
ORIGINAL ARTICLE

A Positive Psychology Intervention to Enhance Well-being and Lower Depression: Results from a Randomized Controlled Trial of a Signature Strengths Intervention among Indian College Students

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ABSTRACT

With positive psychology gaining rapid momentum in India, counselors and mental health professionals are increasingly turning to positive interventions such as gratitude, mindfulness, and strength-based interventions to help clients function efficiently in their everyday lives. A ground-breaking study carried out by [25] on positive psychology interventions has revealed the benefits of identifying and using personal strengths of character called signature strengths. Also known as "Use your Signature Strengths in a New Way", this particular positive intervention has shown to considerably improve well-being in many studies conducted among people of various cultures and countries, including India [15]. The present study is the first randomized controlled trial conducted to test the effect of the "Use your Signature Strengths in a New Way" intervention on well-being and depression in an Indian adult population. A total of 49 engineering students were randomly assigned to the experimental group and a wait-list control group with well-being and depression measured at the pre-test and the post-test. Results showed that the intervention had a significant effect on well-being but not on depression. Existing theories and possible underlying mechanisms that may explain these results are discussed. Finally, the need for more studies on underlying mechanisms facilitating the effect of signature strengths and directions for future research are outlined.

Keywords: depression, positive psychology interventions, signature strengths, web-based online interventions, well-being.

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INTRODUCTION

Until the end of the twentieth century, the science of psychology was mainly focused on mental disorders and their diagnoses and treatment while largely overlooking human strengths, potential, and all the good that we as a species are capable of. But with the emergence of positive psychology in 1998, the scope of psychology extended beyond mental illnesses to include the study of human potential, fulfillment, and flourishing [21]. [27] define positive psychology as the science of "positive subjective experience, positive individual traits, and positive institutions". It is a science that investigates positive aspects of human life such as happiness, health, well-being, fulfillment, healthy functioning, and flourishing [21].

Applied research in positive psychology focuses on building fulfilling lives through the identification and utilization of moral traits or personal strengths possessed by every individual to varying degrees. [21] developed a hierarchy of moral human virtues and traits known as the VIA Classification of character strengths and virtues that classifies and describes moral traits, also known as "character strengths", that

constitute good human character. The classification identifies six ubiquitous virtues namely wisdom and knowledge, courage, justice, humanity, temperance, and transcendence. The classification also includes twenty-four distinct moral traits or character strengths that are classified under one of the six overarching virtues. For example, the character strengths of love, kindness, and social intelligence are classified under the virtue of humanity, while the character strengths of fairness, teamwork, and leadership are categorized under the virtue of justice.

Out of the twenty-four strengths of character, every individual can identify three to seven strengths as being inherent or central to their personality [21]. This set of strengths, called the signature strengths, form the core of an individual and represent the individual's authentic or true self. [21] define signature strengths as "the strengths of character that a person owns, celebrates, and frequently exercises." Therefore, an individual's signature strengths is a set of a unique combination of three to seven character strengths that are the most central or prominent moral personality traits possessed by the individual. The experience of utilizing signature strengths is said to be invigorating and gratifying as it allows the expression of one's authentic or true self [26] [21]. Apart from facilitating the expression of one's authentic self, utilizing signature strengths is also inherently fulfilling which contributes to increased well-being [21]. This notion is supported by numerous studies that have shown the strong association between utilizing or 'exercising' signature strengths and different indicators of well-being such as life satisfaction and flourishing. While many studies have examined the effect of utilizing signature strengths on happiness and well-being, a handful of studies have also investigated its effect on depression.

Signature Strengths Interventions: Their Effect on Well-being and Depression

Signature strengths interventions are positive interventions designed to help people identify their signature strengths and utilize them more often in different domains of life [31]. The "Use Signature Strengths in a New Way" intervention designed by [26] has evolved as the most widely used signature strengths intervention adopted in many studies testing the efficacy of signature strengths interventions. [25] tested the effect of the "Use Signature Strengths in a New Way" intervention and four additional positive interventions on happiness and depression in a sample of 411 American adults. The authors found that using signature strengths in a new way each day for a period of one week led to a significant increase in happiness that lasted for six months. Using signature strengths also had a positive effect on depression as a significant decrease in depression was observed following the intervention and this decrease was also maintained for six months after the intervention.

To test the replicability of these findings, [7] tested the "Use Signature Strengths in a New Way" and other positive interventions tested in [26] study in a European sample and found a significant increase in happiness and a significant decrease in depression among participants in the signature strengths intervention group. Also, these improvements lasted for six months thereby confirming the findings obtained by [27]. Another [16] study was carried out by [19] in a Canadian sample. Similar to the findings obtained by [26], this study also found that using signature strengths led to long-lasting gains in happiness that lasted for six months. For depression, however, they could not make the same conclusions made by [25] as they found no significant change in depression following the "Use Signature Strengths in a New Way" intervention. This observation was further supported by another study conducted in an Australian sample by [17]. This study found a substantial increase in well-being but no significant change in depression following the use of signature strengths. However, this observation must be interpreted with caution as [17] implemented a slightly different variation of the standard "Use Signature Strengths in a New Way" intervention.

Nevertheless, these findings seem to imply that utilizing signature strengths may be more effective in *enhancing well-being* than in *alleviating depression*. But this implication cannot be generalized to people belonging to different cultures as studies conducted in Asian countries such as Malaysia and China show that utilizing signature strengths are just as effective in lowering depression as they are in enhancing well-being. For instance, in a sample of Malaysian undergraduate students, [30] found a significant increase in happiness and a significant decrease in depression one month after the completion of the signature strengths intervention. In line with this finding, another study conducted in an Asian sample by [4] among Chinese university students revealed significant changes in both happiness as well as depression following the signature strengths intervention. Therefore, conclusions about the effect of signature strengths interventions on depression are mixed with some studies showing a substantial lowering of depressive symptoms and others showing no significant change. On the other hand, the conclusion seems to be quite clear in the case of well-being as almost all the studies testing signature strengths interventions report a significant increase in one or more indicators or components of well-being.

This conclusion also holds true for people belonging to different countries and different age groups. For instance, a signature strengths intervention conducted among university students in Quebec, Canada, resulted in significant increases in life satisfaction, psychological well-being, and vitality [6]. Similarly, another study conducted by [3] among Chinese university students showed a significant increase in life satisfaction upon implementing the “Use Signature Strengths in a New Way” intervention for a period of six weeks. Akin to findings obtained among university students, studies conducted among working professionals also yielded similar results thereby proving the efficacy of signature strengths interventions in enhancing well-being in the adult working population [8],[9],[10].

However, as noted by [15], a huge majority of positive strength-based interventions are carried out in the west, mainly in the United States and European countries. There are only a few studies that test positive strength-based interventions in Eastern countries. This raises questions about the ubiquity of character strengths and their benefits in addition to the lack of representation of eastern cultures in the strengths literature. The only study conducted in India that implements a signature strengths intervention was carried out by [15] in a sample of school-going adolescents in north India. This study is a [16] study in an Indian population. The study found that participants in the “Use Signature Strengths in a New Way” intervention group experienced significant gains in different indicators of well-being such as life satisfaction, subjective well-being, psychological well-being, and happiness. However, the intervention did not cause any significant change in participants’ depression levels. This study was carried out among children aged between eleven and thirteen, and hence the findings of this study cannot be generalized to the adult population without exercising caution. Therefore, the present study is the first to implement a signature strengths intervention in an Indian adult population with the aim of testing its effect on well-being and depression. Moreover, with reports pouring in from different parts of the country about worsening mental health and well-being among university and college students [14] [18] [23], implementing a positive intervention that has shown to be effective in enhancing well-being is further warranted.

Aim of the Study

The present study aims to test the effect of the “Use Signature Strengths in a New Way” intervention on well-being and depression in a sample of Indian college students. The study uses a randomized controlled design and participants were randomly assigned to the experimental group and a wait-list control group. Participants in the experimental group engaged in the “Use Signature Strengths in a New Way” intervention for a period of 1 week while participants in the control group were not assigned any intervention. Well-being and depression were measured for participants in both the groups before the intervention (at pre-test) and after the intervention (at post-test). Based on the findings of previous studies, this study hypothesized the following:

Hypothesis 1: There will be a significant difference between the well-being scores of the experimental group and the well-being scores of the control group at the post-test.

Hypothesis 2: There will be a significant difference between the depression scores of the experimental group and the depression scores of the control group at the post-test.

Hypothesis 3: There will be a significant difference in the well-being scores of the experimental group between the pre-test and post-test measurement points.

Hypothesis 4: There will be a significant difference in the depression scores of the experimental group between the pre-test and post-test measurement points.

MATERIAL AND METHODS

Participants

The participants in this study were first-year students pursuing their engineering degrees at a polytechnic engineering college in the town of Visakhapatnam, located in the southern state of Andhra Pradesh in India. All participants were natives of Visakhapatnam and its surrounding villages. In total, 49 students (18 female and 31 male) agreed to participate in the study and their ages ranged from 18 to 20 ($M = 18.37$; $SD = 0.60$). Out of 49 students, 48 reported being single and 1 reported being in a relationship. All of them met the inclusion criteria of never having attended any strength-based program or workshop previously and of being free from drugs and not taking any psychotherapeutic treatment during the time of the study. No incentives were provided for participating in the study.

Design

The study adopted a true experimental design whereby participants were randomly assigned to the experimental group and the control group. The well-being and depression scores of all participants in the experimental and control groups were collected at the pre-test and the post-test. The intervention was the independent variable of the study which had only two levels consisting of an experimental group that

implemented the intervention and a wait-list control group that was not assigned any intervention. The two dependent variables of the study were well-being and depression which were both measured by scores obtained in standardized questionnaires measuring the respective constructs.

Instruments

1. The Values in Action – Inventory of Strengths (VIA-IS) – The VIA-IS is a standardized tool that measures the degree to which each character strength is possessed by an individual. The inventory is available for use free of cost online at the website <https://www.viacharacter.org/>. The inventory is a 5-point Likert scale with options ranging from “very much unlike me” (1) to “very much like me” (5). It consists of 240 items in total having 24 sub-scales measuring 24 strengths of character with 10 items under each sub-scale. One of the 10 items under the sub-scale of Fairness is “I always treat people fairly whether I like them or not” and one of the 10 items under the sub-scale of Honesty is “I always keep my promises”. The VIA-IS has shown to have good psychometric properties in numerous studies with good internal consistencies within each sub-scale (Cronbach’s $\alpha > .70$) and good test-retest reliability ($r > 0.70$) for over a period of four months.

2. The Center for Epidemiological Studies–Depression CES-D [22] – The CES-D is a 20-item standardized tool and is one of the most widely used tools to measure depression. The scale was used by [28] and also by studies that replicated the study conducted by [26]. The scale measures the symptoms of depression based on the frequency of their occurrence over the prior week. It is a 4-point Likert scale offering options ranging from “Rarely or none of the time (less than 1 day)” (0) to “Most or all of the time (5-7 days)” (3). Sample items from the scale are “I felt that I could not shake off the blues even with help from my family or friends”, “I thought my life had been a failure”, etc. The scale has demonstrated good psychometric properties across numerous studies with good concurrent and convergent validity, reliability, and internal consistency. In the present study, the scale showed an excellent reliability value (Cronbach’s $\alpha = .94$).

3. Brief Inventory of Thriving BIT (Su et al. 2014) – The BIT is a shortened version of the Comprehensive Inventory of Thriving (CIT) which measures seven different dimensions of well-being namely, subjective well-being, engagement in everyday activities, healthy relationships, meaningfulness in life, mastery or accomplishment, optimism, and autonomy. The BIT has 10 items in total measuring all the dimensions except autonomy. It is a 5-point Likert scale with options ranging from “Strongly Disagree” (1) to “Strongly Agree” (5). Sample items from the Inventory are “What I do in life is valuable and worthwhile”, “I am achieving most of my goals” and “There are people who appreciate me as a person”. The scale has good psychometric properties and also showed a good reliability value in the present study (Cronbach’s $\alpha = .83$).

Procedure and Intervention

The students were approached through the Head of the Electronics and Communication Department of the engineering college who introduced the study as a self-awareness and resilience program named “Discover your Inner Strength and your True Potential”. Ethical clearance to conduct the study was obtained from the researcher’s university. Students were given the consent form describing the nature of the study, adherence to confidentiality, benefits and risks of participation, the voluntary nature of participation, and the right to withdraw at any point during the study. Students were also informed that they would be assigned to an exercise group or a waiting group at the beginning of the workshop. Students who expressed their interest to participate in the study (in the consent form provided to them) were directed to fill in the demographic details followed by the pre-test measures of depression and well-being. In view of the ongoing pandemic and the restriction of movement imposed by the government on various states in the country, the data collection and intervention were carried out online.

The introduction session leading up to the intervention addressed all participants and consisted of a concise introduction to moral traits and good character. At the end of the introduction session, participants who were assigned to the control group were told that they will only have to attend the post-test session hereafter to measure their well-being and depression. The second session, engaging only the experimental group, consisted of identifying signature strengths by filling out the VIA Survey available for free at the VIA Character website (<https://www.viacharacter.org/>). After filling out the survey, participants were asked to make a note of their top five signature strengths for later use. They were also asked to take some time to reflect on the importance of their signature [5]. The intervention program began in the third session and spanned a period of one week, implementing the “Use Signature Strengths in a New Way” intervention. Each session consisted of group discussions wherein participants shared their experience of using their signature strengths and planned on the ways to use another signature strength the next day in a new way. In order to facilitate easier implementation of the exercise, participants were given a booklet consisting of different activities for each of the twenty-four strengths of

character. For example, the activities listed under the character strength of curiosity were “Ask a neighbor a couple of questions”, “Try a new food for the first time, preferably from a culture different than your own”, etc. All the activities listed in the booklet were excerpted from the work of [20] on character strengths interventions [20]. With one session per day for seven continuous days, participants exercised their top five signature strengths in new ways every day and shared their experiences in the group discussions conducted in each session. Following the week-long intervention, the researcher conducted the post-test session in which participants in the experimental group and the control group completed their post-test measures of depression and well-being. At the end of the post-test session, participants in the control group were informed of the exercise implemented by the experimental group and were guided through the process of filling out the VIA Survey to identify their signature strengths. Following the identification of their signature strengths, they were also given the booklet consisting of activities for each character strength and asked to carry out the activities listed under their signature strengths every day. This helped ensure that the control group also benefits equally from the intervention [30] & [35].

RESULTS

Data was analyzed using IBM SPSS 24.0. A total of 49 participants (25 in the experimental group and 24 in the control group) were included in the analyses to test the effect of the intervention. A set of independent samples t-test was conducted prior to the intervention to check for any systematic differences between the experimental and control groups in well-being and depression – the tests revealed no significant differences between the experimental group and the control group thereby confirming random assignment of the participants. All 49 participants completed the pre-test and post-test measures of well-being and depression. The means and standard deviations of well-being and depression at the pre-test and post-test are displayed in Table 1.

Table 1 Means and Standard deviations of well-being and depression at pre-test and post-test

Variable	Group	Pre-test		Post-test	
		M	SD	M	SD
Well-being	Experimental	3.63	0.75	4.00	0.57
	Control	3.61	0.51	3.56	0.68
Depression	Experimental	21.84	14.15	17.80	9.64
	Control	25.38	11.93	21.42	12.26

Effect of the Intervention on Well-being

An independent samples t-test was conducted to test the difference between the experimental group and the control group on well-being at the post-test after the completion of the intervention (results displayed in Table 2). Results of the t-test revealed a significant difference between the experimental group and the control group on well-being after the completion of the intervention, thereby confirming Hypothesis 1. An effect size calculation showed that the well-being of the experimental group increased by a moderate to large effect size (Cohen’s $d = 0.70$) following the intervention.

Table 2 Independent sample t-test for well-being at post-test

Outcome	Experimental group		Control group		$t(47)$	p	Cohen’s d
	M	SD	M	SD			
Well-being	4.00	0.57	3.56	0.68	2.44	.019	0.70

Effect of the Intervention on Depression

An independent samples t-test was conducted to test the difference between the experimental group and the control group on depression at the post-test after the completion of the intervention (results displayed in Table 3). Results of the t-test revealed no significant differences between the experimental group and the control group on depression at the post-test. Therefore, Hypothesis 2 could not be confirmed.

Table 3 Independent sample t-test for depression at post-test

Outcome	Experimental group		Control group		$t(47)$	p	Cohen’s d
	M	SD	M	SD			
Depression	17.80	9.64	21.42	12.26	-1.15	.256	0.33

Within Group Analyses

A set of paired sample t-tests for well-being and depression were conducted to determine the changes in well-being and depression, within the experimental group, before and after the intervention (results displayed in Table 4). Results of the paired sample t-test for well-being indicated a significant increase in well-being among participants in the experimental group from the pre-test to the post-test. Therefore, Hypothesis 3 was confirmed. An effect size calculation revealed that well-being increased by a moderate effect size (Cohen's $d = 0.56$). However, results of the paired sample t-test for depression revealed no significant difference in depression among participants in the experimental group between the pre-test and the post-test. Thus, Hypothesis 4 could not be confirmed.

Table 4 Paired samples t-test for well-being and depression before and after the intervention

Outcome	Pre-test		Post-test		$t(24)$	p	Cohen's d
	M	SD	M	SD			
Well-being	3.63	0.75	4.00	0.57	2.80	.010	0.56
Depression	21.48	14.15	17.80	9.64	1.46	.158	0.31

While results proved the effectiveness of the intervention on well-being (Hypothesis 1 and Hypothesis 3), the analyses revealed that the intervention did not have a significant effect on depression (Hypothesis 2 and Hypothesis 4).

DISCUSSION

The objective of the present study was to test the impact of the "Use Signature Strengths in a New Way" intervention on well-being and depression in an Indian adult population. Results revealed that the intervention had a significant impact on well-being (Hypothesis 1 and Hypothesis 3) but not on depression (Hypothesis 2 and Hypothesis 4). The intervention had a moderate effect size on well-being and this finding is congruent with the findings obtained by Hendricks et al. (2018) in their study on the effectiveness of positive psychology interventions (PPIs) in non-western countries. In their meta-analysis, [8] report that PPIs in non-western Asian populations have a moderate effect on well-being and a large effect on depression. However, the 28 studies included in the meta-analysis test diverse PPIs out of which only *one* study tests the efficacy of a strength-based intervention. Nevertheless, it can be noted that PPIs collectively have a moderate effect on well-being in non-western Asian populations.

While the present study's results for well-being were in agreement with the findings of previous studies on the efficacy of signature strengths interventions, the same was not true for depression. For instance, [28] found that participants who implemented the "Use Signature Strengths in a New Way" intervention for a week experienced a significant increase in well-being as well as a significant decrease in depression. This decrease in depression also lasted for a period of six months after the completion of the intervention. In a [16] study carried out by [7], results once again revealed that utilizing signature strengths had a significant impact on both well-being as well as depression. In addition to the significant decrease in depression following the intervention, the decrease in depressive symptoms also lasted for six months after the intervention as observed in [27] study. Moreover, even studies conducted in non-western Asian countries, such as Malaysia and China, found that utilizing signature strengths led to significant decreases in depression apart from merely enhancing well-being. For example, utilizing signature strengths significantly lowered depression, in addition to enhancing well-being, in a group of Malaysian university students [30]. The same was observed in a sample of Chinese students wherein the authors found that participants experienced significant changes in both well-being *and* depression following the utilization of signature strengths [4]. Therefore, studies conducted across different cultures show that exercising signature strengths lowers depression in addition to enhancing well-being.

However, there are a handful of studies that found that signature strengths interventions are only effective in *enhancing well-being* and not in *alleviating depression*. For example, [19] replicated [25] study in a Canadian sample and found that the utilization of signature strengths only enhanced well-being and did not lead to any significant change in depression. [8] also arrived at similar conclusions in their study among Australian employees. Interestingly, this finding also held true in an Asian sample as reported by [15] in their [16] study in an Indian population. Conducted in north India among children aged between eleven and thirteen, the authors found that children who implemented the "Use Signature Strengths in a New Way" intervention experienced significant increases in different components of well-being but no significant reduction in depression. In line with the above findings, this study also found that utilizing signature strengths brings about fulfillment and well-being but does little to alleviate depression. The

findings that signature strengths interventions only influence well-being and not depression can be explained based on the two continua model of mental state/being put forward by [12].

The two continua model posits that mental health and mental illness are two related but *distinct* dimensions or continua with each dimension having its own highest and lowest points. The mental illness continuum describes the presence or absence of mental illness with the high end of the continuum representing severe mental illness and the low end of the continuum representing the absence of mental illness. The mental health continuum, on the other hand, describes a positive state of being with the high end of the continuum (called flourishing) representing optimal functioning in multiple domains of life and the low end of the continuum (called languishing) representing inadequate functioning in different domains of life [12],[13]. The two continua model shows that there exists a “pure languishing” state that is distinct from a “pure mental illness” state, thereby showing that mental health and mental illness are two distinct and separate dimensions and that the absence of one does not imply the presence of the other and vice versa. Therefore, mental health and mental illness co-exist and have an almost inverse relationship with each other whereby the level of mental illness decreases as the level of mental health increases [12].

In the light of this model, the well-being assessed in the present study represents a measure of the mental health continuum while the depression assessed represents a measure of the mental illness continuum. The model also implies that the mental processes or mechanisms involved in increasing mental health are different from the processes or mechanisms involved in lowering mental illnesses such as depression. Therefore, exercising signature strengths can be said to trigger the mental processes or mechanisms involved in increasing well-being as opposed to the mental processes involved in lowering depression. The notion that there exist different mental processes responsible for enhancing well-being and reducing depression is also supported by studies that compare the effect of Cognitive Behavior Therapy (CBT) on depression with its effect on well-being. These studies found that CBT is effective in *lowering depression* but not in *enhancing well-being*. For example, [34] found that CBT lowered symptoms of depression and anxiety but did not have any effect on well-being. This finding is also confirmed by a meta-analysis conducted by [11] on the effectiveness of CBT on depression and quality of life. While CBT had a large effect size on depression (Hedge’s $g = 1.30$), its effect size on quality of life was comparatively small (Hedge’s $g = 0.69$). Therefore, CBT has shown to have a greater effect on lowering depression than it does on enhancing well-being. This may be the case because CBT, by identifying and correcting negative automatic thoughts and distorted thinking patterns, triggers the mental processes that aid in *reducing depression* the same way that signature strengths interventions trigger the mental processes that help in *increasing well-being*. Given that reduction in depression and improvement in well-being are brought about by different mental processes, PPIs such as signature strength interventions may only stimulate the mental processes that facilitate an increase in well-being and not the mental processes that are involved in lowering depression.

[21] explain some of the mental processes underlying the use of signature strengths. The authors state that using signature strengths induces feelings of authenticity as signature strengths constitute the core of an individual’s personality and, therefore, acting according to one’s true or authentic self leads to feelings of invigoration and excitement. Also, using one’s signature strengths for a noble cause or in the process of achieving personal goals induces a sense of meaningfulness and accomplishment thereby contributing to an individual’s well-being [25],[26]. Research has revealed a couple of mental processes or underlying mechanisms that facilitate the effect of using signature strengths. For example, [6] identified the experience of harmonious passion as an underlying mental process that facilitates the positive effect of using signature strengths on well-being. Exercising signature strengths also evokes a sense of calling wherein individuals experience an overwhelming passion towards an endeavor that makes use of their signature strengths. When individuals perceive an endeavor or a job as a calling, they are willing to invest themselves for the sole sake of the job/endeavor itself and not for the sake of any extrinsic reward that may come along with it [29].

Signature strengths can be effectively used to increase positive emotions, engagement in everyday activities, and meaningfulness in life [28]. More recently, the Well-being Theory put forward by [27] claims that in addition to positive emotions, engagement, and meaningfulness, using signature strengths can also improve the quality of social relationships and facilitate goal-accomplishment. Although enacting signature strengths enhances well-being through different mental processes, [21] state that fulfillment and well-being is an inherent part of exercising character strengths and that expressing strengths of character brings about immense satisfaction despite not being associated with any extrinsic reward or benefit. For example, enacting the strength of kindness by helping someone in need inherently leads to fulfillment and satisfaction despite not receiving anything in return. In this way, character strengths

“contribute to fulfillment” and are, therefore, said to be inherently linked to well-being [21]. This may explain why signature strengths interventions, and character strength-based interventions in general, lead to increases in happiness and overall well-being.

The two continua model established by [12] also helps explain the findings of studies which show that signature strengths interventions impact both well-being and depression. For example, [26], [8], [30], [4], and other authors have found that utilizing signature strengths not only enhances well-being but also lowers depression. According to the two continua model, mental health and mental illness are two separate dimensions or continua that are inversely related to each other. Since mental health and mental illness share an inverse relationship with each other, the level of mental illness decreases as the level of mental health increases and vice versa [12]. Therefore, an increase in well-being along the continuum of mental health would be accompanied by a decrease in depression along the continuum of mental illness. This implies that an increase in well-being upon utilizing signature strengths will be accompanied by a decrease in mental illness such as depression. Therefore, although utilizing signature strengths may not have a direct effect on depression, it can lower depression through its positive impact on well-being.

LIMITATIONS AND FUTURE RESEARCH

Despite being the first study to test the effect of an online signature strengths intervention on well-being and depression in an Indian adult population, the study has certain limitations. The first limitation is the size of the sample recruited in the study which is a mere forty-nine participants in total. Researchers of future studies can try and obtain larger samples to enhance the statistical power of trials thereby arriving at more definite conclusions.

The second limitation is the generalizability of the findings. Given that the study was conducted among students hailing from one particular locality in the southern part of the state of Andhra Pradesh, the findings obtained in this study may not apply to the masses belonging to other cultures, languages, and regions of India whose lifestyles and traditions differ massively from that of the participants assessed in the present study. Hence, there is a probability these findings may hold true only for this specific subsection of the diverse Indian population. Future studies can include larger and more heterogeneous samples to test the validity of the findings obtained in this study. Nevertheless, the finding obtained by [15] gives us reason to believe that signature strengths interventions carry benefits for all individuals irrespective of their ethnicity, culture, or lifestyle.

The third limitation concerns the use of self-report measures which have been criticized for carrying a possibility of giving biased results [2]. For this reason, self-reports are often combined with peer-rated, family-rated, or supervisor-rated measures to provide as true a picture as possible of the results as it allows researchers to assess the degree to which the results from multiple measures converge [2], [5]. However, as noted by [9] and [8], several elements of well-being, and even symptoms of depression, are within-person experiences that are best evaluated and assessed by the person experiencing them and, hence, the use of self-reports to measure such variables are considered valid.

The fourth limitation is the lack of a follow-up measurement of well-being. Given that signature strengths interventions have a steady but *gradual* impact on well-being, their effect strengthens over time, becoming more pronounced at the one-month or six-month follow-up compared to the immediate post-test. For instance, [25] found that utilizing signature strengths did not have any significant impact on happiness at the immediate post-test but gradually led to a significant increase at the one-week post-test. Similarly, [30] observed that utilizing signature strengths did not lead to any significant increase in happiness at the immediate post-test but noticed a significant increase at the one-month follow-up measurement point. Therefore, future studies can include follow-up measures after the completion of the intervention which not only allows one to detect changes in well-being over the long term but also helps to determine the point at which the effect of the intervention is the strongest.

CONCLUSION

In line with previous studies on the effect of signature strengths interventions, the present study confirmed that utilizing signature strengths improves well-being considerably. While findings of previous studies for depression appear to be inconclusive, the present study revealed that utilizing signature strengths did not lower depression significantly. Although the two continua model of mental state [12] offers a plausible explanation for the findings obtained in this study, future studies can further explore the effect of using signature strengths in greater depth to explain its differential effects on well-being and depression. Future research on the mental mechanisms underlying the use of signature strengths can shed some light on why utilizing signature strengths affects only well-being and not depression [19]. A probable mechanism underlying the utilization of signature strengths is the

experience of authenticity and invigoration brought about by acting in accordance with one's true self which, in turn, contributes to fulfillment and well-being [21]. Future studies should adopt qualitative approaches in investigating the mechanisms underlying the utilization of signature strengths as it can yield crucial information about how signature strengths interventions work, thereby explaining the process of change. The use of rigorous and diverse methodological designs to examine the exercise of signature strengths can help researchers and practitioners tailor effective and evidence-based interventions to promote growth and flourishing.

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REFERENCES

1. Biswas, S., & Biswas, A. (2021). Anxiety level among students of different college and universities in India during lock down in connection to the COVID-19 pandemic. *Journal of Public Health (Berl.): From Theory to Practice*, 1-7. <https://doi.org/10.1007/s10389-020-01431-8>
2. Buschor, C., Proyer, R. T., & Ruch, W. (2013). Self- and peer-rated character strengths: How do they relate to satisfaction with life and orientations to happiness? *The Journal of Positive Psychology*, 8(2), 116-127. <https://doi.org/10.1080/17439760.2012.758305>
3. Duan, W., Ho, S. M. Y., Tang, X., Li, T., & Zhang, Y. (2014). Character strength-based intervention to promote satisfaction with life in the Chinese university context. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 15(6), 1347-1361. <https://doi.org/10.1007/s10902-013-9479-y>
4. Duan, W., Bu, H., Zhao, J., & Guo, X. (2019). Examining the mediating roles of strengths knowledge and strengths use in a 1-year single-session character strength-based cognitive intervention. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 20(6), 1673-1688. <https://doi.org/10.1007/s10902-018-0014-z>
5. Dubreuil, P., Forest, J., Gillet, N., Fernet, C., Thibault-Landry, A., Crevier-Braud, L., & Girouard, S. (2016). Facilitating well-being and performance through the development of strengths at work: Results from an intervention program. *International Journal of Applied Positive Psychology*, 1, 1-19. <https://doi.org/10.1007/s41042-016-0001-8>
6. Forest, J., Mageau, G. A., Crevier-Braud, L., Bergeron, É., Dubreuil, P., & Lavigne, G. L. (2012). Harmonious passion as an explanation of the relation between signature strengths' use and well-being at work: test of an intervention program. *Human Relations*, 65(9), 1233-1252. <https://doi.org/10.1177/0018726711433134>
7. Gander, F., Proyer, R., Ruch, W., & Wyss, T. (2013). Strength-based positive interventions:
8. Further evidence for their potential in enhancing well-being and alleviating depression. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 14, 1241-1259. <https://doi.org/10.1007/s10902-012-9380-0>
9. Harzer, C., & Ruch, W. (2016). Your strengths are calling: Preliminary results of a web-based strengths intervention to increase calling. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 17(6), 2237-2256. <https://doi.org/10.1007/s10902-015-9692-y>
10. Hendriks, T., Schotanus-Dijkstra, M., Hassankhan, A., Graafsma, T., Bohlmeijer, E., & de Jong, J. (2018). The efficacy of positive psychology interventions from non-Western countries: A systematic review and meta-analysis. *International Journal of Wellbeing*, 8(1), 71-98. <https://doi.org/10.5502/ijw.v8i1.711>
11. Hofmann, S. G., Curtiss, J., Carpenter, J. K., & Kind, S. (2017). Effect of treatments for depression on quality of life: A meta-analysis. *Cognitive Behaviour Therapy*, 46(4), 265-286. <https://doi.org/10.1080/16506073.2017.1304445>
12. Keyes, C. L. M. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology*, 73, 539-548. <https://doi.org/10.1037/0022-006x.73.3.539>
13. Keyes, C. L., Dhingra, S. S., & Simoes, E. J. (2010). Change in level of positive mental health as a predictor of future risk of mental illness. *American journal of public health*, 100(12), 2366-2371. <https://doi.org/10.2105/AJPH.2010.192245>
14. Khadirnavar, A. A., Vanageri, H., & Asagi, R. E. (2020). Perceived stress, wellbeing and mental health of college student during COVID-19 pandemic. *Indian Journal of Psychiatric Social Work*, 11(2), 1-9. <https://doi.org/10.29120/IJPSW.2020.v11.i2.231>
15. Khanna, P., & Singh, K. (2019). Do all positive psychology exercises work for everyone?
16. Replication of Seligman et al.'s (2005) interventions among adolescents. *Psychological Studies*, 64(1), 1-10. <https://doi.org/10.1007/s12646-019-00477-3>
17. Mitchell, J., Stanimirovic, R., Klein, B., & Vella-Brodick, D. (2009). A randomised controlled trial of a self-guided internet intervention promoting well-being. *Computers in Human Behavior*, 25(3), 749-760. <http://dx.doi.org/10.1016/j.chb.2009.02.003>

18. Moghe, K., Kotecha, D., & Patil, M. (2020). Covid 19 and mental health: A study of its impact on students. *MedRxiv*, 6. <https://doi.org/10.1101/2020.08.05.20160499>
19. Mongrain, M., & Anselmo-Matthews, T. (2012). Do positive psychology exercises work? A replication of Seligman et al. (2005). *Journal of Clinical Psychology*, 68(4), 382–389. <https://doi.org/10.1002/jclp.21839>
20. Niemiec, R. M. (2017). *Character strengths interventions: A field-guide for practitioners*.
21. Hogrefe, Page, K. M., & Vella-Brodick, D. A. (2013). The working for wellness program: RCT of an employee well-being intervention. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 14(3), 1007–1031. <https://doi.org/10.1007/s10902-012-9366-y>
22. Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. American Psychological Association.
23. Peterson, C., Ruch, W., Beermann, U., Park, N., & Seligman, M. E. P. (2007). Strengths of character, orientations to happiness, and life satisfaction. *The Journal of Positive Psychology*, 2(3), 149–156. <https://doi.org/10.1080/17439760701228938>
24. Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401. <https://doi.org/10.1177/014662167700100306>
25. Ravichandran, S., Palanichami, M., Kalaiselvan, K., Muthukumar, A., & Mahalingam, G. (2020). Psychological impact of COVID-19 lock-down on college students across India: A cross sectional study. *International Journal of Community Medicine and Public Health*, 7(12), 4917–4926. <http://dx.doi.org/10.18203/2394-6040.ijcmph20205163>
26. Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction.
27. *American Psychologist*, 55, 5–14. https://doi.org/10.1007/978-94-017-9088-8_18
28. Seligman, M. E. P. (2002). *Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment*. The Free Press.
29. Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychology progress: Empirical validation of interventions. *American Psychologist*, 60(5), 410–421. <https://doi.org/10.1037/0003-066X.60.5.410>
30. Seligman, M. E., Rashid, T., & Parks, A. C. (2006). Positive psychotherapy. *American Psychologist*, 61, 774–788. <https://doi.org/10.1037/0003-066X.61.8.774>
31. Seligman, M. E. P. (2011). *Flourish*. The Free Press.
32. Senf, K., & Liau, A. K. (2013). The effects of positive interventions on happiness and depressive symptoms, with an examination of personality as a moderator. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 14(2), 591–612. <https://doi.org/10.1007/s10902-012-9344-4>
33. Schutte, N. S., & Malouff, J. M. (2019). The impact of signature character strengths interventions: A meta-analysis. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-being*, 20(4), 1179–1196. <https://doi.org/10.1007/s10902-018-9990-2>
34. Su, R., Tay, L., & Diener, E. (2014). The development and validation of the Comprehensive Inventory of Thriving (CIT) and the Brief Inventory of Thriving (BIT). *Applied Psychology: Health and Well-Being*, 6(3), 251–279. <https://doi.org/10.1111/aphw.12027>
35. Widnall, E., Price, A., Trompetter, H., & Dunn, B. D. (2020). Routine cognitive behavioural therapy for anxiety and depression is more effective at repairing symptoms of psychopathology than enhancing wellbeing. *Cognitive Therapy Research*, 44, 28–39. <https://doi.org/10.1007/s10608-019-10041-y>

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