Highlighting Clients' Strengths: The Benefits of Using the Balanced Diagnostic Impressions (DICE-PM) Model

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Abstract

People are generally prone to the negativity bias, and subsequently, psychological assessment has historically focused on pathology. Breaking with that tradition, research supports the effectiveness of infusing strengths in clinical practice to provide a more balanced approach. However, little research has examined the outcomes of providing education to students about intentionally using balanced assessment approaches. The purpose of this study was to examine the impact of teaching students about and the use of a strengths-based assessment approach—the Balanced Diagnostic Impressions (DICE-PM) Model. Results showed that undergraduate students' attitudes towards strengths and what they attended to in the assessment process changed after learning about and using the DICE-PM Model compared to the control group. Specifically, students in the intervention group viewed positive psychology theory, strengths assessment, and attention to therapeutic gains as more important than the comparison group. Additionally, after reading a vignette with low pathology and *without* being prompted to attend to strengths, students from the intervention group indicated they wanted to know more about the client's external strengths and less about individual weaknesses compared to the control group. Additionally, students in the intervention group experienced increased life satisfaction compared to the control group. Overall, results suggested teaching students strengths-based assessment is valuable. Training students and professionals could serve as a means to proactively address the negativity bias and help improve clinical services.

Keywords Strengths · Assets · Assessment · Conceptualization · Positive psychology

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Despite many cited benefits of strength-based and balanced approaches in clinical intervention (e.g., Magyar-Moe et al. 2015a; Owens et al. [under review](#)), diagnostic assessment and conceptualization tends to overemphasize or solely focus on human dysfunction and problems (e.g., Lopez and Snyder 2003; Owens et al. 2015; Pierce 1988). The way in which students and practitioners are trained commonly aligns with this trend. For example, courses that introduce students to psychological assessment and client conceptualization tend to emphasize pathology by focusing on the International Classification of Diseases (World Health Organization 2016), the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association 2013), and/or assessments that identify symptoms and disorders (Magyar-Moe 2011). As a result, early in students' education and training, they are exposed to a disproportionate number of tools and procedures that assess clients' pathology and concerns. This focus on pathology reinforces the natural tendency to focus on losses, weaknesses, or errors, referred to as the negativity bias/fundamental negative bias (e.g., Baumeister et al. 2001; Wright and Lopez 2002).

Creating a community of students and practitioners in which attention to both clients' strengths and concerns is the norm requires exploring methods to foster strengths-based *intentionality* in the assessment process. Beginning this process at the undergraduate level would be advantageous, as the foundations of clinical training are often laid during this stage. Effective training during early periods of one's professional trajectory has beneficial results, and conversely, undesirable clinically-related skills developed early in students' education are often difficult to untrain later in their education (Campbell 2015; Hill et al. 2016). The purpose of this study was to examine whether education related to and the use of a strengths-based assessment and conceptualization model—the Balanced Diagnostic Impressions (DICE-PM) Model—during undergraduate education (i.e., an abnormal psychology course) would counter an inherent negativity bias and improve students' ability to provide a holistic assessment of clients. It was hypothesized that students trained in an explicit strengths-based assessment model would report attitudes and demonstrate unprompted behaviors more inclusive of strengths as compared to students trained in a typical curriculum.

Furthermore, previous research suggests students who participate in courses exclusively on positive psychology experience enhanced well-being (e.g., Goodman et al. 2016; Maybury 2012). Therefore, we hypothesized an additional benefit of incorporating instruction on strengths-based assessment to the course would be increased student well-being. Notably, to the authors' knowledge no existing study has examined the impact of training others to use a strengths-based assessment approach or the infusion of positive psychology content into another psychology course (e.g., abnormal psychology).

1 The Negativity Bias

Previous research has produced a substantial body of knowledge regarding heuristics and biases, unconscious shortcuts in cognition that establish simplistic and generalized rules that govern decisions in some circumstances (see Gilovich et al. 2002 for a review). One such heuristic, the negativity bias, refers to the “tendency for negative objects, events, or information to predominate over positive” (Shook

et al. 2007, p. 144). Early studies found that negative personality traits are typically given more weight when appraising another person, while positive personality traits are given less (Anderson 1965). Since, the negativity bias has been observed in a variety of circumstances, including basic attention (Dong et al. 2011), motivation (Goldsmith and Dhar 2013), behavioral economics (Tversky and Kahneman 1974), voting decisions (Lau 1982), selection of news (Bachleda et al. 2020), and consumer behavior (Yin et al. 2010). The effect has also been observed in a variety of populations, including international samples (e.g., Soroka et al. 2019) and in infants as young as three months old (Hamlin et al. 2010). The apparent automaticity and ubiquity of the negativity bias across domains, populations, ages, and cultures, as well as its suspected evolutionary and biological foundations, has led Ito and Cacioppo (2004) to label it “a human universal” (p. 1).

The negativity bias effect has been found to be more nuanced than originally hypothesized. The relative weighting of information depends on an interaction between both its valence and its strength. In an effect called *positive offset*, positively valent information will be more influential than negative information of the same magnitude when that information does not evoke substantial arousal. The *negativity bias*, as defined above, occurs as information evokes moderate or high levels of arousal (Cacioppo and Berntson 1994). Generally, the negativity bias appears to be more powerful (i.e., produces a greater asymmetry) than does positive offset. Furthermore, individuals appear to differ in the extent to which the negativity bias influences judgments and attitudes (Norris et al. 2011).

The negativity bias is, by definition, a cognitive error – one that distorts impressions by giving negatively valent data greater attention and weight (Baumeister et al. 2001). The negativity bias is one of the many problematic habits that Meehl (1973) warned corrodes clinical judgments. A variety of theorists (e.g., Maddux 2011; Owens et al. 2015; Pierce 1988; Wright and Lopez 2002) have discussed the insidious and deleterious effects of the negativity bias during the diagnosis and treatment-planning process. Clinicians, like others, are susceptible to an automatic and consistent negativity bias when interacting with client data, and traditional assessment training practices perpetuate this (e.g., Magyar-Moe 2011; Owens et al. 2015). Undue weight on negative factors prevents an accurate or comprehensive view of client functioning, and charts a therapeutic path that fails to incorporate assets and strengths.

Cognitive biases are challenging to correct, as they tend to be immediate and unconscious processes. In general, efforts to overcome cognitive biases involve intentionality, particularly by developing structured, systematic decision-making tools and models that explicitly correct the biases (Kahneman 2011). However, the most common assessment tools in clinical practice, such as the DSM-5 and structured clinical interviews for diagnosis (American Psychiatric Association 2013), tend to focus more heavily on pathology than on strengths (see Maddux 2011) and therefore run significant risk of reinforcing the negativity bias. Several assessment approaches have been developed to bring strengths to the forefront (see the Assessment of Strengths section below), which could potentially help clinicians and students avoid the negativity bias in the assessment process. However, this has yet to be examined empirically.

2 Strengths

2.1 Strengths Conceptualization

The construct “strengths” can be conceptualized in a number of ways and as a result can be somewhat ambiguous when applied to studying people (King and Trent 2012). For instance, strengths can be interpreted as the capacity to overcome adversity or specific characteristics, capacities, or skills that increase the likelihood of success across domains or that are consistently associated with beneficial outcomes (King and Trent 2012). Furthermore, many researchers who study strengths rely on specific classifications or measurements of strengths to guide their conceptualization (e.g., CliftonStrengths or VIA-Inventory of Strengths). While there is some debate whether personality traits should be classified as “strengths” (King and Trent 2012), the inherent interaction of traits with one’s environment can be more or less adaptive and functional. Thus, “personality strengths” are described as characteristics that promote adjustment and are influenced by their interaction with one’s environment. Similarly, theorists (e.g., Benson et al. 2006; Bowers et al. 2010; Owens et al. 2018) assert positive outcomes are more likely to occur when strengths are explicitly identified and used by the person who possesses the strengths and when those strengths are fostered by their environment and other people.

Beyond individual or personality strengths, there are external contexts or environmental factors that are promotive or supportive, leading to beneficial outcomes, otherwise referred to as “environmental strengths” (Owens et al. 2015; Wright and Lopez 2002). Thus, not only is it important to study and apply individual strengths, but also to maximize environmental/external strengths (e.g., Owens et al. 2015; Owens et al. 2018; Owens and Woolgar 2018). Researchers have established the importance of environmental strengths, external assets, and cultural strengths in the literature (e.g., Benson et al. 2006; Owens et al. 2015; Owens et al. 2018); however, the vast majority of research on strengths focuses on individual differences (Owens et al. *under review*). The focus on individual differences persists despite well-founded arguments that it would be advantageous to the entire field of psychology to examine environmental and contextual considerations to a greater extent (Neufeld et al. 2006).

Although strengths have largely been examined at the individual level, the vast body of literature makes it clear that a focus on strengths – of any sort – is important and merits further examination to extend our current knowledge and address existing gaps. For example, in non-clinical samples, strengths are related to a host of positive outcomes, including enhanced well-being, positive affect, courage, self-esteem, and vitality (e.g., Douglass and Duffy 2015; Govindji and Linley 2007; Proctor et al. 2011; Pury and Kowalski 2007; Wood et al. 2011). Similarly, in the academic context, strengths are associated with school-related positive affect, promotive school functioning, academic achievement, and college GPA and satisfaction (Allan and Duffy 2014; Lounsbury et al. 2009; Weber et al. 2016). In the career context, strengths are related to job satisfaction, adaptive coping, meaning, occupational exploration, and buffer work-related stress (Harzer and Ruch 2013; Littman-Ovadia and Steger 2010; Owens et al. 2016). Given the large body of research demonstrating the many benefits of strengths, it seems focusing energy towards identifying and assessing strengths is worthwhile to maximize this process.

2.2 Strengths in the Clinical Context

Over the last two decades, strengths have gained a significant presence in the clinical context. A key example is the development and widespread use of positive psychotherapy (PPT; Seligman et al. 2006; Rashid 2015). PPT is a standalone treatment approach or can be integrated into other, existing therapy approaches, that focuses on strengths, positive emotions, and meaning (Rashid 2015). One of PPT's three phases includes eliciting a balanced perspective of the client through examining their strengths from multiple perspectives and developing goals from their strengths. Further, several specific interventions used in PPT involve strengths, including a positive introduction; an extensive strengths assessment process; exploration of stories, memories, and accomplishments that highlight the client's strengths; and a discussion of the client's presenting concern through a strengths-based lens (see Rashid and Seligman 2018). Throughout the course of therapy, goals and the nuance of strengths are revisited, particularly as it relates to addressing challenges through the use of strengths (Rashid 2015).

Several randomized and nonrandomized studies examining individual and group PPT have been conducted supporting its effectiveness (see Rashid 2015 for a review). These studies have varied considerably in populations examined (e.g., clients with Major Depressive Disorder, Borderline Personality Disorder, undergraduate students, children), comparison groups (e.g., treatment as usual, treatment as usual with medication), and measurement (e.g., pre- to post, 3, 6, & 12 month follow up; see Rashid 2015). Individual PPT has demonstrated significant increases in well-being and positive affect, and decreases in depression symptoms (e.g., Parks-Sheiner 2009; Seligman et al. 2006). Group PPT has shown significant increases in life satisfaction, well-being, and social skills, and decreases in depression symptoms (e.g., Lü et al. 2013; Rashid et al. 2013; Seligman et al. 2006).

More recently, in addition to PPT, several other strength-based counseling approaches have been developed and tested. Goal focused positive psychotherapy (GFPP) is an integrative psychotherapy approach that focuses on strengths, positive emotions, and goals/hope (Conoley and Scheel 2018). GFPP was equivalent to treatment as usual on the outcomes measured (psychological distress, client functioning) with individual clients; however, GFPP clients rated their experience in therapy more positively than the treatment as usual clients (Conoley and Scheel 2018). In the career counseling realm, two empirically tested approaches have demonstrated strength-based counseling approaches are beneficial. In a four-session strength-based career counseling approach with unemployed adults, participants learned about their strengths and used their strengths in the job search (Littman-Ovadia et al. 2014). Following strengths-based career counseling, participants experienced increased strengths use, self-esteem, and a higher employment rate (Littman-Ovadia et al. 2014). Finally, a two-session group counseling protocol with college students demonstrated career assessment and counseling that focused on strengths, interests, and a combination of strengths and interests were all effective; however, the combined approach demonstrated the greatest gains in facets of career exploration (i.e., focus, satisfaction with information, employee outlook) and life satisfaction (Owens et al. 2016).

Beyond specific strengths-based counseling approaches, research suggests the inclusion of strengths in clinical services helps address challenges and mental health

concerns, and enhances well-being. Specifically, strengths are associated with reduced stress and psychological symptoms and increased positive coping (Duan 2016; Gustems-Carnicer and Calderon 2016; Wood et al. 2011). When clinicians identify and implement clients' strengths in practice, clients report higher feelings of self-worth and better rapport with their clinician, and they are more likely to implement treatment recommendations (Conoley et al. 1994; Fluckiger and Grosse Holtforth 2008; Rashid 2015). Following the use of strengths, individuals also tend to experience greater growth, psychological functioning, and well-being, as well as decreased stress and psychological symptoms (Lavy et al. 2014; Seligman et al. 2005; Wood et al. 2011).

Assessment of Strengths Practitioners have long identified strengths as having a valuable role in mental health assessment (e.g. Cowger 1994; Lopez and Snyder 2003; Tedeschi and Kilmer 2005). Longitudinal findings support that strengths knowledge (which is aided by strengths assessment) results in enhanced strengths use (Allan et al. 2019), thus fostering the benefits that accompany the implementation of strengths. The assessment of strengths conveys to clients and others that the clients' identities and current functioning are more than their presenting concerns and diagnoses (e.g., Magyar-Moe 2009; Owens et al. 2015; Saleebey 1996). A holistic assessment of clients—inclusive of strengths—creates a welcoming tone to the therapeutic process, which is believed to positively impact rapport between the client and therapist (Cowger 1994). Further, when both challenges and strengths are assessed, clients are more likely to experience the intervention as affirming, empowering, and motivating (Cowger 1994; Saleebey 1996).

Several authors have provided extensive recommendations for conducting strengths-based assessment in clinical practice (see Cowger 1994; Gallagher and Lopez 2019; Lopez et al. 2003; Owens et al. 2015; Rashid and Ostermann 2009; Snyder et al. 2003). Commonalities across these recommendations include: (a) comprehensive, holistic, and balanced assessment practices; (b) assessing strengths in a multidimensional fashion (e.g., individual strengths, external strengths, strengths across settings); (c) conducting assessment collaboratively between the client and therapist; and (d) identifying and using strengths to address challenges *and* enhance well-being and positive functioning.

In addition to the strengths assessment recommendations, several specific strengths-based assessment instruments and models have been developed. Example individual strengths measures include: the VIA-Inventory of Strengths for adults, youth, and young children (Park and Peterson 2006; Peterson and Seligman 2004; Shoshani 2019); CliftonStrengths for adults and youth (Asplund et al. 2007; Lopez et al. 2005); Profiles of Student Life: Attitudes and Behaviors (Leffert et al. 1998); the Behavioral and Emotional Rating Scale Second Edition (Buckley and Epstein 2004; Epstein et al. 2009); and the Devereux Early Childhood Assessment (LeBuffe and Naglieri 1999). Example strength-based assessment models include the Practice Model of Positive Psychological Assessment (Lopez et al. 2003), the Comprehensive Model of Positive Psychological Assessment (Owens et al. 2015), the Four-Front approach (Wright and Lopez 2002), and the Complete State Model of Mental Health (Keyes and Lopez 2002).

The Balanced Diagnostic Impressions (DICE-PM) Model The Balanced Diagnostic Impressions (DICE-PM) Model is another specific strengths-based assessment model

within the broader Comprehensive Model of Positive Psychological Assessment framework (Owens et al. 2015). The DICE-PM Model was designed to be a flexible guide to gathering and summarizing key client characteristics and contextual considerations that includes both strengths and areas of concern across a variety of domains. In addition, the DICE-PM Model aims to address concerns with existing diagnostic practices, namely a lack of attention to strengths and cultural considerations (e.g., Owens et al. 2015; Owens and Woolgar 2018), as well as the practice of non-axial documentation (American Psychiatric Association 2013; World Health Organization 2016), resulting in solely identifying psychological disorders.

The DICE-PM Model was inspired by the Four-Front approach (Wright and Lopez 2002), the Complete State Model of Mental Health (Keyes and Lopez 2002), the ADDRESSING model (Hays 2008), and RESPECTFUL counseling framework (D’Andrea and Daniels 2001). The Four-Front approach consists of four quadrants to organize information into individual strengths and individual weaknesses (i.e., internal traits, states, and experiences), as well as environmental strengths and environmental weaknesses (i.e., external factors; Wright and Lopez 2002). The Complete State Model of Mental Health assesses clients on two continua—the degree of symptoms of mental illness they are experiencing and the degree of symptoms of well-being they are experiencing. Together, a client can be conceptualized as: (a) flourishing (low symptoms of mental illness and high symptoms of well-being), (b) floundering (high symptoms of mental illness and low symptoms of well-being), (c) languishing (low symptoms of mental illness and low symptoms of well-being), or (d) struggling (high symptoms of mental illness and high symptoms of well-being; Keyes and Lopez 2002). Finally, the ADDRESSING model and RESPECTFUL counseling framework are approaches to identify various cultural identities, which can be recalled by their acronyms (e.g., the “A” in the ADDRESSING model stands for age and generational influences; see D’Andrea and Daniels 2001; Hays 2008).

To complete the DICE-PM Model, students and clinicians are encouraged to gather information about clients’ strengths and areas of concern through a number of means, including a balanced clinical interview, behavioral observations, as well as tests and measures guided by positive psychological practices (see Owens et al. 2015). The data is then summarized into a number of domains, which can be recalled with the acronym DICE-PM—**D**agnosis, **I**ndividual Strengths and Weaknesses, **C**ultural Assets and Struggles, **E**nvironmental Resources and Deficits, **P**hysical Wellness and Health Concerns, and **M**ental Health Category (a category from the Complete State Model of Mental Health [Keyes and Lopez 2002] to summarize overall functioning). An example of this model follows:

Balanced Diagnostic Impressions (DICE-PM):

Diagnosis: Social Anxiety Disorder

Individual Strengths: caring, creative, focused

Individual Weaknesses: inattentive, hot-temper, impatient

Cultural Assets: bi-cultural flexibility, privileged gender and age status

Cultural Struggles: underprivileged racial and sexual orientation status

Environmental Resources: strong social support, stable employment

Environmental Deficits: unsafe neighborhood, conflict with co-worker

Physical Wellness: regular exercise, healthy sleeping habits

Physical Health Concerns: Type I Diabetes

Mental Health Category: incomplete mental illness (struggling)

2.3 Education and Training in Strengths-based Assessment

Despite the benefits of strengths in clinical practice and an expressed interest and identified need for training in this area, limited formal training in positive psychological assessment practices exist (Gelso and Woodhouse 2003; Magyar-Moe et al. 2015b). When surveyed, a sample of counseling psychology students overwhelmingly endorsed an interest in learning about positive psychology. Specifically, 93% of the undergraduate students surveyed and 94% of graduate students surveyed reported a desire in taking a course devoted to positive psychology. However, only 7% of the undergraduate and 20% of the graduate student participants had the opportunity to take a positive psychology course (Magyar-Moe et al. 2015b). Additionally, in a survey of counseling psychology professionals and students, results revealed that while the majority of participants claimed to adhere to a strengths-based approach, when asked to identify *specific* interventions, assessment tools, and strengths-based counseling models used, the large majority of participants were unable to do so (Magyar-Moe et al. 2015b). Further, results from a phenomenological examination of how strengths are used in therapy across clinical orientations demonstrated that the inclusion of questions about strengths in clinical interviews was the only *assessment* strategy used regularly (Scheel et al. 2012). Together, evidence suggests education and training in positive psychological assessment approaches is desired and would be beneficial; however, there is little guidance on how to do so in an effective manner and no known previous study has examined strength-based assessment education.

Typically, one of the first opportunities for students to have exposure to psychological assessment is during undergraduate psychology courses. Introducing balanced assessment approaches early in students' psychology education may prevent an over-emphasis or use of pathology models. In addition, several benefits of providing undergraduate students with education in clinical skills and positive psychology have been identified. Related to clinical skills, students with more training demonstrated greater accuracy in diagnostic skills, and students with less education were more likely to identify case histories as having greater pathology (Lambert and Wertheimer 1988). Further, after a semester long undergraduate course in counseling skills, students' helping skills improved (Hill et al. 2016). Following the completion of a course dedicated to positive psychology, undergraduate students experienced a number of beneficial outcomes, including: increased life satisfaction, happiness, hope, self-actualization, search for meaning, and mindfulness, and decreased stress and depressive symptoms (e.g., Goodmon et al. 2016; Maybury 2012). Together, it seems students who receive relevant and developmentally appropriate education in strengths-based approaches at the undergraduate level will likely be better prepared later in their training or careers and more likely to experience improved personal well-being.

3 The Present Study

The primary goal of this study was to examine the impact of providing education about intentional practice with a strengths-based assessment and conceptualization approach—the DICE-PM Model—with undergraduate psychology students. This is the first study to examine the outcomes of teaching students to use strengths-based assessment. This study also sought to examine a balanced emphasis of both individual strengths and external strengths, a gap identified in the literature. It was hypothesized that from pre-test to post-test, students' attitudes related to strengths would significantly change in the strengths group compared to the control group, resulting in a greater perceived importance of the inclusion of strengths in clinical services across all domains measured (theory, assessment, and supporting client progress). It was also hypothesized that from pre-test to post-test when provided with case vignettes and *unprompted* to attend to strengths, students in the strengths group compared to the control group would indicate they would want to know more about the client's strengths and less about their weaknesses as compared to those in the control group. Finally, it was hypothesized that students in the strengths group would report greater life satisfaction compared to the control group from pre-test to post-test.

4 Method

4.1 Participants

The sample included 131 (79% female; 21% male; M age = 21.35, SD = 0.79 years) undergraduate students from four separate sections of an undergraduate abnormal psychology course at a mid-size Midwestern public University. Among the students, 3.8% were first year students, 53.4% were second year students, 32.8% were third year students, and 9.9% were fourth year students. Participants largely self-identified as White American (93.9%), with the remaining students identifying as Asian American (3.1%), Black (0.8%), Hispanic/Latinx (0.8%), Native American (0.8%), and Other races/ethnicities (0.8%). The proportion of race and ethnicities noted are generally representative of the University where this study took place. Sixty-five students were in the control condition (two sections of the course) and 66 students were in the strengths condition (two additional sections). The sections as a whole were randomly assigned to their group. Seven students were unable to complete the first activity of the study, which included the comparison of a high and low pathology vignette (see the procedure section), due to missing the first day of class. This resulted in a slightly lower participant number for that set of analyses (control group = 63 students; strengths group = 61 students).

4.2 Measures

Attitudes Towards Strengths The Inventory of Therapist Work With Client Assets and Strengths (IT-WAS; Harbin et al. 2014) was used to assess the perceived importance of incorporating strengths into therapeutic services. The IT-WAS has 38 items, uses a 7-point continuous scale (ranging from 1 = *A Little Important* to 7

= *Extremely Important*), and an average is calculated for each subscale. The IT-WAS was originally designed for therapists and students in training. Thus, the instructions were slightly modified for the current undergraduate student sample to read: “Circle the number that best describes how important the following statements are in therapists’ work with clients.” All of the measure’s items remained the same.

The IT-WAS consists of three subscales. The first, Theory of Intervention, represents the importance placed on incorporating positive psychology theory into therapy; the second, Assessment of Strengths, indicates the degree to which importance is placed on asking clients about their strengths, giving equal attention to strengths and deficits, and interpreting tests in the context of clients’ strengths; and third, Supporting Progress, measures to what extent importance is placed on emphasizing clients’ gains in therapy. The IT-WAS has strong internal consistency, ranging from .91–.92 for the subscales and .96 for the total score (Harbin et al. 2014). Test-retest reliability coefficients ranged from .63 to .90 for the subscales and was .81 for the total score over a two-week period. The IT-WAS demonstrated validity with measures of similar constructs, and therapists’ self-reported work with recent clients’ strengths (Harbin et al. 2014). For this sample, the internal consistencies were .92 at pre-test (T1) and post-test (T2) for the Theory of Intervention subscale; .89 at T1 and .88 at T2 for the Assessment of Strengths subscale; and .82 at T1 and .81 at T2 for the Supporting Progress subscale.

Assessment of Client Strengths and Weaknesses Similar to Pierce’s (1988) methodology, students were asked to read two brief case vignettes—one low and one high in psychopathology. Participants were asked to select 16 items from a list of 56 strengths and weaknesses (half external, half individual) that they would like to know more about the client described. Importantly, the students in both groups were *not* prompted or instructed to attend to strengths when completing this activity, nor were they provided with any assessment materials (i.e., DICE-PM Model worksheet or DSM-5 criteria) that may influence their approach. Additionally, this was the first measure the students completed at pre- and post-test. The majority of items (57%) included in the list were from Pierce’s (1988) study. The present study differed from Pierce’s (1988) in that an equal number of individual and external strengths and weaknesses items were included. In Pierce’s study the majority of items were individual characteristics; therefore, the creation of new external items was necessary. To do so, items were drafted by the primary author and then independently rated by 16 research assistants. Items were only included if full agreement was reached among the research assistants’ independent ratings that an item represented an external strength or weakness. Example individual strengths items included: “Is Joan generous?” and “Is Joan intelligent?” Example external strengths items included: “Did Joan have helpful teachers?” and “Does Joan have social support?” Example individual weaknesses items included: “Is Joan moody?” and “Is Joan hostile?” Example external weaknesses items included: “Does Joan have a stressful job?” and “Is Joan homeless?” (See Appendix A for a full list of items.) A sum score of individual strengths and weaknesses, as well as external strengths and weaknesses were calculated. The 16 items selected equaled one point each.

Well-being As an indicator of well-being, life satisfaction was measured using the Satisfaction With Life Scale (SWLS; Diener et al. 1985). The SWLS uses a 7-point Likert scale (ranging from 1 = *strongly disagree* to 7 = *strongly agree*), with a total, summed score indicating one's level of life satisfaction. The scale demonstrates strong internal consistency, ranging from .79 to .89 (Adler and Fagley 2005; Pavot and Diener 1993; Steger et al. 2006). Test-retest reliability included coefficients of .80 (Steger et al. 2006) to .84 (Pavot et al. 1991) over a one-month period and .54 over a four-year period (Magnus et al. 1993). In past studies, the SWLS has demonstrated a negative relationship with negative affect (Larsen et al. 1985), depression (Schimmack et al. 2004), and symptoms on the Symptoms Checklist-90 (Arrindell et al. 1991). For this sample, the internal consistencies were .85 at T1 and .82 at T2.

4.3 Procedure

Prior to beginning the study, informed consent was obtained from all individual participants included in the study. At the beginning and end of the semester, students were asked to complete all questionnaires listed in the Measures section. In the strengths and control conditions, both of which were taught by the same instructor, students were exposed to the diagnostic criteria (~70% of the time), possible etiologic factors (~10% of the time), and common treatment methods for disorders presented in the DSM 5 (~20% of the time; American Psychiatric Association 2013). The elements of the course that differed were as follows: In the strengths condition, students were introduced to and asked to consistently use the DICE-PM Model (Owens et al. 2015) during in-class diagnostic activities. During these activities, students read a variety of vignettes, featuring psychological disorders, and identified information that aligned with the components of the DICE-PM Model. Students were also provided with chapters on positive psychological assessment (Snyder et al. 2003) and intervention (Bowers 2008) that were discussed for approximately 30 minutes as a large group. Lastly, the students received a lecture on research regarding strengths assessment and application that lasted about 45 minutes.

In the control condition, students read the same vignettes as the strengths condition for the in-class diagnostic activities, but did not use the DICE-PM Model. Rather, they identified the disorder present and which specific psychological symptoms included in the vignette aligned with criteria in the DSM-5. In place of the strengths readings, the students read and discussed the historical context of the DSM (Klegg 2012) and cultural considerations related to diagnosis (White Kress et al. 2005). Otherwise, the course content, number of homework assignments, exams, and in-class activities were identical.

4.4 Data Analysis

Main effects of differences between groups (strengths and control) over time (T1 and T2) as well as interaction effects were examined using mixed design analyses of variance (ANOVAs) for the variables Theory of Intervention, Assessment of Strengths, and Supporting Progress; the endorsed number of individual and external strengths and weaknesses after reading two vignettes; and life satisfaction. Instructor and course

effectiveness were examined using independent samples *t*-tests. In addition, given this was the first study to examine the outcomes of a strengths-based assessment educational intervention, exploratory moderation analyses were conducted. An *a priori* α level of .05 was employed for all analyses, which were conducted in SPSS.

5 Results

5.1 Preliminary Analyses

To address missing data (2.71%) at the item-level, the expectation maximization algorithm was used before computation of the scale or subscale scores (Tabachnick and Fidell 2012). Each scale/measure was screened for skewness and kurtosis using visual inspection and examining statistical values; values were within acceptable bounds (Tabachnick and Fidell 2012). Values for potential outliers at the subscale and scale levels were examined via scatterplots and values were compared to upper and lower boundaries at the 25th and 75th percentiles (Field 2013). No outliers were identified. Independent samples *t*-tests were also conducted to determine if there were significant differences between each variable assessed at T1 between the strengths and control groups. There were no significant differences between groups for any variable at T1.

5.2 Instructor and Course Effectiveness

Given that the same instructor taught all students who participated in this study, instructor and course effectiveness were examined through anonymous student evaluation scores provided by the University across conditions. Independent samples *t*-tests were used to compare differences between the strengths and control groups on instructor's teaching effectiveness ("Overall, the instructor taught this course effectively") and the overall rating of the course ("Overall, this was a good course"). There were no significant differences found between the two groups for teaching effectiveness.

5.3 Intervention Analyses

Attitudes Towards Strengths A 2 (Time: T1 and T2) x 2 (Condition: strengths and control) mixed design ANOVA was used to examine students' attitudes towards strengths following the intervention. Main and interaction effects within and between groups based on the IT-WAS subscales (Theory of Intervention, Assessment of Strengths, and Supporting Progress) were examined. Main effects emerged for Time; participants showed a significant increase in Theory of Intervention ($F[1, 129] = 53.62, p < .001, \eta^2 = .29$); Assessment of Strengths ($F[1, 129] = 44.61, p < .001, \eta^2 = .26$); and Supporting Progress scores ($F[1, 129] = 40.07, p < .001, \eta^2 = .24$). Main effects for Condition were not significant. As hypothesized, several significant interactions were found for all three scales, suggesting that students in the strengths group demonstrated significantly greater increases in Theory of Intervention ($F[1, 129] = 9.80, p = .002, \eta^2 = .07$), Assessment of Strengths ($F[1, 129] = 10.55, p = .001, \eta^2 = .08$), and

Supporting Progress scores ($F[1, 129] = 6.11, p = .02, \eta^2 = .05$) as compared to the control group. See Table 1 for descriptive statistics.

Assessment of Client Strengths and Weaknesses To examine students' assessment behavior following the intervention, *without* a prompt to attend to strengths, two separate 2 (Time: T1 and T2) $\times$ 2 (Condition: strengths and control) mixed design ANOVAs were conducted – one for the low pathology vignette and another for the high pathology vignette. A main effect emerged for Time, as students, regardless of condition, indicated they wanted to know more about individual strengths in both the low pathology ($F[1, 122] = 136.22, p < .001, \eta^2 = .53$) and high pathology conditions ($F[1, 122] = 12.24, p < .001, \eta^2 = .09$). Further, with the high pathology vignette, students, regardless of condition, indicated they wanted to know less about individual weaknesses, $F(1, 122) = 19.04, p < .001, \eta^2 = .14$. No other main effects for Time were found. Additionally, no main effects emerged for condition in either the high or low pathology vignettes.

Significant interactions also emerged. With the low pathology vignette, students in the strengths group showed a greater increase in interest in the client's external strengths ($F[1, 122] = 9.61, p = .002, \eta^2 = .07$) and a greater decrease in interest in the client's individual weaknesses ($F[1, 122] = 10.22, p = .002, \eta^2 = .08$) as compared to the control group (see Table 1). No other significant interactions were found. However, given previous findings (Pierce 1988), it may be of interest that with the high pathology vignette, results *approached* significance for students' reported

Table 1 Means and Standard Deviations of Outcome Variables

Variable	Condition			
	Control Group		Strengths Group	
	T1 <i>M</i> (<i>SD</i>)	T2 <i>M</i> (<i>SD</i>)	T1 <i>M</i> (<i>SD</i>)	T2 <i>M</i> (<i>SD</i>)
IT-WAS Theory	5.78(.76)	6.00(.66)	5.53(.80)	6.08(.70)
IT-WAS Assessment	5.82(.78)	6.01(.69)	5.56(.85)	6.12(.70)
IT-WAS Progress	5.93(.68)	6.13(.62)	5.76(.78)	6.20(.64)
High Pathology Vignette				
Individual Strengths	3.63(1.58)	3.92(1.46)	3.10(1.73)	4.11(1.90)
Individual Weaknesses	4.14(2.03)	3.68(1.84)	4.13(1.85)	2.93(1.83)
External Strengths	4.21(1.70)	4.41(1.90)	4.48(1.77)	4.90(2.04)
External Weaknesses	4.03(1.84)	3.89(1.62)	4.30(1.83)	4.05(1.73)
Low Pathology Vignette				
Individual Strengths	3.63(1.58)	6.03(1.88)	3.10(1.73)	5.72(1.81)
Individual Weaknesses	2.38(1.28)	3.00(1.77)	2.74(1.48)	2.34(1.44)
External Strengths	4.83(1.33)	4.22(1.70)	4.36(1.30)	4.77(1.73)
External Weaknesses	3.16(1.56)	2.78(1.30)	3.39(1.16)	3.16(1.38)
SWLS	25.18(5.76)	25.78(5.34)	23.90(6.53)	25.89(5.55)

Note. IT-WAS = Inventory of Therapist Work With Client Assets and Strengths; SWLS = Satisfaction With Life Scale

increased interest in the client's individual strengths in the strengths group ($F[1, 122] = 3.85, p = .052, \eta^2 = .03$) and decreased interest in the client's individual weaknesses ($F[1, 122] = 3.76, p = .055, \eta^2 = .03$) compared to the control group.

Well-being A 2 (Time: T1 and T2) x 2 (Condition: strengths and control) mixed design analysis of variance (ANOVA) was used to examine main and interaction effects within and between groups on life satisfaction. A main effect emerged for Time; participants showed a significant increase in life satisfaction ($F[1, 129] = 14.78; p < .001; \eta_p^2 = .10$). The main effect for Condition was not significant. As hypothesized, a significant interaction effect was found; students in the strengths group reported greater life satisfaction compared to the control group ($F[1, 129] = 4.28; p = .04; \eta_p^2 = .03$) from T1 to T2.

Moderation Analyses To examine possible moderating effects of gender and year in school on the intervention outcomes, the PROCESS macro for SPSS was used. Gender and year in school were examined as moderators between condition (i.e., intervention and control group) and students' assessment attitudes (i.e., IT-WAS difference total score and IT-WAS Theory of Intervention, Assessment of Strengths, and Supporting Progress difference subscale scores). Gender and year in school were also examined as moderators between condition and students' assessment behavior (i.e., assessment of individual and environmental strengths and weaknesses difference scores with both the low and high pathology vignettes). Finally, gender and year in school were examined as moderators between condition and life satisfaction. All moderation analyses were not significant.

6 Discussion

The current study is one attempt to answer the primary issue: How can we foster greater attention to client strengths? Specifically, the purpose of this study was to examine the impact of providing undergraduate students with instruction and practice using strengths-based assessment—specifically the DICE-PM Model—and how doing so impacted their attitudes towards strengths, behavior towards assessing strengths, and their individual well-being. Overall, the results suggested that systematic and intentional training in a strength-based assessment model, the DICE-PM Model, can shift attitudes towards strengths, promote appraisals of strengths, and positively influence student well-being.

A strengths-based assessment technique—the DICE-PM Model—was compared to traditional assessment techniques that focus on pathology and symptomology. Results from the self-report measure of attitudes towards strengths (i.e., the IT-WAS) suggested that learning about and routinely using the DICE-PM Model with case vignettes influenced students' perceptions of clinical work. Using a balanced assessment procedure increased a general appreciation and perceived importance of strengths in all therapeutic domains assessed (i.e., theory, assessment, and supporting client progress). However, the effect sizes for these changes were relatively small and results should be interpreted with this in mind. Given that assessment provides the foundation for

conceptualization and treatment planning, these findings suggest that adopting a strengths-based assessment approach early during one's education or training could make strengths-based data more readily available and foster a strengths-based orientation to various aspects of clinical work. However, additional research is needed to test this possibility.

Furthermore, when faced with case vignettes and *unprompted* to attend to strengths, students who learned about and routinely used the DICE-PM Model were more likely to focus on strengths when asked what information they would prioritize in the assessment of a client with low pathology. This was most relevant when considering an increased focus on external strengths and decreased focus on individual weaknesses. However, again, the effect sizes for these findings were small. Given the limited applied research on this topic, it seems there is promise in teaching and using a strengths-based assessment approach. Teaching strengths-based assessment is one way to systematically address the negativity bias as it pertains to clinical assessment (Wright and Lopez 2002). Frequent use of the DICE-PM Model seems to have helped - at least partially - overcome this tendency by placing greater emphasis on strengths. Although the findings are limited and fairly small, it is an important first step. Previous literature clearly shows incorporating a strengths-based approach into one's clinical work is advantageous for clients (e.g., Conoley et al. 1994; Littman-Ovadia and Steger 2010; Rashid 2015); however, the negativity bias is very difficult to overcome (Kahneman 2011), even in the case of this study when intentional practice of a strengths-based assessment approach was used. Future research and potential modifications to the intervention, particularly in clinical settings, are necessary to provide greater support for this approach.

In the instance of the high pathology vignette, results were not significant. With similar findings, Pierce (1988) concluded that pathology activated the negativity bias, such that deficits became more salient than strengths, leading to the tendency to seek out additional deficit-based information. Novel to this study, it appears that even those who embraced a strengths-based perspective (as suggested by the IT-WAS results) had difficulty avoiding an emphasis on symptomology or deficits when presented with a high pathology vignette. Pierce's interpretation is consonant with the literature on the negativity bias: The asymmetrical weighting of negative information increases at greater levels of affective activation (Cacioppo and Berntson 1994). The findings of the current study suggest that the intervention was insufficient to overcome the negativity bias at high levels of activation. It is also possible that greater attention to client symptomology and deficits is necessary in certain situations or feels necessary initially; however, there is still room for a more balanced perspective even when remediation and crisis management is necessary (e.g., De Jong and Kim Berg 2013; Magyar-Moe et al. 2015a; Owens and Woolgar 2018; Pierce 1988; Rashid 2015). Together, results suggest intentional instruction about the use of strengths-based assessment can help shift attitudes related to strengths and partially address the negativity bias; however, more potent interventions are necessary to affect the way students approach cases displaying greater pathology. Insights from this study are encouraging and can be used to guide future research to further address these challenges.

Even in instances of severe mental illness and pathology, attention to strengths can be helpful in addressing client concerns and helping them live more optimally

(Francisco Galvez et al. 2011; McArthur et al. 2018; Meyer et al. 2012; Sims et al. 2014). In future educational and training situations, explicit discussion of the negativity bias, providing extra time and emphasis on strengths with high pathology cases, and highlighting the existence of the two discrete continua of mental health and mental illness (i.e., the Complete State Model of Mental Health) could potentially help address these considerations further (Keyes and Lopez 2002).

Additionally, students in the strengths intervention group reported enhanced well-being. This suggests attending to *other* people's strengths can have a direct impact on one's own well-being. A significant body of research has consistently demonstrated focusing on one's own strengths can enhance various indicators of well-being (e.g., life satisfaction, positive affect; Douglass and Duffy 2015; Govindji and Linley 2007; Proctor et al. 2011; Wood et al. 2011); however, no known study has demonstrated focusing on others' strengths can be personally rewarding as well. This finding is beneficial for several reasons. First, previous research demonstrated courses dedicated to positive psychology enhanced students' personal well-being (Goodmon et al. 2016; Maybury 2012); however, such a course is not always available or feasible at every institution. It appears *infusing* positive psychological content on strengths into a non-positive psychology course (abnormal psychology) can lead to similar findings, which is likely more attainable by a greater number of institutions. Second, undergraduate students face a number of significant challenges while in college, such as stress and mental health concerns, which can impact their academic performance, social functioning, and well-being (e.g., Brougham et al. 2009; Eisenberg et al. 2009; Eisenberg et al. 2007). Identifying protective and promotive factors, such as strengths, has been shown to be one way to positively enhance the college students' experience (e.g.; Duan 2016; Owens et al. [under review](#)). This study extends that literature, showing that incorporating strengths-based content in other, existing classes and focusing on others' strengths could be another approach to enhance student well-being. Lastly, there is a robust body of literature demonstrating mental health providers and trainees are particularly susceptible to burnout (e.g., Allan et al. 2019; Clark et al. 2009; Lee et al. 2011; Morse et al. 2012). Finding ways to enhance their well-being in their work – in this case by assessing others' strengths – could potentially buffer against the high degree of burnout. Future research in the clinical setting is needed to examine this possibility.

Finally, exploratory moderating variables (i.e., gender and year in school) were examined. All moderation analyses conducted were non-significant. Evaluation of additional process variables would be valuable in future studies to determine what factors may influence students' perceptions and behaviors related to strengths-based assessment, particularly instances involving high-pathology cases.

6.1 Practical Implications

Results from this study suggest that providing education about and practicing the use of a strengths-based assessment and conceptualization approach is beneficial. Structured, habitual assessment of strengths appears to not only affect what client variables are attended to, but also the perceived importance of infusing strength-based concepts into all aspects of the therapeutic endeavor. However, findings were not robust across all variables—particularly when the client had high pathology—and the effect sizes were

small. Thus, even for those who value a strengths-based approach, an enhanced intentionality to identify and promote strengths may be necessary to achieved a more balanced approach consistently. More long-term and continued use of the DICE-PM Model and other strengths-based approaches could potentially help reinforce the importance of attending to both strengths and weaknesses across contexts, despite the level of pathology.

If, as the literature suggests, there are numerous benefits to clinicians incorporating strengths into their clinical work (e.g., Conoley et al. 1994; Seligman et al. 2005), then the field would benefit from providing additional education and training related to strengths-based approaches. The DICE-PM Model, or other strengths-based procedures, could be incorporated into undergraduate, graduate, and professional educational and training settings (e.g., Georges and Tomlinson-Clarke 2015; Magyar-Moe 2011). Similarly, these approaches could be introduced during brief, targeted trainings, such as workshops or continuing education opportunities for professionals.

While additional research is necessary to examine the implications of using the DICE-PM Model in clinical practice, results from this study provide initial evidence of its value in the educational context. It is possible that by equipping students with the clinical tools to appropriately attend to clients' strengths and assets, they will develop into clinicians that have a more holistic view of their clients, and clients may subsequently experience positive outcomes. Future research could examine these questions. For practitioners who are looking to infuse positive psychology principles and strengths into their clinical work, adopting the DICE-PM Model to structure intake interviews and conceptualize clients, as well as summarizing diagnostic impressions in notes and reports, could be possible first steps (see Owens et al. 2015; Owens and Woolgar 2018).

6.2 Limitations and Future Directions

Several limitations and possible future directions were noted. First, the sample itself limits the generalizability of findings. The results presented were gathered from a sample of undergraduate students, and therefore cannot directly speak to the effectiveness of augmenting current providers' practice with the methods presented in this study. However, unlike practitioners, the undergraduate students represented a homogenous sample in that they likely did not have a history of training or allegiance to any specific methods or theoretical orientations, a benefit to the current study. Future studies could include a group of graduate students in training or clinicians currently in practice to determine the validity and effectiveness of the DICE-PM Model in clinical practice with clients.

In addition, given the geographic location of the institution where this study took place, the sample was fairly homogenous in terms of demographics, limiting the generalizability of the findings. Individuals from different cultural backgrounds may appraise the relevant constructs differently. For example, there may be differences both in what is considered a strength, and the ease with which they are identified (Pedrotti et al. 2009). Future studies could include a more diverse sample to address these limitations.

There are also limitations regarding the methodology and interpretation of the results. Regarding methodology, the instructor of the course was the same for both

the strengths and control groups. Although the instructor intentionally did not discuss strengths with the control group and the student evaluations of course and instructor effectiveness revealed nonsignificant findings between groups, it is possible the instructor's strengths-based orientation unintentionally influenced the control group. The instructor's orientation could be one explanation for the time effects found. Future studies could include two different instructors, one with and one without a strengths orientation.

Furthermore, the findings were not as sizable as predicted. The intervention at the core of the study appears sufficient to show a small effect under a low-pathology case, but not the high-pathology case. This may indicate that the type of intervention tested is insufficient to achieve the level of change desired, that the intervention used was too weak, or greater power (i.e., larger sample size) would be beneficial. A future study may include a more potent intervention, possibly achieved by increasing the length of training or frequency of practice, or by explicitly labelling, and therefore challenging, the negativity bias. Future studies could also include psychoeducation about the negativity bias and explicitly challenge this bias when engaging in assessment techniques.

Additionally, it was only possible to examine the outcomes for the students following one semester. Since the ultimate goal of this project is to create lasting change and develop a community of providers more attuned to strengths and assets, it would be beneficial to examine the long-term effects of learning about and using the DICE-PM Model. Longitudinal studies of students who go on to graduate clinical training and practice could determine the long-term effects of students exposed to the DICE-PM Model early in their education. Alternatively, future studies could also examine the impact of introducing the DICE-PM Model later in one's educational or professional career to examine the impact of longer exposure to traditional deficit-based approaches and practices. Results from this study can serve as a starting point in how to further examine the training of strengths-based assessment in light of some of the unexpected findings and limitations.

7 Conclusion

This study provided promising results of adopting a strength-based assessment and conceptualization model and provides guidance on how to examine assessment further to address consistent challenges related to the negativity bias. Students, and potentially clinicians, who wish to increase their focus on strengths could benefit from using a structured assessment approach like the DICE-PM Model, as it appears to shift students' attitudes towards the value of strengths during all phases of treatment and increases unprompted assessment of strengths in a low-pathology scenario. Additionally, students who attended to others' strengths were more likely to experience individual benefits through enhanced well-being. While the results of this study are encouraging, additional research related to the assessment of strengths with the DICE-PM Model as well as in cases of severe pathology is necessary. Thus, this study brings to light both the benefits and continued areas of growth related to balanced assessment and conceptualization.

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Compliance with ethical standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent Informed consent was obtained from all individual participants included in the study.

Appendix A. Assessment of Client Strengths and Weaknesses Items

Does Joan plan ahead?

Did Joan have helpful teachers?

Does Joan live in a stressful situation?

Does Joan lack people she can count on?

Does Joan have a stressful job?

Does Joan live near relatives or friends?

Is Joan overly suspicious of others?

Does Joan get discouraged easily?

Does Joan work hard at tasks?

Is Joan generous?

Is Joan homeless?

Is there adequate health care available in Joan's community?

Does Joan have a drug problem?

Is Joan kind?

Is Joan rebellious?

Is Joan lacking in social skills?

Did Joan experience abuse from her family?

Is Joan able to do many different things well?

Is Joan moody?

Does Joan's community have public transportation?

Has Joan experienced discrimination?

Does Joan show poor hygiene?

Was Joan's school academically inadequate?

Has Joan's family encouraged her to set and pursue goals?

Does Joan have social support?

Does Joan care about others?

Is Joan's place of employment hostile?

Is Joan friendly?

Is Joan intelligent?

Do people (friends and family) have confidence in Joan?

Does Joan's romantic partner treat her well?

Does Joan like herself?

Is Joan narrow-minded?

Is Joan able to change her strategy of problem solving if it fails?
 Does Joan have a learning disability?
 Does Joan have health insurance?
 Does Joan stand up for what she believes in?
 Is Joan hostile?
 Are other people hurtful towards Joan?
 Does Joan's community have enjoyable places to go?
 Does Joan's romantic partner abuse her?
 Did Joan's school lack resources?
 Do Joan's friends consistently give her support?
 Does Joan have limited resources?
 Does Joan adjust to changes easily?
 Do others offer Joan help when she needs it?
 Will employers consider hiring Joan?
 Does Joan have trouble controlling her impulses?
 Does Joan's job pay poorly?
 Do Joan's friends and family often take advantage of her?
 Does Joan live in a safe neighborhood?
 Does Joan make efficient use of her time?
 Is Joan short-tempered?
 Does Joan have difficulty expressing herself?
 Is Joan cooperative?
 Does Joan complain a lot?

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