LAY BELIEFS IN PAST PERSONALITY CHANGE AND CHANGE STRATEGY USE

By

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(Under the Direction of BRIAN HAAS)

ABSTRACT

This research advances the way that we understand how people go about changing who they are. One unanswered question is how do lay people perceive and think about changes to their personality? In this study, we compared participant's perceptions of who they are with their perceptions of who they used to be. We aimed to elucidate individual differences in people's perception of past change and were interested in understanding if people tended to perceive past changes in terms of either volitional or situational factors. We also investigated individual differences in the capability to change one's personality by investigating the sense of agency as a key concept that should affect one's ability to change. Perceived personality change was calculated in the socially desirable direction (directional change) and for overall change (absolute) which does not consider the direction of change. We found that implicit belief systems around changeability or stability were associated with whether people believe they have changed over time. Incremental theorists reported more directional and absolute change. People's beliefs in their personality change were also associated with whether or not they endorsed strategies that should help them change their

personality. Participants who endorsed strategies for change also believed that they changed more over time. Lastly, we demonstrated that there are individual differences that predict someone's ability to change their perceived personality. Agency plays a role in the relationship between strategy endorsement and perceived change and this role is different when considering directional and absolute change. This research increases our understanding of how people change their personalities. We demonstrated that people perceive past personality change and report said change as occurring because of volitional and/or situational strategies. Lastly, we demonstrated that beliefs about implicit theories and sense of agency play an important role in the perception of change over time.

INDEX WORDS: Personality Change, Implicit Theories of Personality, Change Strategies, Agency, Volitional Personality Change

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CHAPTER 1

Introduction

Life coaching is one of the fastest growing six-figure careers in the world (Van Riper, 2006). Therapy performed by psychologists, social workers, and counselors is an $18 billion-dollar industry (IBISWorld, 2018). Americans spend $10 billion a year on self-help books and programs in attempt to help change themselves for the better (Linder, 2009). Research seems to be clear on the topic—people care about and desire to change who they are (Hudson & Fraley, 2016a; Hudson & Fraley, 2016b; Hudson & Roberts, 2014). Research has focused on investigating volitional personality change prospectively and from the perspective of psychological paradigms used by personality psychologists. Therefore, one unanswered question is how do lay people perceive and think about changes to their personality? In this study, we compare participant's perceptions of who they are with their perceptions of who they used to be. We aim to elucidate individual differences in people's perception of past change and are interested in understanding if people tend to perceive past changes in terms of either volitional or situational factors.

Personality Stability and Change

Personality has historically been viewed as the automatic and stable pattern of thoughts and behaviors that define a person's typical way of responding to different situations (Roberts, 2009). Common belief holds that if a construct demonstrates temporal consistency, that it cannot change (Roberts, Walton, & Viechtbauer, 2006);

however, Roberts and colleagues (2006) argue that this misunderstanding comes from the semantics around terms like “stability” and “change.” These terms are used broadly and interchangeably in personality research but fail to consider that continuity and change come in many forms and can occur simultaneously (Block, 1971).

Subsequent research has demonstrated that personality can change in various ways. Personality change can occur through individual maturation processes. For example, research on personality change over the lifespan has demonstrated that the Big 5 traits have systematic increases or decreases over one’s life time (Specht, Egloff, & Schmukle, 2011; Robins, Fraley, Roberts, & Trzesniewski, 2001; Roberts, Walton, & Viechtbauer, 2006). This research has demonstrated changes in rank-order consistency, which is the relative placement of individuals within a group over time and mean-level changes, which measures how a group of people increases or decreases on personality traits over time (Roberts, Walton, & Viechtbauer, 2006). Personality changes can also occur from physical changes to the brain through injury, surgery and diseases such as Alzheimer’s. For example, children become more aggressive and paranoid, and less inhibited after experiencing a traumatic brain injury (Max, Robertson, & Lansing, 2001). People with Alzheimer’s experience increases in neuroticism and decreases in all other Big 5 traits. Neuroticism and conscientiousness demonstrate the most change in patients with Alzheimer’s which means they could be early signs of the disease and subsequently act as accurate predictors for personality change in dementia patients (Robins Wahlin, & Byrne, 2011).

Personality change can also occur from the desire to change. People's desires to change their personality determines their current pattern of thoughts, feelings, and behaviors (Denissen & Penke, 2008; Morf, 2006) and can shape the development of their personality traits over time (Hennecke, Bleidorn, Denissen, & Wood, 2014). Personality can also be changed through changes in people's social roles and interpersonal circumstances. For example, becoming a parent, getting married, and forging new relationships are likely to change people's personalities (Edmonds, Jackson, Fayard, & Roberts, 2008). For instance, research demonstrates decreases in facets of neuroticism after participants entered into their first long-term romantic relationship (Lehnart, Neyer, & Eccles, 2010). The authors demonstrate that young adults experience fewer negative feelings and worries after finding a safe haven and argue that individual differences in life experiences influence the amount and direction of personality change. Foreign travel is associated with changes to openness to experience and generalized trust (Cao, Galinsky, & Maddux, 2014). People that travel abroad have increased diversity of experiences as compared to those who do not, which plays a key role in increasing generalized trust. Foreign travel also increases exposure to multicultural environments, which has been associated with decreased prejudiced attitudes towards foreigners through personality shifts in openness to experience (Sparkman, Eidelman, & Blanchar, 2016).

Lastly, personality change can occur through behavioral and pharmacological interventions. For example, a 3-month intensive meditation retreat decreased levels of neuroticism in participants. Interestingly, this decrease in neuroticism was related to

telomere length and immune cell longevity, pointing to the negative relationship between neuroticism and positive health outcomes (Jacobs et al., 2011). Psilocybin has also been reported to affect personality traits like openness to experience (MacLean, Johnson, & Griffiths, 2011). For example, participants who had a mystical experience from psilocybin reported increases in aesthetic appreciation, imagination, and creativity even if they did not intend to change on these traits. These changes related to openness to experience remained significantly higher than baseline for more than a year after the session. These findings indicate that personality can be changed through intervention and point to the importance of using meditation and drugs to help people change their personalities. This research is particularly important in clinical and health trials where these interventions could help patients with terminal diseases and mental illnesses. Overall, this line of research demonstrates that personality changes in various ways. The current study investigates personality change by examining how people have changed their personalities in the past. Generally, the current study investigates the questions of how people think about who they have become by examining participant's perceptions of their past personality traits.

Perceptions of Current and Past Personality

The accuracy of self-perceptions is important to consider when measuring psychological constructs. Evidence suggests that in some research people self-enhance their self-perceptions (overrate), other times they self-diminish (underrate), and yet other times people seem to make relatively unbiased evaluations of themselves (John & Robins, 1994). The first of two competing frameworks for understanding accuracy of

self-perceptions argues that self-perceptions are created from the same processes that people use to make perceptions of others. These perceptions created from behavioral observation are considered to be true reflections of the self (Bem, 1972). The second framework argues that self-perceptions are fundamentally flawed because of people's motivations to self-enhance and thus report self-perceptions as more positive than they actually are (John & Robins, 1994). John and Robins (1994) argue that perhaps both views are valid by demonstrating that even though people tend to self-enhance (bias), there were substantial individual differences that did not always point toward biased self-perceptions. The current study aligns with the framework that personality is perceived and evaluated through people's behaviors. Considering work on consensus of personality ratings (McCrae, 1982; Letzring, Wells, & Funder, 2006) and the validity of self-report personality measures (McCrae, 1982; Letzring, Wells, & Funder, 2006) it has been demonstrated that people's self and peer-evaluations of personality significantly align (John & Robbins, 1994). These findings are important because they demonstrate that people seem to be accurate self-evaluators.

Self-perceptions can be anchored in past, current, and future selves. Wilson and Ross (2001) argue that people have a desire to evaluate their current selves favorably and demonstrate that participants are more critical of past selves than of current selves. However, other research demonstrates the opposite finding. For example, Robins, Noftle, Trzesniewski, and Roberts (2005) demonstrate that that the tendency to derogate past selves is less apparent in a sample of young adults where change is salient and common. In fact, participant's perceptions of personality change showed

correspondence with their actual personality change. To ensure participants more accurately report perceptions of their past personalities we will consider Wilson and Ross (2001), where it is believed that greater distance may produce more derogation of past selves. Therefore, we ask participants to consider themselves 2 years ago when reporting past personality of their past selves. Lastly, participants in the current study, as compared to past research, will not be specifically prompted to think about their desires or abilities to change their personalities, which may be one explanation for people's tendency to derogate past selves. By using a short time period (i.e., 2 years) that is not too distant from the current and by not specifically prompting participants to think about their desires and ability to change, we increase the likelihood that we are collecting the most accurate past self-perceptions that we can. Implementing these concepts do not completely solve the concern of the accuracy of self-perceptions, but we believe that this issue is less of a concern in the current study which investigates perceived personality change.

The accuracy of self-perceptions is important when measuring actual personality change; therefore, this limitation is less of a concern for the current study as we are interested in people's perceptions of their change, not their actual change. People's reports of changing in socially desirable ways could indicate that they are "illusory optimists" that have deluded themselves into believing they have changed for the better (Robins et al., 2005). Research demonstrates that creating positive illusions in relationships is important for relationship satisfaction (Murray, Holmes, & Griffin, 1996) and it could be that creating positive illusions around one's personality could also have

positive effects on constructs like self-esteem and life satisfaction (Allport, 1937; Greenwald, 1980). The current study does not separate truth from perception, but people's past perceived change, either accurate or illusory, is still an important artifact of perception that can have profound implications for research on volitional personality change.

Volitional Personality Change

The way that people think about their past changes may be in part informed by research that has studied the mechanisms of prospective volitional personality change. Research demonstrates that people have a desire to change their personality. When asked to complete personality inventories for current and desired (future) selves, nearly all (85-95%) of participants report a desire to increase in each Big 5 trait (Hudson & Roberts, 2014). Though more prevalent for younger individuals, this finding holds even when using a sample of older adults (Hudson & Fraley, 2016b). The desire to change is not just an artifact of methodology, for example, when using open-ended questions, Baranski, Morse, and Dunlop (2017) found that about 67% of participants freely report a desire to change their personality and tend to use Big 5 constructs when making these reports (i.e., I want to be more talkative).

If people report desires to change their personality, the next logical question is whether people can actually volitionally change their personality. Though prior research tends to focus on actual change, it still provides some insight for the present study which investigates the perception of past change. This prior research demonstrates that when individuals are prompted to think about their desire to change, that they report

systematic changes in their personality. For example, in a longitudinal study where personality was measured weekly for four months, participants report positive change in the personality traits that they desired to change (Hudson & Fraley, 2015). This begs the question then, is wanting to change enough to predict actual change? A 15-week longitudinal study had participants report their personality and freely accept and complete weekly challenges. These challenges were behavioral goals, intended to help participants work toward their desired changes. Results indicated that predictions for actual change occurred only for those who completed the challenges. Thus, people have the capability to change their personalities, but it takes work and active effort to do so (Hudson, Briley, Chopik, & Derringer, 2018).

Research also indicates that people seem to take steps to change their personality. For example, college students who feared becoming boring persons engaged in increased binge-drinking behavior, in attempt to become more fun and interesting persons (Quinlan, Jaccard, & Blanton, 2006). Students also strategically chose extracurricular activities that they believed would help them change into their desired personality trait (Stevenson & Clegg, 2011). This past research relies on prompts from researchers for participants to think about their desire and ability to change. This raises the possibility that volitional change only occurs with these experimental prompts. The purpose of the present study was to fill this gap by demonstrating that perceptions of past volitional change occurs without specific prompts related to people's desires and abilities to change. Subsequently, this measure of participant's

perception of past change could be related to individual differences amongst participants.

Individual Differences in Perception of Change

Research in personality change has demonstrated that dissatisfaction with life predicts desire to change one's personality (Hudson & Roberts, 2014) and that people report increased well-being when they were able to successfully reach their desired change goal (Hudson & Fraley, 2016b). This indicates that dissatisfaction may be an initiator of a personality change goal, and that progress towards change eliminates dissatisfaction. Life satisfaction and wellbeing may predict desire to change, but there may be other underlying mental processes that are responsible for the differences in why some people change while others do not.

Implicit personality theory posits that people's judgments are influenced by the implicit beliefs they hold about the self and others (Chiu, Hong, & Dweck, 1997). Dweck and Leggett (1988), describe how a person's belief about the changeability of self-attributions predict self-judgments. For example, when considering academic achievement, those who consider intelligence to be a fixed entity, tend to focus on judging their levels of intelligence. Conversely, those who consider intelligence to be changeable tend to focus on developing their intelligence. Therefore, some people are entity theorists and tend to believe a trait is fixed, while others are incremental theorists and tend to believe a trait is malleable. These beliefs tend to be domain specific (i.e., intelligence), and some evidence indicates that people hold implicit theories of personality. Dweck (2008) argues that the underlying beliefs about

personality explain many patterns of adaptive behavior and are important to consider when thinking about personality development and personality change. Therefore, we believe that a person's belief in the malleability of personality could be an implicit theory that explains the likelihood that someone not only believes in change but also reports perceived changes in their past personalities.

Past research has focused on the question of why people change, but little is known about individual differences in a person's ability to change their personality. One such explanation for understanding how some people change is the psychological construct known as sense of agency or the idea that a person is the initiator of their own actions (Synofzik, Vosgerau, & Voss, 2013). Sense of agency represents the beliefs that one plays an active role in realizing their desires, making plans, and carrying out their own actions (Lewis, 1990). Other constructs like locus of control, free will, and self-efficacy can sometimes be considered together with sense of agency; however, agency is unique because it specifically measures one's belief that they play an active role in their actions and subsequent outcomes (Tapal, Oren, Dar, & Eitam, 2017).

Sense of agency can be thought of in two forms, the feeling of agency (FOA) and the judgment of agency (JOA). Feeling of agency the implicit feeling of being an agent of your own actions, while judgment of agency are the explicit judgments people make about their agency (Moore, 2016). The FOA relies on sensorimotor processes and automatically registers agency or non-agency while the JOA is controlled by higher level cognitive processes where individuals must employ causal attribution processes. This

difference between the two highlights an important distinction between agency and causality (Moore, 2016).

Being that the sense of agency is either automatic or controlled, the measurement for sense of agency is either implicit or explicit. Implicit measures attempt to make inferences of an individual's agentic experience by assessing correlates of behavior. With implicit measures an individual is never directly asked about their sense of agency (Moore, 2016). One common example of an implicit measure is called intentional binding which uses time perception as a proxy for sense of agency. In this paradigm when a person makes a voluntary action the perceived time of the action and its consequences shift towards each other. Researchers believe that the central nervous system binds together sensorimotor events that surround voluntary action and therefore consider the time shift between actions and their consequences to be an implicit marker for sense of agency (Haggard, Clark & Kalogeras, 2002). Explicit measures directly ask the participant to report their sense of agency. These measures might be accompanied with behavioral tasks (i.e., visual feedback), but oftentimes are self-report measures (Moore, 2016). In the current study, we focus on JOA and use an explicit self-report paradigm to obtain a measure of an individual's conscious belief in their sense of agency.

Research on sense of agency, which was originally developed from work on learned helplessness and locus of control (Abramson, Seligman, & Teasdale, 1978; Newman, Brown, & Rivers, 1983), slowed in the 80's; however, a resurgence has occurred mostly due to neuroscientists' interest in understanding the precursors of

sense of agency (Tapal, Oren, Dar, & Eitam, 2017). Research on sense of agency has thus been diverse and has important contributions across many fields. For example, the lack of sense of agency may explain some symptoms for patients with schizophrenia, anosognosia, and obsessive-compulsive disorder (Daprati et al., 1997; Fotopoulou et al., 2008; Gentsch, Schütz-Bosbach, Endrass, & Kathmann, 2012). Less sense of agency could also be associated with the negative health outcomes related to aging and to human computer interaction where people may experience less sense of agency as computers become more integrated into human's lives (Berberian, Sarrazin, Le Blaye, & Haggard, 2012). Lastly, and most relevant for the current study, sense of agency is inherently related to concepts of responsibility and free will. Sense of agency helps to guide concepts of responsibility, and responsibility plays an important social function. People can hold others and themselves accountable for their actions, thus allowing behavior to be managed through punishment and reward (Frith, 2014). Free will, or the belief that you have the power to make your own choices, free from intervention from any outside influence (e.g., deities, fate,) is also tied to sense of agency. Given these constructs it becomes apparent that sense of agency could be related to concepts of personality change. Because people with a sense of agency believe that they have the power to control their behaviors, they should report more perceived change. However, this relationship could be affected by a person's selected strategy for change (i.e., volitional vs situational strategies). It important to consider people's perceptions of the strategies they perceived to use when changing their personalities.

Strategies for Personality Change

The strategies that people use to change their personalities is not well understood. Understanding the ways that people change could have profound implications for lay and clinical samples that desire to change their personalities. One study categorized self-reported free responses to either cognitive or behavioral strategies (Baranski, Morse, & Dunlop, 2017). This is one useful way to think about the specific strategies people use, but there are a wide range of mechanisms that may cause personality change. These mechanisms range from biological maturation to social and situational influences (Kaw Vaidya, Gray, Haig, & Watson, 2002; Edmonds, Jackson, Fayard, & Roberts, 2008), and volitional actions (Hudson & Fraley, 2015; Caspi & Roberts, 2001). In the present study we focus on the volitional (i.e., intentional or active) actions of the individual and situational (i.e, unintentional or passive) factors that happen to the individual that could be responsible for a person's perceived past personality change.

In applied and clinical areas of psychology it is widely believed that people can play an active role in their own development (Heckhausen, Hundertmark, & Krüger, 1992; Reimer, DeWitt, Goudelock, & Walker, 2009). Recently this belief has migrated into social psychology and specifically into research on personality development and change. For example, Hudson and Roberts (2014) created the Change Big Five Inventory to measure the motivation for personality change. This line of volitional research has continued in recent years to show that people desire to change their personalities

(Hudson & Fraley, 2016a), and that prolonged personality change seems to require active work on behalf of the individual (Hudson et al., 2018).

A distinct line of research from volitional personality change focuses on the effect of situational changes over a person's life. This research demonstrates that personality can develop from natural maturation processes (Specht, Egloff, & Schmukle, 2011; Robins, Fraley, Roberts, & Trzesniewski, 2001; Roberts, Walton, & Viechtbauer, 2006), from changing social roles (Lüdtke, Roberts, Trautwein, & Nagy, 2011), and be affected by differences in life experiences (Kaw Vaidya, Gray, Haig, & Watson, 2002; Edmonds, Jackson, Fayard, & Roberts, 2008). This line of research points to the idea that the situations people experience can affect their personalities. For example, starting a new job, moving homes, beginning new relationships, and going to college among many other situations can have different effects across the Big 5 personality traits (Lüdtke, Roberts, Trautwein, & Nagy, 2011). Personality change can therefore come about from purposeful attempts performed by the individual or from passive effects of the situations that people experience. The present study investigates these two mechanisms for change in attempt to understand their relationship to past perceived personality change and sense of agency.

CHAPTER 2

Present Study

The purpose of the present study was to build upon past research on personality change. Specifically, this study sought to demonstrate that without asking participants to attempt to change their personalities that people could perceive past personality change and report said change as occurring volitionally or situationally. We measured perceived personality change by comparing participants self-reported current and past personality ratings. Perceived personality change was calculated in the socially desirable direction (directional change) and for overall change (absolute change) which does not take into account the direction of change. We believe that certain individual differences will predict participant's perceived personality change. Specifically, we investigated the relationship between implicit theories of personality and perceived personality change. **Hypothesis 1:** Entity theorists will report less perceived change, while incremental theorist will report more perceived change.

Next, because little is currently known about how people change their personality and its relation to perceived change we investigated the relationship between past perceived personality change and strategy use. We believe that the endorsement of strategies should correspond to higher average perceived change. This result would demonstrate for the first time that people not only perceive that that they changed their personality but that they had strategies that aided in the process.

Hypothesis 2: Participants that endorse strategies intended to help them change on the Big 5, will have more average perceived change on the Big 5.

Lastly, because research has focused on wellbeing and life satisfaction as the main motivators for change we wanted to further understand the relationship between individual differences in the capability to change one's personality. Therefore, we investigated the relationship between agency and either volitional or situational strategies and its effect on perceived personality change.

Hypothesis 3: More agentic participants will have more perceived change when they endorse volitional strategies, while less agentic participants while have more perceived change when they endorse situational strategies.

CHAPTER 3

Pilot Study

We completed a qualitative pilot study to investigate concepts about personality change that would ultimately provide us with guidance on the development of the design and method for the current quantitative study. The pilot study produced insights into how people view and describe changes in their personality and what strategies they used to change. We were able to learn more about how participants' personalities had changed over time, what characteristics they were currently working on changing, and what strategies and experiences had the biggest effect on their personality change.

32 participants wrote free responses on 7 open-ended questions about their past, current, and future characteristics (i.e., not specifically on their personality). First, participants wrote about how their characteristics had changed in the past. They then discussed the characteristics they were currently working to change and the characteristics they were planning to change. For both questions, they described the specific strategies they used or planned to use to change their personalities. Lastly, participants were presented with specific personality traits (Big 5) and asked to write about how someone could go about changing these characteristics.

We investigated participants responses using a qualitative approach that allowed us to understand their beliefs about personality change and the strategies they used for change. In other words, we were looking for general trends on how people talk about

their personality change and what strategies they reported were responsible for their change. There were some key findings that guided the design of the current study. For example, without prompting people to think about their personalities specifically, participants still talk about their characteristics changing in terms of the Big 5 traits, providing credibility for the use of a Big 5 personality questionnaire in the current study. Secondly, there were cases where participants indicated that certain traits were not changeable, pointing to the need to measure implicit theories of personality to better understand people's different beliefs about personality change. Lastly, participants were able to identify why they believed their personalities had changed. Volitional and situational strategies were commonly reported to be responsible for change, providing reason to further investigate the relationship between these two types of strategies. The volitional strategies were unique to specific traits, and many corresponded with the trait-level challenges described in Hudson et al. (2018) and therefore were helpful in creating the volitional and situational scale described in the method section. Overall, the qualitative pilot study provided us a better understanding of how people talk about their personality change and provided invaluable insight into the best methods for the current study's design.

CHAPTER 4

Method

Participants and Procedures

Participants were recruited from Amazon's Mechanical Turk (MTurk). This online crowdsourcing marketplace allows individuals to complete online tasks for compensation. A brief description of the study's tasks, duration, and compensation were added to the site in September 2019. The study was described to potential participants as an investigation of people's thoughts about the development of who they are. After providing informed consent, participants completed the measures described below and were debriefed at the end of the survey. Participants received $0.75 for completing the survey. Any participant that provided an incorrect response to either of two attention check questions was excluded from the dataset (*N* = 15). 3 additional participants were excluded for poor responses (e.g., responding the same on every item). Participants (*N* = 318, 185 males), were all located in the USA, ranged in age from 18-72 (*M* = 36.80, *SD* = 11.46) and identified as 71% white, 13% black or African American, 7% Asian, 5% multiracial, 3% Hispanic or Latino, and 1% of another race. Given the estimated sample size of 300 (based on available funding), we had 80% power to detect an effect size of Pearson's *r* = .160 for Hypothesis 1, and Cohen's f = .08 for Hypotheses 2 and 3. Thus, we had 80% power to detect small-to-medium effect sizes.

Measures

Personality traits. Participants provided self-reported ratings of their personality traits using the Big Five Inventory (BFI; John & Srivastava, 1999). The BFI is a 44-item questionnaire that measures the 5 domains of personality: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Mean α current ratings = .857, Mean α past ratings = .859). Participants rated their agreement on a 5-point Likert scale from ‘‘disagree strongly’’ (1) to ‘‘agree strongly’’ (5). The BFI demonstrates adequate convergence with other personality inventories (John & Srivastava, 1999), despite some concerns that it fails to measure certain aspects of agreeableness like immodesty and manipulativeness (Miller, Gaughan, & Price, 2011). Participant boredom and fatigue have long been concerns in self-report measures (Burisch, 1984), and became increasingly worrisome with the use of online crowdsourcing marketplaces like MTurk. However, research demonstrates that MTurk participants are more diverse than typical college samples, and that the data obtained are equally reliable as data obtained using traditional methods. Since the length of the survey is a concern for the quality of data and the amount of time it takes to collect the data (Buhrmester, Kwang, & Gosling, 2011) and that we desire to measure perceived (i.e., not actual) personality change we believe the BFI to be an appropriate measure of perceived personality for the current study.

Perceived personality change. Participants rated their current and past personalities. Both current and past personality were measured using the BFI, however, for past personality the wording of the BFI items and instructions were modified to have

participants think about themselves in the past (i.e., 2 years ago). Prior to calculating perceived change, all personality items were coded so higher scores reflected higher ratings on each item in a socially desirable direction (e.g., neuroticism is reversed coded to reflect emotional stability) (John & Robbins, 1993). We calculated two forms of change, directional and absolute perceived personality change. By examining these two types of personality change we gain extra insight into the differences between directional and absolute change and their effects on individual differences that may predict change (e.g., implicit theories & agency).

Perceived personality change was calculated based on the difference scores between self-reported current and past personality across each personality domain (e.g., extraversion) for directional and absolute change. Directional perceived personality change was calculated by subtracting each current personality item from its corresponding past personality item. We then averaged these difference scores for each item to calculate overall directional change (*M* = .11, *SD* = .37; range: -1.03–2.06; Mean α = .610). Given that all personality items were coded to reflect the change in the socially desirable direction, higher scores on directional perceived change represent an increase in change in a socially desirable direction. Directional change takes into account any change going toward (positive) and away (negative) from the socially desirable direction. Therefore, people can change on some traits in a socially desirable direction and change on others in a socially undesirable direction resulting in a low directional change score. This means that directional change captures the general direction of change in a socially desirable manner. Absolute perceived personality change allows us

to capture total change free of the direction of the change in personality. Absolute change was calculated by taking the absolute value of the differences scores between items (*M* = .63, *SD* = .42; range: 0-2.06; Mean α = .753). At the lower end, absolute change is bound at zero (no change) and more positive scores represent more overall change in either a positive or negative direction (Human, Biesanz, Miller, Chen, Lachman, & Seeman, 2013).

Because participants took the BFI for current and past selves, the order of each version of the BFI was counter balanced to control for order effects. To identify if there were order effects, we completed a series of independent samples t-tests to determine if the way participants reported their current and past personality was different based on what order they reported their personality (current-past vs past-current). We also analysed whether directional and absolute perceived change was different due to possible order effects. All results demonstrated no differences between the comparison groups, indicating that order did not affect personality reports or perceived change scores.

Implicit theories of personality. Participants completed a 4-item questionnaire to measure their lay beliefs on the stability (entity theorist) or changeability (incremental theorist) of personality in general (i.e., not at the domain level). Participants indicated their level of agreement on a 5-point Likert scale from ‘‘disagree strongly’’ (1) to ‘‘agree strongly’’ (5) for the following items: “My personality is something about me that I can’t change very much,” “I have a certain personality, and it is something that I can’t do much about,” “I can do things to get people to like me, but I

can't change my real personality," and "I can change the way I act, but I can't change my true personality." The average from the three items was used to calculate the participant's implicit personality theory. Higher scores on the scale indicate acceptance of an entity theory, or the belief that personality is unchangeable. This scale has been shown to be a reliable measure with high internal reliability, test-retest reliability, and construct validity (Dweck, Chiu, & Hong, 1995a; Chiu, Hong, & Dweck, 1997).

Sense of Agency. Participants completed the sense of agency scale (SoAS) to measure the extent to which they believe they are the initiator of their own actions. The SoAS acts as a direct measure of cross-situational sense of agency, specifically measuring an individuals' beliefs in their control of their body, thoughts, and immediate environment (Tapal, Oren, Dar, & Eitam, 2017). The SoAS can be parsed into two judgments. Sense of positive agency (SoPA) measures one's control, while sense of negative agency (SoNA) measures ones perceived helplessness over their sense of agency. The current study combined the two judgments to obtain a measure for global sense of agency. Participants completed the 13-item SoAS using a 5-point Likert scale from ''disagree strongly'' (1) to ''agree strongly'' (5). The scale demonstrates adequate reliability and validity and measures unique variance associated with agency aside from related psychological constructs such as self-efficacy, locus of control, free will, and body consciousness (Tapal, Oren, Dar, & Eitam, 2017).

Strategy Endorsement. Participants were asked to think about how perceived changes to their personalities occurred either volitionally (under their control) or situationally (passively, not under their control). Participants were presented with a

brief definition and responded to two items for each of the Big 5 traits. Using a 5-point Likert scale from ‘‘disagree strongly’’ (1) to ‘‘agree strongly’’ (5), participants reported how much they agreed that they decided and controlled their perceived personality change and how much they agreed that situations were responsible for their perceived personality change. Examples to demonstrate possible volitional strategies or situational reasons were provided for each trait to help participants understand possible reasons for their perceived change (Appendix A). Volitional strategies were created by modifying within trait challenges presented in Hudson et al. (2018), which were intended to help participants change their personality for desired change goals. The challenges that were chosen most frequently by participants were shortened and simplified and then modified further to represent the volitional nature of the strategy by adding “I decided” before each strategy. Oftentimes, a volitional strategy could simply be modified to reflect the passive nature of the effect of external situations on personality. For these instances, “I decided” was replaced with phrases like “situations”, “experiences”, or “events” to create the situational examples. Literature on how situations and life events can affect one’s personality were also considered when creating the situational examples (Vaidya, Gray, Haig, & Watson, 2002; Lüdtke, Roberts, Trautwein, Nagy, 2011; Edmonds, Jackson, Fayard, & Roberts, 2008).

Two forms of strategy endorsement were calculated. For H2 a global view of strategy endorsement was used, where scores across all 10 items (volitional and situational) were averaged. This type of strategy endorsement thus measured the degree to which participants endorsed strategies for change including volitional and

situational strategies. For H3, the analysis differentiated between volitional and situational strategy endorsement. Therefore, a difference score between volitional and situational strategy endorsement was calculated. Higher scores indicate the degree to which participants endorsed volitional over situational strategies.

Demographics. Participants completed the demographics survey, consisting of age, sex, and ethnicity.

Analytic Plan. To test the association between implicit theories of personality and perceived personality change we used a correlational analysis. To test the effect of strategy endorsement (average of volitional and situational endorsement) on perceived personality change we used a mixed model analysis where strategy endorsement was entered as a continuous between-subjects variable and the Big 5 domain was entered as a categorical within-subjects variables. To test the effect of agency and strategy endorsement on perceived personality change we ran a similar model as H2, but strategy endorsement was calculated as the difference between volitional and situational endorsement. In the model, agency was entered as a continuous between-subjects variable, strategy endorsement (V – S) was entered as a continuous between-subjects variable and Big 5 domain were entered as a categorical within-subjects variables. The dependent variable for all analyses was perceived personality change both in the socially desirable direction (directional perceived change) and overall (absolute perceived change).

CHAPTER 5

Results

Implicit Theory and Perceived Personality Change

Hypothesis 1, that entity theorists will report less perceived personality change as compared to incremental theorists, was supported. Accepting an entity theory of personality was negatively associated with directional perceived personality change. Entity theory was also negatively associated with overall (absolute) perceived change when considering the directional one-tailed test (Table 1). Therefore, having an entity orientation of personality was associated with less perceived change overall and in the socially desirable direction while having a less entity orientation (indicating a more incremental orientation) was associated with more perceived directional and absolute change.

Strategy Endorsement and Perceived Personality Change

Hypothesis 2, that strategy endorsement predicts perceived personality change in all Big 5 domains, was tested by adding strategy endorsement (average volitional & situational) as a continuous between-subjects variable to the model, creating a mixed model analysis that treats the Big 5 domain as a categorical within-subjects variable and strategy endorsement as a between subjects variable. With directional perceived change as the outcome variable, this analysis indicated a main effect of strategy endorsement, $F(1, 1263) = 13.72$, $p < .001$, $\eta p^2 = .011$, and did not indicate a significant

interaction between strategy endorsement and the Big 5 domain, $F(4, 1263) = 1.01$, $p = .399$, $\eta_p^2 = .003$ denoting no differences across domain on average perceived directional change, $F(4, 1263) = .74$, $p = .566$, $\eta_p^2 = .002$ (Figure 1). Similarly, for absolute perceived change there was a main effect of strategy endorsement, $F(1, 1263) = 21.10$, $p < .001$, $\eta_p^2 = .016$, no **i**nteraction of strategy endorsement and Big 5 domain $F(4, 1263) = 1.78$, $p = .131$, $\eta_p^2 = .006$ and no main effect of Big 5 domain, $F(4, 1263) = .56$, $p = .691$, $\eta_p^2 = .002$ (Figure 2). These findings indicate that strategy endorsement predicted perceived directional and absolute personality change (in all big 5 domains).

Agency and Perceived Personality Change

Hypothesis 3, that more agentic participants will have more perceived change when they endorse volitional strategies, was tested by adding sense of agency as a continuous between-subjects variable to the model, creating a mixed model analysis that treats strategy endorsement (difference between volitional and situational) as a continuous between-subjects variable, and Big 5 domain as a categorical within-subjects variable. This analysis with directional perceived change entered as the outcome variable, indicated a main effect of sense of agency, $F(1, 1253) = 7.12$, $p = .008$, $\eta_p^2 = .006$, no main effect of domain $F(4, 1253) = 2.13$, $p = .075$, $\eta_p^2 = .007$, and a 2-way interaction between sense of agency and strategy endorsement (V – S) that approached significance, $F(1, 1253) = 3.50$, $p = .062$, $\eta_p^2 = .003$**.** Findings when entering absolute perceived change as the outcome variable were similar. Results indicated a main effect of sense of agency, $F(1, 1253) = 37.68$, $p < .001$, $\eta_p^2 = .029$, no main effect of domain,

$F(4, 1253) = .73$, $p = .572$, $\eta_p^2 = .002$, and a non-significant 2-way interaction between sense of agency and strategy endorsement, $F(1, 1253) = 2.13$, $p = .145$, $\eta_p^2 = .002$. Together, these findings point to the idea that differences in average perceived personality change (directional and absolute) are not a result of individual differences in sense of agency and strategy endorsement type. One explanation as to why these findings do not fully support H3 could be because our measure of strategy endorsement is not able to fully capture a difference between volitional and situational endorsement type. Indeed, when looking at the association between volitional and situational average endorsement we find that they are highly positively correlated, $r(318) = .612$, $p < .001$.

Because volitional and situational strategy endorsement were highly correlated we investigated whether the use of all strategies (V and S combined) would interact with agency to affect perceived change. This was tested by adding strategy endorsement (average volitional & situational) as a continuous between-subjects variable to the model, creating a mixed model analysis that treats the Big 5 domain as a categorical within-subjects variable and agency as a continuous between-subjects variable. The analyses indicated an interaction between strategy endorsement and agency, for directional perceived change**,** $F(1, 1254) = 6.04$, $p = .014$, $\eta_p^2 = .005$, and for absolute perceived change, $F(1, 1254) = 15.75$, $p < .001$, $\eta_p^2 = .012$. This indicates that the association between strategy endorsement and agency is related to directional and absolute perceived personality change. The main effect analyses paralleled H2 analyses with the addition of agency and its interactions included in the model.

Lastly, because there was no effect of Big 5 domain on perceived personality change in any of the H3 analyses, we re-ran these same models to understand the interaction of agency and strategy endorsement on perceived change, while excluding domain from the model. There was a significant interaction of strategy endorsement and agency for directional perceived change, $F(1, 1270) = 7.60$, $p = .006$, $\eta p^2 = .006$, and for absolute change, $F(1, 1270) = 15.16$, $p < .001$, $\eta p^2 = .012$, again indicating that association between strategy endorsement and agency is related to directional and absolute perceived personality change.

Figure 3 shows the interaction of strategy endorsement and agency on directional perceived change and indicates that high agency increases the degree to which strategy endorsement is associated with perceived change in a socially desirable direction. A person who is highly agentic, regardless of whether they endorse strategies for change or not reports more directional change. Still though, being highly agentic and endorsing strategies for change increases directional perceived change over those who are highly agentic and don't endorse strategies. Figure 4 shows the interaction of strategy endorsement and agency on absolute perceived change and indicates that high agency decreases the degree to which strategy endorsement is associated with absolute perceived change. Interestingly, people who are high in agency report less overall change (more stability), but also report that they change more if they endorse strategies for change.

Exploratory Analyses

The nature of that data allowed us to complete two exploratory analyses. The first analysis answers the question of whether people believe their personality changes over time. The second looks into what types of strategies (volitional or situational) coincide with change within each Big 5 trait. To test whether participants report a difference between perceived change over time, we used a paired samples t-test to compare participants' reported current and past personality. When considering all traits, there was a significant difference between current personality ratings (M = 3.52, SD = .57) and past personality ratings (M = 3.41, SD = .59), $t(317) = 5.40$, $p < .001$, d = .608, indicating participant's personalities increased in a socially desirable direction over time. When completing paired samples t-tests within trait, all participants increased in all traits, except for extraversion, where there was no difference between current and past ratings (Table 2).

For the second exploratory analysis, we used a mixed model analysis to explore whether volitional or situational strategies were endorsed more within each trait. Big 5 domain was entered as a categorical within-subjects variable, strategy type (volitional or situational) was entered as a categorical within-subjects variable and strategy endorsement (degree of endorsement) was entered as a continuous between-subjects variable. Results indicated a main effect of domain, $F(4, 3170) = 6.31$, $p < .001$, η_p^2 = .008, no main effect of strategy type, $F(1, 3170) = .09$, $p = .761$, $\eta_p^2 < .001$, and a significant interaction between domain and strategy type, $F(4, 3170) = 7.60$, $p < .001$, $\eta_p^2 = .009$. We then used a series of paired samples t-tests to explore the pair-wise

comparisons. The analysis indicated that for extraversion and openness, situational strategies were endorsed more than volitional strategies and for agreeableness and conscientiousness volitional strategies were endorsed more than situational strategies. There were no differences in endorsement type for emotional stability (Figure 5).

CHAPTER 6

Discussion

This research advances the way that personality changeability is understood. Specifically, we demonstrate that implicit belief systems around changeability or stability are associated with whether people believe their personalities have changed. People's beliefs in their change were associated with whether or not they endorse strategies that should help them change their personality. Participants who endorse strategies for change also believe that they have changed more over time. Lastly, we demonstrated that there are individual differences that predict someone's ability to change their perceived personality. Agency plays a role in the relationship between strategy endorsement and perceived change and this role is different when considering directional and absolute change.

General Discussion

Before discussing hypothesis-specific findings, it is important to examine concepts on personality change. One important topic concerns the use of perceived change (instead of actual change) as a measure for personality change. Across the sample, participants reported beliefs that they had increased across the Big 5 traits, except for extraversion which was reported to be relatively stable. The fact that participants report change in a socially desirable direction begs the question of whether

they are accurately reporting changes to their personality or deceiving themselves into believing they are getting better over time.

These issues about self-enhancement are concerns in other studies as well, but importantly it has been demonstrated that actual personality change significantly coincides with perceived personality change (Robins et al., 2005) in a sample of college students. The authors note that when participants believed they had changed on a trait, they indeed showed actual change in the same direction on that trait over 4 years of college. However, these associations were not perfect. One reason could be because of the implicit stereotypes that people hold about personality change relative to life events. College students have stereotypes about the college experience and subsequent transition into adulthood, which may affect their beliefs on how their personalities *should* be changing. For example, young adults likely believe that college is a time to become more conscientious (Swann, 1997), mature, and competent (Roberts et al., 2003). If these beliefs have strong individual differences or are inaccurate then they could affect the relationship between actual and perceived change. This concern is somewhat mitigated in the current study, where we used a more representative sample with participants at various stages of life. Issues around stereotypes surrounding expected change during specific life events were less prevalent in the current study since we did not focus on a single period in one's life (i.e., college students). Still though, implicit beliefs of about time-based life experiences could subsequently affect all participants (at different points in their lives) and is an interesting direction of study for future research.

Though we cannot rule out self-enhancement effects, we know from previous work that perceived personality change is a viable way to measure change in personality. By comparing reports of current personality and past personality (2 years ago) across 44 items, we were able to calculate perceived change in a sensitive manner. Further, examining personality change at a global level provided our analyses a holistic and parsimonious person-centered approach (Human et al. 2013). The nature of this paradigm therefore gives researchers another tool to measure personality change without having to use longitudinal methods. This method is useful, especially when the research question is concerned with understanding the factors that affect personality change but may be less useful if the research question relies heavily on concepts of how people are actually changing.

One key difference between this study and other work on personality change is that we focus specifically on the beliefs or perceptions that people have about their personality change. Broad personality traits are easily assessed using self-report measures, but do not provide any information about how to change on specific traits. Beliefs, on the other hand, can be just as easily measured and can be altered through intervention. By concentrating on perceptions about how people have changed over time and about the changeability of personality, we are able to focus on the *beliefs* of change, which may be an important component of personality development. Dweck (2008) has argued that beliefs are at the core of personality and provide researchers with a unique perspective on how personality can be changed. In fact, small interventions that challenge people's beliefs about the changeability of self-attributes

can bring about real world change. For example, the type of praise that people receive can affect their beliefs on the changeability of traits and ultimately on the positive or negative outcomes they experience. When students are praised for their intelligence they move toward an entity theory. Though the praise raises their self-esteem, it can also make them challenge-avoidant and vulnerable. Oppositely, when students are praised for their effort, they move toward an incremental theory and are more eager to learn and are more resilient when faced with difficult situations (Mueller & Dweck, 1998). In other research, beliefs about self-theories have been shown to affect self-regulation, resilience, and whether someone seeks out challenging situations (Dweck, 2008). This work is important because it demonstrates that changing beliefs can influence people's personality development. As someone changes to a more incremental orientation, they also tend to become more open to learning, better able to deal with difficult tasks, more resilient to failure, and more willing to confront challenging situations (Dweck, 2008). The current research demonstrates that incremental theorists believe they have changed more over time and that strategies have aided in the perceptions of change. Perhaps if we teach people to take on more of an incremental orientation and provide them with small interventions or strategies to help them change, then we can give them the tools (i.e., strategies and approaches) to fundamentally change their personalities.

Given the state of personality psychology on the debate of the stability (Costa & McCrae, 1989; Roberts et al., 2003) or malleability (Heckhausen, Dixon, & Baltes, 1989; Hudson & Roberts, 2014; Quoidbach, Gilbert, & Wilson, 2013) of personality, studying

lay people's beliefs on change is an important future direction for the field. Researchers need to identify other core beliefs that may be responsible for the consistency in people's experiences and behaviors. The current study investigated sense of agency, or one's belief that they play an active role in their actions and subsequent outcomes (Tapal, Oren, Dar, & Eitam, 2017). Agency was associated with increased perceived change in a socially desirable direction. By increasing a person's sense of agency, you therefore might provide them with a better means to change who they are. In fact, some research has started to consider using cognitive behavioral therapy or drug treatments as a way to increase older people's sense of agency to help them better cope with diseases and adverse health effects related to aging (Lachman & Firth, 2004). If research can identify interventions to change sense of agency, it could be another mechanism to help people change their personalities.

Future research on other core beliefs and how they might affect personality and contribute to personality development is needed. Research on general change (i.e., not specifically personality change) has identified some key individual differences in an attempt to answer why some people change who they are while others tend to stay the same. For example, adaptability to change was predicted by self-discipline, creative achievement orientation, and lack of defensive rigidity in participants who were moving from high school to college (Mumford, Baughman, Threlfall, & Uhlman, 1993). Other concepts that predict stability include the reluctance to lose control (Conner, 1992; Sagie & Koslowsky, 2000), cognitive rigidity or dogmatism (Fox, 1999; Wanberg & Banas, 2000), intolerance to the adjustment period involved in change (Kanter, 1985), and

differences in sensation seeking and novelty that may be associated with change (Goldsmith, 1984). Regarding the Big 5 and personality change, openness has been directly negatively associated with the resistance to change (Oreg, 2003) and highly neurotic people are more likely to resist change (Mumford et al., 1993). Extraversion may also be indirectly related to resistance to change because of its relationship with the need for sensation-seeking (Oreg, 2003). This provides researchers with an interesting question of whether successful personality change actually requires a certain personality type. Research points to the idea that personality change might rely on being open, extraverted, and emotionally stable. This line of research could be particularly interesting because theoretically, changing on one of these three traits might have profound effects on all personality traits. Perhaps changing your personality in a more preferred direction is less about trait specific interventions, but rather understanding how your current personality could be a barrier to change and focusing on that trait first. This research could thus provide people with a better understanding of the necessary process needed to most efficiently change their personalities. Other possible belief systems that might affect someone's ability to change their personality and should be investigated include locus of control, learned helplessness, free will, and self-efficacy.

Personality reports can be made for past, current, and future selves. Research has demonstrated the ability and relative accuracy of having participants report on their past (Robins et al., 2005; Quoidbach, Gilbert, & Wilson, 2013) and current personalities (John & Robins, 1994). The end of history illusion is of particular importance to reports

of future selves and indicates that people believe that who they are currently is an accurate depiction of who they will be in the future despite having changed in the past (Quoidbach, Gilbert, & Wilson, 2013). In other words, it is the illusion that your personality will not change in the future, even though you believe it has changed previously. Therefore, using predictions of future selves would be much more problematic under the current method as people would likely not report much change from their current personality evaluations. These findings do bring up important concepts about personality change. Because personality is a key part of the self, the possibility of future change could threaten beliefs about who people think they currently are. It could also be that future changes in personality are just difficult to imagine, and people confuse this difficulty with the unlikeliness of the personality change itself (Quoidbach, Gilbert, & Wilson, 2013). Research has demonstrated that not all change is good. For example, changing personality too much is associated with worse psychological health and metabolic profiles in the future (Human et al., 2013). Understanding the mechanisms behind the end of history illusion could provide a better understanding of personality change. Perhaps there are individual differences in the end of history illusion or other concepts that affect its impact on beliefs of change. For example, desire to change and life satisfaction would likely affect people's reports of changing in the future. Perhaps an individual who wants to change or who is less satisfied with who they currently are has better insight into who they want to become.

Implicit Theory and Perceived Personality Change

The concept of different belief structures that people hold about changing who they are has long been established in social psychology. Dweck and colleagues were some of the first to describe the concept of implicit theories that govern the beliefs around the changeability of certain traits (Chiu, Hong, & Dweck, 1997; Dweck, Chiu, & Hong, 1995a). Early work focused on intelligence, but implicit theories are domain specific, meaning that people can believe that some traits can change, while others remain stable (Chiu, Dweck, Tong, & Fu, 1997). Including implicit theories of personality in the current study is therefore an important and relatively new exploration into the beliefs about perceived personality change.

This research supports other work on personality changeability and implicit theories. For example, Robins and colleagues (2005) found that having an incremental orientation was related to actual increases in personality across the Big 5 in the socially desirable direction, except for extraversion (Robins, Noftle, Trzesniewski, & Roberts, 2005). Robins and colleagues' study also attempted to investigate perceived change by using a single item that asked participants whether they believed they had stayed the same or changed for each trait. Their findings on perceived change were consistent with their findings on actual change, but agreeableness was only marginally associated with incremental theory (r = .10) for perceived change. The current study supports much of these findings. Like the Robins et al. study, we found that neuroticism (coded as Emotional Stability in the current study), openness, and conscientiousness were positively associated with incremental theory. We did not find a significant association

between extraversion and incremental theory, but it should be noted that the association approached significance. In the current study, agreeableness was significantly associated with incremental theory, contrasting with the previous study where the association was only marginally significant. One potential reason for the difference in agreeableness findings is that the current study used a more sensitive, detailed approach to measure perceived personality change. Though the associations in the current study were consistently stronger than in the previous study, it is important that the results between the two studies were nearly the same. Both studies also found that incremental theory was associated with absolute perceived personality change. This is an interesting finding because these long-standing notions of implicit theories of personality affecting personality change are supported in the current study not only for change in a socially desirable direction, but also for overall change. People with a more incremental orientation also believed that their personalities had changed over time irrespective of directionality.

Strategy Endorsement and Perceived Personality Change

Regarding personality development, one of the most important unanswered questions is whether people can change their personalities if they want to (Kiecolt, 1994; Edmonds, Jackson, Fayard, & Roberts, 2008). It is clear that personality traits continue to develop throughout life. Change increases in rank-order consistency with age and people demonstrate normative trends in maturity with time (Edmonds, Jackson, Fayard, & Roberts, 2008). The current view of personality change creates a hopeful picture, pointing to the fact that traits develop and change. People can change, but the

changes that do occur in adulthood are moderate in magnitude. This begs the question: how easy or difficult is it to change your personality? There are clear individual differences in change directly related to life experiences. Therefore, two leading theories of personality change include volitional change (the purposeful decision to change one's personality) and situational change (change that occurs because of one's life experiences).

The field of personality psychology has recently started investigating the different types of strategies that people use to change who they are. For example, Baranski and colleagues (2017), measured the personality change that participants hoped to enact through self-reported free response questions. They then attempted to categorize whether a participant indicated that cognitive or behavioral strategies would be the reason for personality change. The findings indicated that those who wanted to be more extraverted sought to act differently (behavioral strategies), whereas those who wanted to be more agreeable sought to think differently (cognitive strategies). More generally, participants reported that their desire to change was stimulated by specific life events and previous changes in personality were attributed to changes in social roles. Hudson and colleagues (2018) focused on volitional change strategies and provided trait-typical behavioral challenges intended to help participants change desired personality traits. Results indicated that across the 15-week study, participants who completed the challenges reported personality change within their desired trait change goals.

The current study focused more specifically on volitional and situational strategies and attempted to understand if strategies were associated with perceived change. The design of the study allowed us to investigate whether perceived change was associated with the endorsement of strategies within each Big 5 domain. Given that this is, to our knowledge, the first study to attempt to differentiate specifically on either volitional or situational strategies, a new scale was designed. The scale allowed participants to report whether they decided to change their personality or if situations/experiences occurred in their lives that changed their personality.

Results indicated that strategy endorsement predicted perceived directional personality change. This result was supported for all Big 5 domains. In other words, participants reported that they believe their personalities have changed and that volitional and situational strategies have helped them change. This finding is not only supported for directional change but also for absolute (overall change), which indicates that people believe that strategies have affected their personality, but most importantly helped them to change into the people they have become.

This analysis combined situational and volitional endorsement because we were interested in whether strategies, generally, would affect perceived change. To paint a more complete picture of the differences in strategy endorsement, we completed an exploratory analysis comparing average volitional and situational endorsement within each Big 5 trait. Results indicated that participants believed volitional strategies affect agreeableness and conscientiousness more than situational strategies while situational strategies affect extraversion and openness over volitional strategies. There was no

difference between volitional and situational strategy endorsement for emotional stability. Research on understanding the reason behind trait changes is in its infancy, but these current findings coincide with recent research by Haas, Cochran, & vanDellen (2019, submitted for publication). This study found a similar pattern of results concerning agreeableness and conscientiousness being related to volitional (and situational) endorsement, but also found that agreeableness was considered more changeable according to situation/social context than conscientiousness. However, they were not different from one another according to volitional control. Overall, this exploratory analysis compliments and builds upon other work on the changeability of personality. For example, other research has found that traits differ in how essentialized (changeable, discreet, inherent) they are viewed to be (Haslam et al., 2004) and that traits that are considered to be a personal weakness were evaluated to be more changeable (Steimer & Mata, 2016). The current research goes beyond beliefs of what *could* be changed and moves into beliefs about what *did* change. In other words, the current study builds upon past research on the possibility of personality change by demonstrating that people believe their personalities change and that different strategies (volitional or situational) play a role in that change.

One important note about volitional and situational strategies is that the way participants understand their effect on personality change might be inherently intertwined. In fact, we found that endorsement of situational and volitional strategies was highly correlated – in other words, participants endorsed volitional and situational strategies together. It could be that participants believed both strategy types to be

important factors for change, or it could be that beliefs about situational change are still considered to be under their control. That is, a person could believe that even though a situation changed their personality, that they made a choice to put themselves in that situation. We attempted to separate these concepts by including "I decided…" for volitional strategies and "I had experiences or encountered situations…" for situational strategies. Future research should look into concepts of situational strategies and try to parse situations that are considered to be volitional or inherently passive. To better understand personality change we next considered how agency, an important individual difference that could affect one's capability to change, would be associated with strategy endorsement and ultimately affect personality change.

Agency and Perceived Personality Change

Research on the individual differences that predict personality change is a relatively new direction of study. Existing research has focused on only a few different individual differences. As mentioned previously, differences in implicit theories dictate the beliefs people hold about the stability or changeability of traits. Previous research indicates that a majority of people desire to change on at least some of their personality traits (Hudson & Fraley, 2015; Hudson & Roberts, 2014) and that not possessing desirable personality qualities is associated with reduced well-being (Hardin & Larsen, 2014; Higgins, 1987; Hudson & Roberts, 2014). The current study introduces agency as another factor that could predict personality change. One key difference between agency and implicit theories or well-being is that agency focuses more on *how* personality changes while the other factors focus on *why* personality changes. In other

words, agency is an important factor to consider to better understand differences in people's capability to change. Because agency is related to people playing an active role in their actions and subsequent outcomes, we wanted to further investigate the association between agency and volitional personality change.

We initially used a difference score of volitional and situational strategy endorsement to investigate the association between agency and volitional personality change. These results did not indicate that agency and strategy endorsement affected directional or absolute perceived change, though the results were in the correct direction and approached significance. One potential explanation for why this model did not reach significance is that, as previously mentioned, volitional and situational strategy endorsement were highly correlated. This could indicate that people view these strategy types in a similar manner or that both types are equally important in helping people change their personality. The relationship between volitional and situational strategies is more complex than initially anticipated, and future research should try to elucidate the differences between the strategy types.

Because volitional and situational strategies were highly correlated we continued with a different approach that combined both strategies into a single average endorsement score. This allowed us to delve into the association of agency with strategy endorsement. The results indicated that the association between strategy endorsement and agency affects directional and absolute perceived personality change. Lastly, because there was not an effect of domain we re-ran these analyses while excluding domain from the models. Again, a significant interaction emerged between strategy

endorsement and agency for both directional perceived change and for absolute perceived change, though the pattern was different between the two types of perceived personality change.

When considering directional perceived personality change, the interaction indicates that regardless of strategy endorsement, highly agentic participants report more perceived change in a socially desirable direction. However, for absolute perceived change, highly agentic participants report less perceived overall change. Strategy endorsement plays an important role for both directional and absolute change. For each type of change, participants report more perceived change when they endorse strategies for change. Taken together, these patterns of results indicate that highly agentic people believe that their personalities are relatively stable (less absolute change), and that any change in personality occurs in a socially desirable direction (more directional change). In both cases strategy endorsement is associated with higher perceived change, suggesting that both volitional and situational strategies played an important role in helping people change when they wanted to.

This pattern of results corresponds with current thoughts on sense of agency. Responsibility is an important social construct for humans and researchers have argued that sense of agency plays a significant role in guiding people's concepts of responsibility (Haggard and Tsakiris, 2009). Sense of agency's relationship with responsibility is therefore inherently linked with beliefs on accountability where people can be punished or rewarded for their behaviors. Sense of agency is also associated with concepts of free will, which argues that people make free choices that are not pre-determined by divine

intervention. If people make their own decisions and are in control of their thoughts and behaviors then they can and should be held accountable for any subsequent outcomes. Humans also are concerned with concepts regarding consistency. People want their attitudes and beliefs to be consistent with their behaviors (Fazio & Zana, 1981) and for their current behaviors to be consistent with their past behaviors (Guadagno & Cialdini, 2010). In fact, consistent behaviors are associated with increased trust within social groups (Dunn, 2000). These past findings might be more relevant for people high in agency. Being more agentic would likely be associated with stronger beliefs about responsibility, accountability, and preference for consistency. If people generally believe in these concepts, it's likely that that more agentic people who believe that they are in full control of their thoughts, behaviors, and subsequent outcomes will also have stronger beliefs around these concepts. Future research needs to be completed to fully support this claim, but that fact that highly agentic people believe their personalities are stable and that they only improve in a socially desirable direction coincides with current thoughts on sense of agency.

Lastly, even though sense of agency is more about the capability to change, simply being agentic does not mean that someone can change their personality. Past research shows that just having a desire to change does not mean that a person will. For example, students' change goals for conscientiousness and openness to experience did not predict increases in those traits (Hudson & Fraley, 2016b). When desire to change exists, personality change is still a difficult task. People have to adhere to prolonged trait specific challenges or interventions to report moderate changes to their personality

(Hudson et al., 2018; Jacobs et al., 2011). Ultimately personality change is complex, encompassing many constructs such as people's desires, motivations, stressors, time, finances, beliefs, and abilities. Research needs to focus on determining the key reasons people change, individual differences in their ability to change, and what strategies provide people with the highest success rates for change.

Limitations and Future Directions

The current study has limitations that suggest a need for future research. As with most research on personality change, this study relied on a self-report personality survey to obtain a measure for change. People's response styles and issues concerning social desirability biases are of particular concern for personality questionnaires (Paulhus, 1991). This issue was somewhat mitigated in the current study, as we were interested in the perception of change, rather than actual change. Some research has used free response paradigms to measure change (Baranski, Morse, and Dunlop, 2017), but generally the field remains steadfast on the use of survey measures. Future research should investigate new measures for personality change and attempt to replicate the current findings. Measures of interest might include free response, behavioral investigations, life event reports, or peer/parent ratings.

Secondly, directional and absolute change are linear measures of personality change, which means we could have missed other dynamic (non-linear) patterns of change. Perhaps a participant believed that over the past two years their extraversion increased in the first 6 months but decreased over the last year. This individual would indicate no change according to our measures. Therefore, perceived personality change

could have more complex developmental tendencies which may be too difficult for people to recall or are not captured with the measures used. Similarly, we used 2 years as the anchor point to have people think about their past selves, but there is little research to indicate the best timing for such a measure. Future research should look into how to measure personality change in a more specific way while taking into consideration the complex dynamics of personality change that occur over time.

Lastly, our research intended to demonstrate that when people believe they have changed, that there were strategies that helped them change. There are two concerns about the strategy examples that were presented. First, the examples were based on behavioral challenges from past work that relied on face validity or a theoretically logical approach. Secondly, we measured strategy endorsement broadly, and did not identify specific strategies that people might use to change their personality. The example strategies provided for each trait were simply to allow participants to consider possible ways they have changed, but the examples were not exhaustive. Future research should attempt to identify specific strategies for personality change, and determine which strategies are most effective. Similarly, future research should explore the different types of strategies that could be used to change personality, including volitional and situational strategies and intervention techniques. This work clearly demonstrates that people believe they have changed, and strategies play an important role in that change, but it cannot speak to what strategies will produce the best change outcomes.

Conclusion

In summary, people can change, strategies help people change, and there are individual differences that predict change. Implicit theories play an important role in whether people believe they can change, while agency is related to one's ability to change. This work adds to the literature on personality change by demonstrating that perceptions or beliefs of change matter and that people's change occurs congruently with strategies. We hope that future work continues to focus on individual differences that predict one's ability to change and identifies the specific strategies that best help people become who they want to be.

TABLES

Table 1. Correlation table including implicit theory, strategy endorsement, agency, and perceived change (directional and absolute).

	1	2	3	4	5	6	7	8
1. Implicit Theory	–							
2. Strategy Endorsement	-.156**	–						
3. Volitional Endorsement	-.174**	.899***	–					
4. Situational Endorsement	-.106*	.897***	.612***	–				
5. Volitional - Situational	-.078	.010	.448***	-.433***	–			
6. Agency	-.233***	-.004	.002	-.010	.013	–		
7. Directional Change	-.315***	.201***	.168**	.193***	-.027	.149**	–	
8. Absolute Change	-.095*	.149**	.129*	.138*	-.009	-.334***	.376***	–

Note: *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

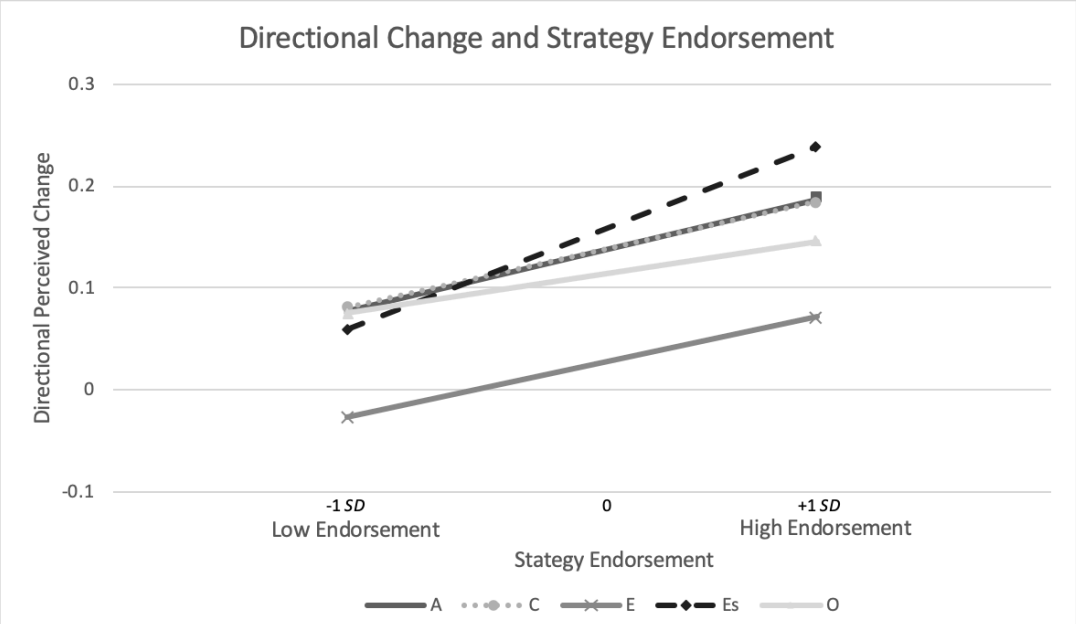
Table 2. Descriptive statistics and paired samples t-test for current and past personality within trait.

	Mean	Standard Deviation	Mean Difference	Standard Deviation	Std. Error Mean	CI Lower	CI Upper	*t*
Emotional Stability								
Current	3.36	.99	.16	.67	.04	.09	.24	4.44***
Past	3.20	1.01						
Extraversion								
Current	2.93	.99	.02	.57	.03	-.05	.08	0.43
Past	2.91	.99						
Openness								
Current	3.68	.74	.11	.46	.03	.06	.16	4.14***
Past	3.57	.76						
Agreeableness								
Current	3.74	.75	.13	.48	.03	.08	.19	5.07***
Past	3.61	.78						
Conscientiousness								
Current	3.89	.82	.13	.50	.03	.08	.19	4.81***
Past	3.76	.82						

Note: ***$p \leq .001$

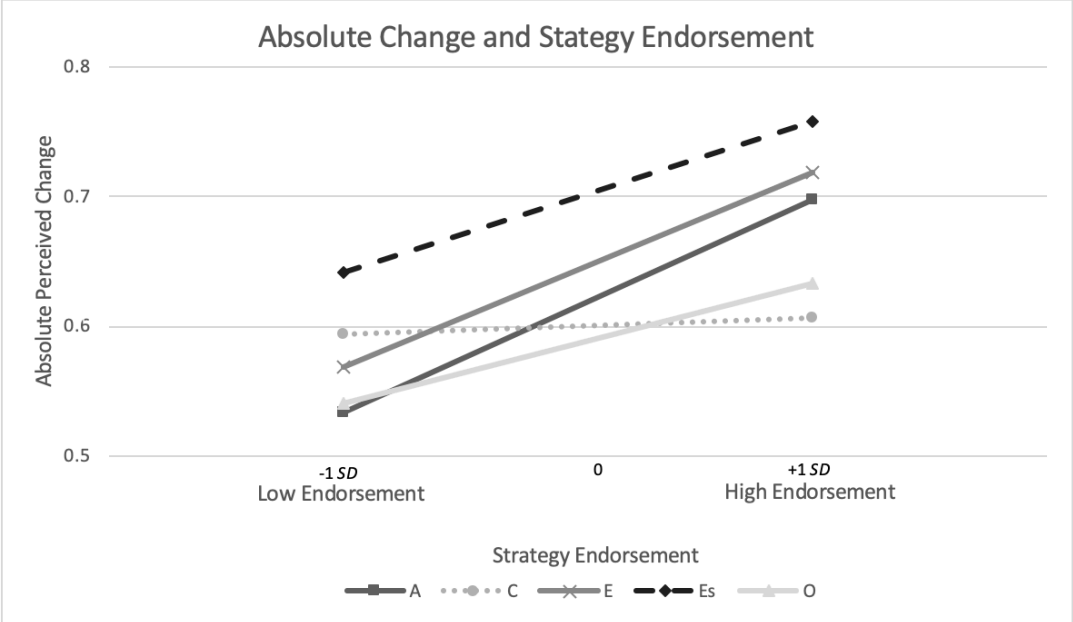
FIGURES

Figure 1.



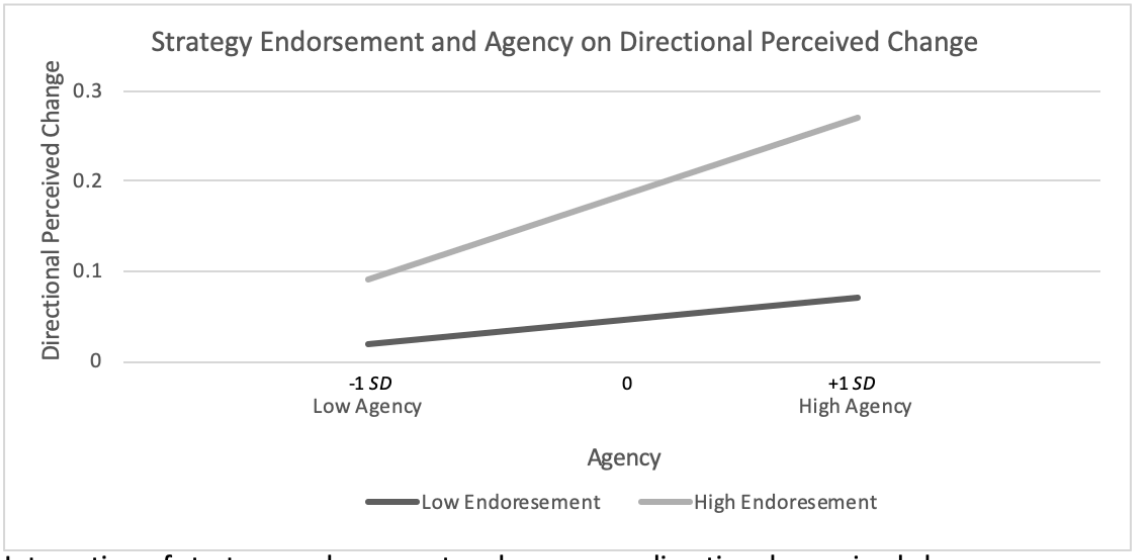
Association of strategy endorsement, domain, and directional perceived personality change.

Figure 2.



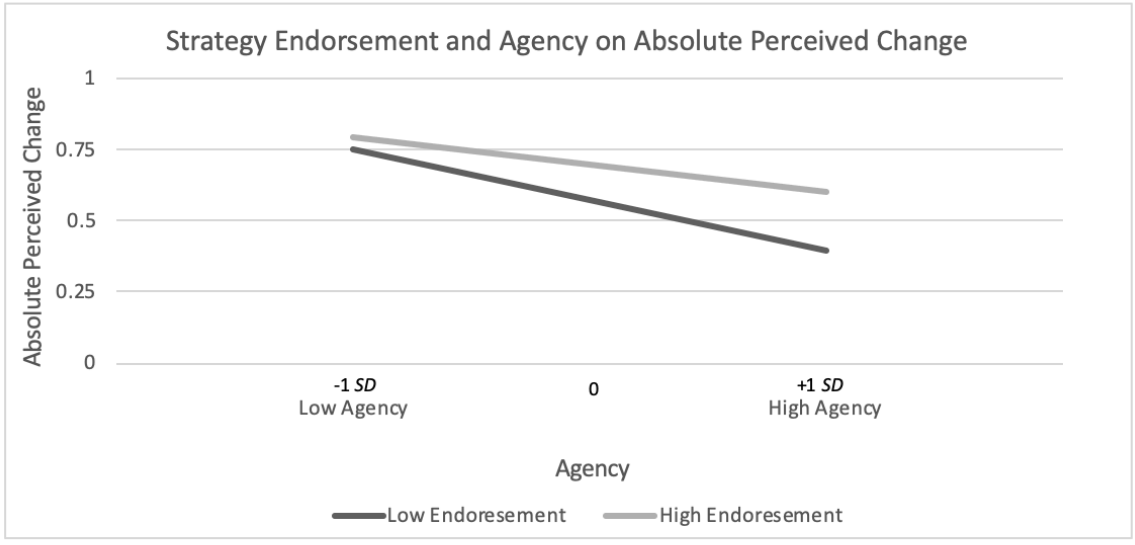
Association of strategy endorsement, domain, and absolute perceived personality change.

Figure 3.



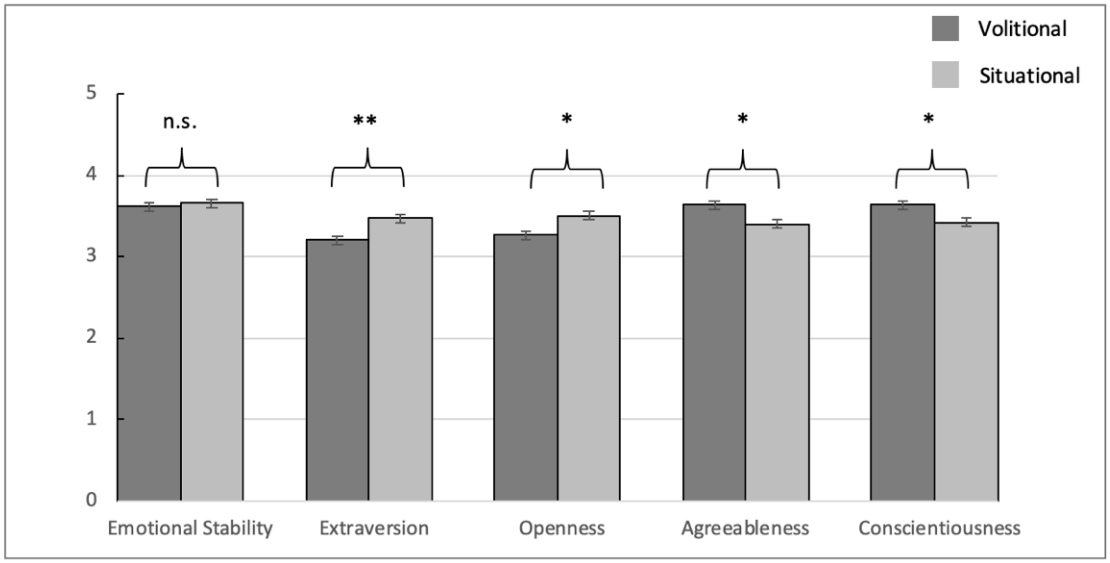
Interaction of strategy endorsement and agency on directional perceived change.

Figure 4.



Interaction of strategy endorsement and agency on absolute perceived change.

Figure 5.



Means and standard errors for each trait, *$p \leq .05$, **$p \leq .001$

APPENDIX A

Volitional and Situational Strategy Endorsement Scale

Volitional Items

For the next section, think about how you have changed as a person over time. We would like you to think about the **strategies that you may have used to change.** We will provide you with some specific characteristics that may have changed, along with some examples of **strategies that you used** that contributed to those changes. Please, read each statement and report how much you agree or disagree on a scale from 1 (disagree strongly) to 5 (agree strongly). Please read each question CAREFULLY

Emotional Stability

I decided to change how <u>emotionally stable and comfortable with myself</u> I was.
Examples:

- I decided to consider more of the positive things in my life.
- I decided to smile more.
- I decided to think more about the things I was grateful for.
- I decided to seek more activities that made me happy.

Extraversion

I decided to change how <u>talkative, outgoing, and engaged with others</u> I was.
Examples:

- I decided to attend more events I was interested in.
- I decided to take the lead in organizing social events more often.
- I decided to find more clubs or organizations that I would enjoy.
- I decided to speak up more and gave my opinion more often.

Openness

I decided to change how <u>imaginative and open-minded</u> I was.
Examples:

- I decided to daydream more.
- I decided to attend new events more often.
- I decided to try more new things (food, music, activities).
- I decided to try to learn more about topics that were new or uncomfortable for me.

Agreeableness
I decided to change how I interact with others in kind, cooperative, and friendly ways.
Examples:

- I decided to think more about the things I was grateful for in my friendships and relationships.
- I decided to work on saying nice things to people more often.
- I decided to start to giving other people more compliments.
- I decided to listen carefully and care more about others.

Conscientiousness
I decided to actively change how orderly, organized, and self-disciplined I was.
Examples:

- I decided to begin preparing for events earlier than I used to.
- I decided to make notes and lists to help me remember tasks more often.
- I decided to avoid distractions when I was working on important tasks.
- I decided to clean and organize my working and living space more often.

Situational Items
For the next section, think about how you have changed as a person over time. We would like you to think about the **situations** that may have affected you. We will provide you with some specific characteristics that may have changed, along with some examples of situations that may have contributed to those changes. Please, read each statement and report how much you agree or disagree on a scale from 1 (disagree strongly) to 5 (agree strongly). Please read each question CAREFULLY.

Emotional Stability
I had experiences or encountered situations that affected how emotionally stable and comfortable with myself I was.
Examples:

- A situation made me a less anxious person.
- A move to a new place made me more secure person.
- A new relationship made me happy.
- Several life stressors changed.

Extraversion
I had experiences or encountered situations that changed how talkative, outgoing, and engaged with others I was.
Examples:

- Friends took me along to social events.
- Several experiences I had required that I work in a group or a team.
- I was required to speak in front of a group.
- I had several positive relationships.

Openness

I had experiences or encountered situations that changed how imaginative and open-minded I was.

Examples:

- A move made me meet new and diverse people.
- As a result of traveling I began to think differently.
- After an uncomfortable experience I realized that I enjoyed it.
- An experience opened up my creative side.

Agreeableness

I had experiences or encountered situations that changed how I interact with others in kind, cooperative, and friendly ways.

Examples:

- Other people told me that I was not very kind or cooperative.
- Someone told me that I was not considerate of their feelings.
- In an evaluation, I was told that I should cooperate more with others.
- Someone felt upset or cried because of things I said.

Conscientiousness

I had experiences or encountered situations that changed how orderly, organized, and self-disciplined I was.

Examples:

- A new job required me to improve my organization skills.
- Someone told me I should work on being more organized.
- A leadership/management role was required of me.
- A goal was not met because of my poor organization skills.

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