect of Emotional Stability on negative affect (McNiel & Fleeson, 2006), future experimental research examining causal pathways between *all* Big Five states and multiple indicators of well-being is clearly warranted given the present results.

The current research is also limited by the use of trait measures to assess personality and well-being states. Specifically, in Study 1, self-esteem and life satisfaction were assessed with the full 10-item and five-item scales, and in Study 2, personality states were measured with items taken from the Big Five Inventory. While participants were instructed to report on their behavior and well-being in the context of the past 30 min, a number of the items in these scales refer to individuals' behavior and well-being in general. These include items such as "has an assertive personality" (Extraversion), "is considerate and kind to almost

everyone" (Agreeableness), "the conditions in my life are excellent" (life satisfaction), and "I am a person of worth" (self-esteem). As such, responses to these items may reflect a mix of state and trait content, and the observed individual differences may reflect differences in how participants interpreted these items. However, the fact that we found substantial variation in well-being and personality states across Samples 1 and 2 suggests that the items were able to detect within-person changes from one measurement occasion to the next.

A related issue is the reliance on self-reported behavior and well-being generally (Block, 1989; Furr, 2009). Participants' account of their personality and well-being states may be influenced by a number of biases, including their motivation to respond in a socially desirable, or positive, manner. Thus, it is possible that individuals tend to report both higher well-being and more positive behavior (more extraverted, emotionally stable, conscientious, agreeable, and open) in moments when they are more motivated to respond socially desirably. Similarly, research has shown that when individuals are experimentally induced to be in a positive mood, they selectively attend to and recall more positive information (e.g., Natale & Hantas, 1982; Sarason, Potter, & Sarason, 1986; Teasdale & Fogarty, 1979; Teasdale & Russell, 1983). Thus, concurrent relationships observed between personality and well-being states, as well as lagged effects of well-being states on personality states, may potentially result, at least in part, from individuals' tendency to attend to and recall positive information about themselves when they are in more positive moods. Future research may address this problem by using experimental designs in which behavior is observed in the lab and rated according to Big Five trait content.

Other limitations of the current research include the fact that our sample was drawn from psychology undergraduate populations. As a result, our two samples were skewed toward being female (69–76%), being young (median ages = 19 and 21), and having a higher socioeconomic status. In addition, samples were composed almost entirely of ethnic Caucasian and Asian students residing in a Canadian city. As such, while the combined sample sizes from these two samples were substantial ($N = 307$), these findings are not generalizable to the broader population. Future research should examine relations between personality and well-being states among community samples with more diverse groups of individuals.

6 | CONCLUSION

Short-term variation in Big Five states is tied to fluctuations in well-being within individuals. In this research, individuals' behavior was more extraverted, emotionally stable, conscientious, agreeable, and open in moments when they reported

higher self-esteem and life satisfaction, greater positive affect, and less negative affect. Moreover, this research showed that behavior and well-being dynamically influenced one another in daily life. Specifically, more positive state personality in a given moment was associated with increases in self-esteem and life satisfaction. In addition, higher levels of well-being (higher life satisfaction, self-esteem, and positive affect, and less negative affect) in a given moment were associated with positive change in personality states (i.e., behavior became more extraverted, emotionally stable, conscientious, agreeable, and open). Finally, this research found little to no evidence that these within-person relationships were moderated by personality traits, and mixed evidence that they were moderated by dispositional well-being.

This study was one of the first to (a) examine relations between all Big Five personality states with multiple indicators of well-being, (b) use cross-lagged analyses to assess the relative influence of personality and well-being states on one another in daily life, and (c) examine possible moderations of all five dispositional personality traits and dispositional well-being. Findings from this research suggest that it may be possible to increase well-being through promoting Big Five behaviors, and that it may be possible to facilitate the development of more positive behaviors through increasing individuals' level of well-being (positive affect in particular).

CONFLICT OF INTERESTS

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

ENDNOTES

[1] Moreover, associations between personality states and self-esteem and life satisfaction remained significant while controlling for positive and negative affect, indicating that personality states are uniquely associated with self-esteem and life satisfaction, over and above their relations with affect.

[2] In addition, results showed that positive affect was the only well-being state that independently predicted change in all five personality states, over and above the influence of the other three well-being states (i.e., state self-esteem, life satisfaction, and negative affect).

[3] Using the same measures of dispositional well-being in Sample 1 (dispositional self-esteem and mean state self-esteem and life satisfaction)

to examine moderating effects did not change the pattern of results for Sample 2.

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SUPPORTING INFORMATION

Additional Supporting Information may be found online in the supporting information tab for this article.
Table S1