

Walking and Happiness: A Study of Luther College Students

**Melissa Berg
Laura Delikowski
Christa Person
Bryan Topf
Lisa Vander Molen**

Attached is a packet identical to what each participant received.

INTRODUCTION (Christa)

Physical activity should be an important part of any individual's life, not only for the physical benefits to maintain a healthy body weight, but health in general, along with an overall sense of well-being (Dept. HHS, 2005). Approximately one in four Americans walk regularly. The University of Michigan Health System states that walking is a popular exercise because it can be done anywhere and at anytime. No matter "your age, regular fitness walking can improve several physical and psychological factors that can affect your risk for developing serious health problems" (UMHS, 2004). The United States Department of Health and Human Services states the following as benefits for regular physical activity: reduces the risk of developing diabetes, high blood pressure, colon and breast cancer and reduces feelings of depression and anxiety, in addition to many other benefits. Physical activity also promotes psychological well-being (Dept. HHS, 2002). A study conducted at California State University, Long Beach observed how the amount of daily walking predicts overall energy, mood, personality, and health. The conclusion of this research found that participants who walked each day were more energetic and had better moods. They found that the participants' self-esteem and happiness increased as well (Thayer, 2005). This demonstrates that physical activity and psychological well-being are connected.

The purpose of our research was similar to that of California State University's study. It was based on the number of steps an individual walked per day and overall happiness. Goals were made to be able to visually/objectively observe the decrease or increase in the number of steps taken daily. Thus, it would be possibly to see the participants' happiness fluctuate as well. The overall hypothesis of this research was that as the number of steps a participant walked each day increased/decreased, the overall happiness of the individual would increase/decrease.

METHODS (Laura)

We recruited undergraduate students (N=25) from Luther College, 21 of whose data was able to be used, to participate in our study. The objective of this study was to examine the relationship between

increased physical activity and psychological well-being. We used four measures of physical symptoms and psychological well-being: the Perceived Wellness Scale, the Mindfulness Awareness Attention Scale (MAAS), the Stress Appraisal scale, and Satisfaction with Life Scale. We asked our participants to track their daily steps for 18 days, with the help of provided pedometers, making goals at 3 points (Day 3, Day 6, and Day 13) to encourage an increase in their number of daily steps as well as averaging their daily steps since their last average steps calculation and goal creation. We asked the participants to complete the four measures of physical symptoms and psychological well-being to serve as baseline physical and psychological states of well-being the day prior to the beginning of the study and the day following the study. We also asked our participants to take the Satisfaction with Life Scale at 3 points during the 18-day study (at Day 3, Day 6, and Day 13).

The Perceived Wellness Scale is a measure created to reflect the multidimensional construct of wellness in an individual. “For the multidimensional aspect of the PWM [(Perceived Wellness Model)], Adams (1995) defined wellness as a 'manner of living that permits the experience of consistent, balanced growth in the physical, spiritual, psychological, social, emotional, and intellectual dimensions of human existence' (p.15). The six dimensions chosen for this model are consistent with the wellness perspective of a holistic emphasis, integrating aspects of the body, mind, and spirit” (Harari, Waehler, and Rogers, 2005). Thus, the measure posits that as an individual perceives himself or herself to be attending to each wellness dimension, he or she would be healthier (and vice versa if the individual does not perceive himself or herself to be attending to those dimensions). The measure we administered to our participants was a 14-item self-report wellness measure (the original PWS measure contains 36 items and has a scale of 1 to 6), scored on a scale ranging from 1 (not at all, or very strongly disagree) to 7 (all of the time, or very strongly agree). In order to obtain a composite wellness score of our version of the PWS, we added up each of the scores and then dividing by 14. The resulting average would indicate a general level of perceived wellness; the lower the average, the less the individual perceives himself or herself being well in the different dimensions addressed in the questions, and vice

versa if the average was higher.

The Mindfulness Awareness Attention Scale (MAAS) is a measure created to indicate a level of mindfulness, or an open awareness and attention to what is occurring at the present moment. The Mindfulness Awareness Attention Scale (MAAS) is a 14-item self-report measure (the original version contains 15 items) of the single factor of mindfulness.

“Mindfulness captures a quality of consciousness that is characterized by clarity and vividness of current experience and functioning and thus stands in contrast to the mindless, less 'awake' states of habitual or automatic functioning that may be chronic for many individuals. Mindfulness may be important in disengaging individuals from automatic thoughts, habits, and unhealthy behavior patterns and thus could play a key role in fostering informed and self-endorsed behavioral regulation, which has long been associated with well-being enhancement (Ryan & Deci, 2000)” (Brown and Ryan, 2003).

This suggests that mindfulness, as a state of consciousness, may vary from a higher sense of clarity to a lower level of attention (automatic or blunted thought). The measure we administered to our participants was scored on a scale ranging from 1 (almost never) to 6 (almost always). In order to generate a composite mindfulness average, we added up the scores of each item and dividing that number by 14. This resulted in an average number between 1 and 6. High scores would indicate to us that an individual had a high level of dispositional mindfulness, or a high level of attentiveness to what is going at the present time. Similarly, a low score would indicate more automatic and mindless thinking.

The Stress Appraisal Scale is a measure created to appraise an individual's sense of stress and his or her perceived ability to overcome stress. Stress may be perceived as challenging and threatening or it may be perceived as manageable.

“The SAM [(Stress Appraisal Measure)] was developed by Peacock and Wong (1990) in

accordance with the transactional model of stress to assess both primary and secondary appraisal dimensions. ...Appraisal was conceptualized as a multidimensional construct consisting of three primary appraisal scales included Threat (e.g., "I feel anxious"), Challenge (e.g., "I am eager to tackle problems"), and Centrality (e.g., "There are long-term consequences as a result of stress"). The three secondary appraisal scales included Controllable-by-Self (e.g., "I have the ability to overcome stress"), Controllable-by-Others (e.g., "There is help available to me"), and Uncontrollable-by-Anyone (e.g., "I feel totally helpless")" (Roesch and Rowley, 2005).

This is a 19-item measure (the original version of the SAM contained 24 items with a rating of 1 to 4), meant to appraise one's perception of stress and the dimensions of stress in a situation. This idea is consistent with models of coping between a person and their environment, as it would indicate an individual's ability or inability to balance the demands of a stressful situation and the individual's stable resources. The participants responded to statements with rating scale between 1 (not at all) and 5 (a great amount). In this case, the lower scores would indicate an individual's perceived inability to overcome stress and a lower sense of control, while higher scores would indicate an individual's perceived ability to overcome and a higher sense of control. In order to calculate a composite value for stress appraisal, we added up the values of each response, inverting the values of ten items (i.e. statements "I perceive stress as threatening" through "There are long-term consequences as a result of stress" as well as "No one has the power to overcome stress.") and then dividing that total value by 19. That composite average, ranging between 1 and 5, would then indicate that an individual is either more resistant (higher scores) or more vulnerable (lower scores) to stress.

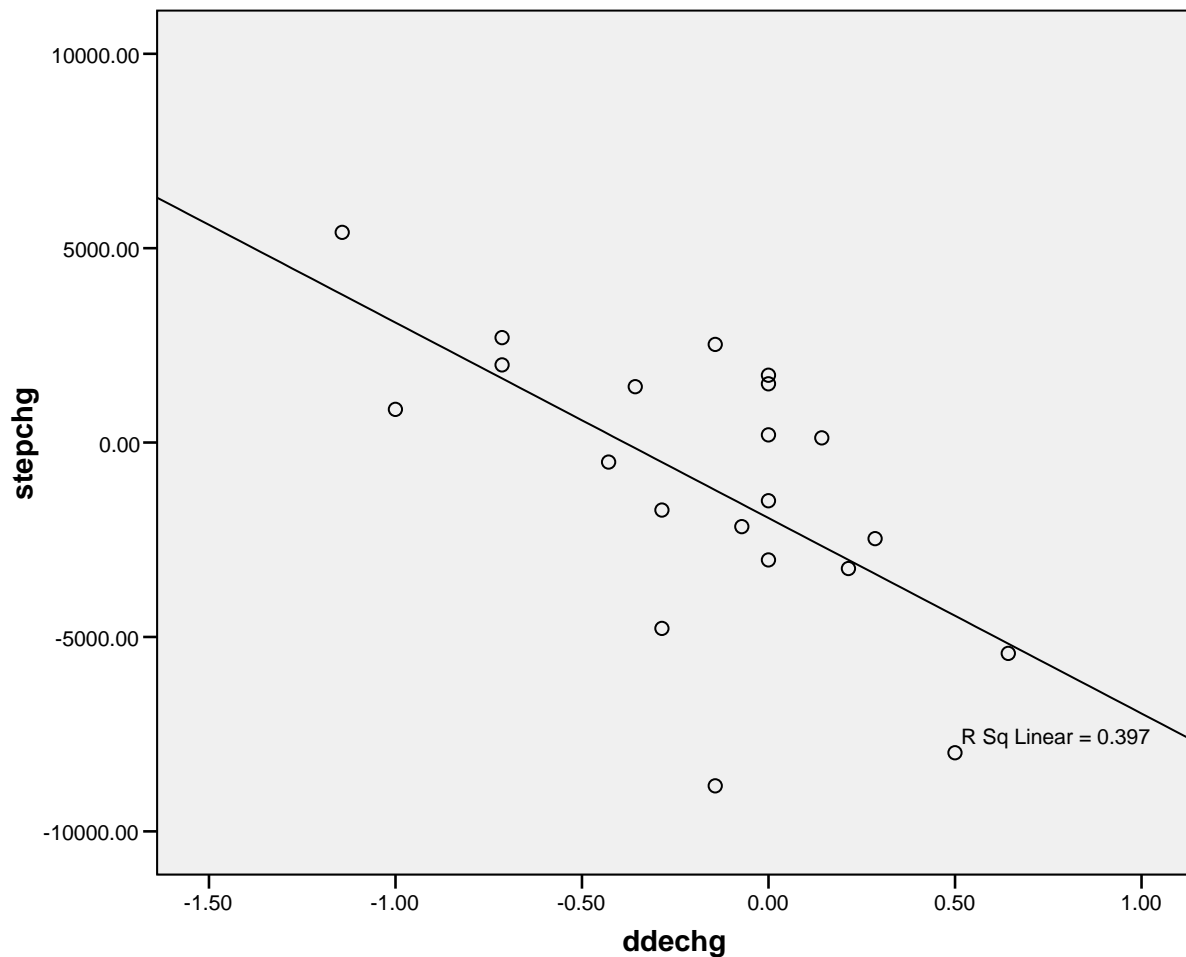
The Satisfaction With Life Scale is a measure created to reflect one's subjective well-being, or a cognitive judgment of satisfaction or dissatisfaction with one's life. The SWLS (Satisfaction With Life Scale) is a 5-item measure of one's global judgment of satisfaction with their life and appraisal of one's emotional well-being. "The SWLS provides an adjunct to measures oriented toward the assessment of

negative states. It assesses the positive side of the individual's experience rather than focusing on unpleasant emotions. In making a life satisfaction judgment, the SWLS emphasizes the person's own standards of evaluation" (Pavot and Diener, 1993). This suggests that one evaluates his or her life satisfaction with standards distinct to his or her life circumstances, which may be influenced by conscious goals, immediate factors, or even unconscious motives. The measure we administered to our participants was scored based on a scale of 1 (strongly disagree) to 7 (strongly agree). We generated a composite life satisfaction score by added up the scores on each item and dividing by five, which resulting in an average value between 1 and 7. Lower values would indicate an individual's dissatisfaction with their life and a lower sense of emotional well-being, whereas higher scores indicate an individual's higher sense of emotional well-being and a greater satisfaction with the circumstances of their life.

RESULTS (Lisa)

Mindfulness Measure

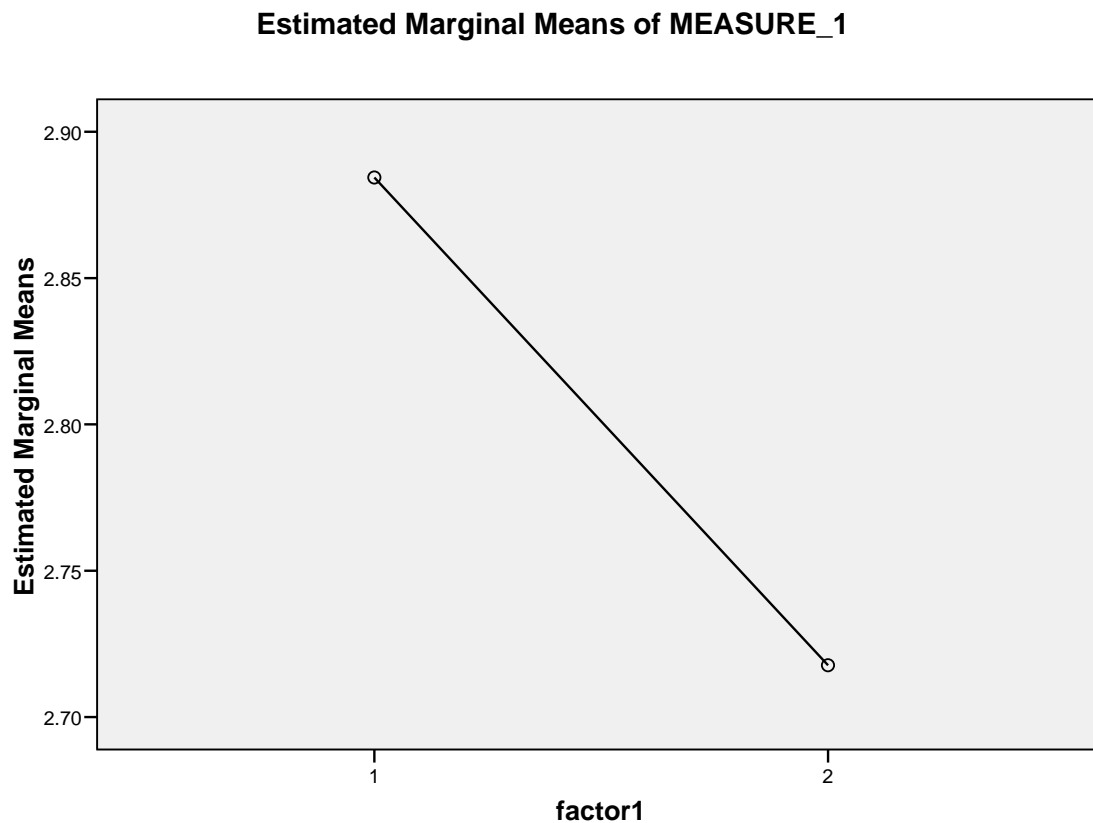
The results show that there is a strong correlation of $-.630$ between the number of steps walked and how mindful a person is. As the number of steps decreases mindfulness decreases as well. People who are mindful are aware of their current surroundings and their thoughts. We can therefore predict that those who take fewer steps in a day are generally not very mindful. The results can predict that if a person takes 5,000 steps more, the individual's score on Perceived Wellness will decrease by 1 score.



Perceived Wellness Scale

These results show that a person's perceived wellness increased from the beginning to the end of the

study (lower number = higher perceived wellness). This could be due to either a person being more thoughtful about his/her exercise during the 18 days of study and therefore thinking his/her wellness is better or it could also be due to the day of week the measure was taken on. There was a small correlation of $-.231$.



Stress Appraisal Measure

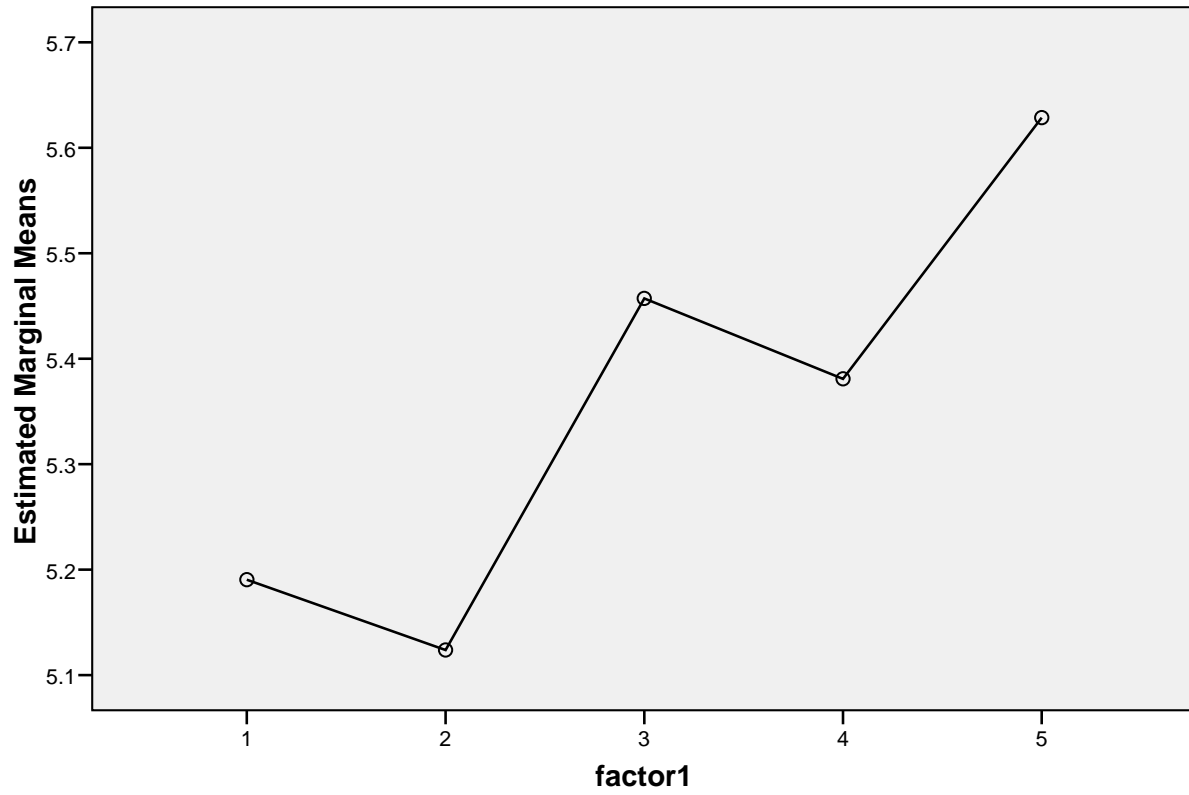
The results show that a person's stress actually increases with more steps taken however, the results were not significant. There is a little correlation between the number of steps taken and the amount of stress of $-.282$. (Higher number = Less stress).

Satisfaction with Life Scale

There was no change in the Satisfaction with Life Scale throughout the study. The results that are shown below suggest that the day in which the survey was taken influences a person's score. Times 3,

4 were taken on a Saturday and Time 5 was taken on a Friday. People generally get excited when the weekend is approaching and these results reflect that. There were no significant results.

Estimated Marginal Means of MEASURE_1



Correlations

		stepchg
Perceived Wellness	Pearson Correlation	-.231
	Sig. (2-tailed)	.313
	N	21
Mindfulness	Pearson Correlation	-.630
	Sig. (2-tailed)	.002
	N	21
Stress Appraisal	Pearson Correlation	-.282
	Sig. (2-tailed)	.215
	N	21

CONCLUSION (Bryan)

In our study comparing walking exercise and mental health, we found a strong correlation between the number of steps a person walked and how mindful they are. The Mindfulness Measure gauges how alert a person is to their surroundings and how mentally engaged they are in what they do and think about. Mindful people are aware of their emotions, are attentive, and pay attention to their bodies' physical cues of hunger, fatigue, etc. The correlation between an increased number of steps and positive mindful behavior indicates that increasing physical activity is linked to positive mental health. As found in the California State University, Long Beach study, increased walking can benefit a person's energy, mood, personality, and health (Thayer, 2005). Our results are similar in the fact that increased walking benefited mindfulness which relates to energy and mood as in the Long Beach study. Our conclusion that increased walking can indeed benefit mental health, even in a short-term study such as

ours, is in congruence with the larger body of current research on the topic which links physical activity to psychological well being.

Our study also considered the correlation of increased walking and perceived wellness. There was a small correlation between increased walking and increased perceived wellness. The Perceived Wellness Scale used indicates a person's wellness considering sleep patterns, bodily symptoms due to stress, etc., and frequency of minor illness. It can be concluded that perceived wellness improved a little for those who increased walking, but the results are probably not very useful due to the variability of sleep, stress, and minor illness that may occur over the short period of our 18 day study. Our results may have shown a stronger correlation if our study was conducted over a longer period of time. Other long-term studies have shown stronger correlations between wellness benefits and increased physical activity.

Considering stress, our results showed a small increase in the Stress Appraisal Measure for those who increased their walking, although the results were not significant. Considering our study, we feel that stress experienced by college students is highly variable and wouldn't necessarily be expected to be reduced over an 18 day study. We also think that our study was conducted during a time in which the students likely experienced fairly variable or even elevated stress during the height of the semester. Our study was probably not long-term enough to show the stress coping and personality disposition measure of stress that may have occurred with increased physical activity.

There was no change in life satisfaction as measured in our study. We feel as though this measure may be influenced easily by the variability of stress, mood, personality, and the day on which the survey was taken. With our surveys being taken on weekend days, we feel that our participants may have experienced more optimism and satisfaction than what they may feel on an average day to day comparison. We would also probably not expect personal outlook as measured on the scale to change much over the course of our 18 day study. In conclusion, we think life variables, rather than increased walking had the largest influence on the participant's satisfaction appraisal.

Overall, our results agreed with the larger body of research linking physical activity with improvements in physical and mental health. In our study, the psychological variable of increased mindfulness showed the most correlation with increased walking. Perceived wellness also increased some with walking. The other variables of stress appraisal and satisfaction with life showed less or no correlation with walking. We feel that this lack of correlation is due mostly to the short-term nature of our study and what may reasonably be expected to change over 18 days. Our study may point to what psychological variables change the most quickly with increased walking, these being mindfulness and wellness. Had our study been conducted over a longer period of time, more correlation between the variables (psychological benefits) and increased walking may have been found. This conclusion is based on the psychological benefits of increased activity as demonstrated by other studies including long-term studies.

In conclusion we recommend individuals consider increasing their levels of physical activity to improve both their psychological and physical well being. Although people often are aware of the physical benefits of increased activity and exercise, the psychological benefits may be overlooked by the general population. We recommend that the healthcare field continues to educate the public and point to the psychological benefits that will likely be experienced by individuals who increase their physical activity. Considering communities, physical activity should be promoted for all ages with the benefit being improved physical and psychological well being for the population.

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