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How to Reduce Anxiety.

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ABSTRACT

In this paper, we sought to understand how lifestyle choices can contribute to the overall reduction of anxiety, so that we could learn how to use this to our benefit. Previous research has found that anxiety can be reduced by music therapy, mindfulness, a dietary change, animal therapy and self-esteem enhancement. In our correlational study, we tested the strength of these relationships by examining naturalistic daily changes in their variables longitudinally over a period of one week. We measured music therapy by the amount of times we had music playing in our heads, mindfulness by time spent in a mindful state, vegan diet by how many vegetables were consumed, animal therapy by time spent exposed to animals, self-esteem enhancement by how many activities were exercised to help increase self-esteem, and anxiety on a subjective scale. Data pooled across participants in our correlational study showed that only mindfulness had a statistically significant correlation with anxiety. We found that although vegan diet and self-esteem enhancement showed a positive correlation with reduced anxiety, the strongest of all variables was increased mindfulness. A possible practical application of these findings could be the use of mindfulness practices, such as deep breathing and self-awareness, to reduce anxiety. A way to ease oneself from anxious moments.

1. Introduction

1.1 Research Problem

This research project is about the ways that we can reduce our own anxiety to build coping mechanisms. The group's interest in this particular topic stems from experiences such as suffering with social anxiety, generalized anxiety disorder, panic attacks, wanting to help a loved one, general curiosity and continuing to develop and grow our own self-esteem.

Our goals were to find easier ways to connect and communicate with our peers, to reassert control over conditions that we are afflicted with, to definitely link healthy lifestyle and diet with a healthier and calmer mind, and to see if animal or music therapy is effective in daily practise in helping us achieve our goals.

To reduce anxiety and maintain a healthy mindset with sufficient self-esteem levels in order to live and survive in the new environment - understanding how to deal with the challenges embedded in it would be crucial. Realizing how we can help ourselves or people we love to cope with anxiety in its many forms is important to each one of us. We hope to find evidence that maintaining increased physical activity, healthier food choices, relaxation/breathing

techniques and some mental exercises on a more daily basis, will translate to other areas of our lives. Such as, being able to confidently offer advice to someone, handling social situations with more ease and better comfortability levels, helping others to not only survive but thrive in new environments or perhaps, even facilitate a reduction of medication for one's self.

1.2 Literature Review

One way previously found to reduce anxiety is music therapy. For example, in a receptive and active music therapy study by Gutiérrez & Camarena (2015), the receptive process had the subjects either listen to prerecorded music, or the music therapist play music, without any involvement. The active process had the subjects engage with the therapist to make music together. The researchers used many practices, such as breathing techniques and exercises to handle irrational thoughts, that were administered throughout 12 two-hour sessions. The results showed that, after taking a BAI (Beck Anxiety Inventory) before and after treatment, the music therapy successfully reduced the scores of those subjects with GAD (General Anxiety Disorder). They also found that actually playing the instruments had a greater reduction in anxiety levels. Based on these results, the researchers suggested that music therapy is an effective method of reducing anxiety.

Another way previously found to reduce anxiety is mindfulness. For example, in a study of a randomized control trial experiment by Surantana et al. (2021), participants were put into one of three groups by random assignment. Group one was self-help mindfulness, group two was self-help relaxation and the third group was a waitlist group who had nothing going on. Prior to the experiment commencing, all participants (129 in total) underwent a questionnaire in which they were presented statements. They were asked to rate on a 4-point subscale how each statement had affected their anxiety levels within the past week. This pretest provided a baseline for which they could then compare against later on. Both experimental groups then were asked to log on to a computer and follow the same program to access and complete the exercises provided. The only difference being, whether the exercises were geared more toward mindfulness or relaxation for their respective groups. Upon completion of the online exercise, participants found a final exercise set out to show the results of each individual's efforts. What they found was that although both experimental groups showed a decrease in anxiety levels from pretest to posttest, the mindfulness group showed the greatest decrease overall. Furthermore, the control group showed an increase in their anxiety levels. Based on these results, the researchers suggested that online self-help mindfulness and relaxation meditation techniques can both help reduce anxiety in a person. However, when compared against one another, mindfulness meditation techniques prevail for overall impact on the reduction of anxiety levels.

A third way previously found to reduce anxiety is a healthy diet. For example, in a lifestyle modification study by Null et al. (2017), 27 people with varying mental and physical illnesses were subjected to an anti-inflammatory vegan diet and prescribed 40-60 minutes of exercise per day. The diet included high protein vegetarian food including brown rice, legumes, seeds etc., beverages such as dairy free milk alternatives, herbal tea and freshly squeezed fruit juice, natural sweeteners, vegetable oils, nine - twelve servings of fruits and vegetables each day, and herbs and spices. Five of the people involved struggled with

anxiety, and when the experiment concluded, the participants gave videotape testimonials, reporting significantly lower levels of anxiety, and a sense of improved physical and mental health. A few participants recorded that it was easier to leave the house and sleep at night. Two of the patients' physicians felt as though they improved enough to stop taking former mood disorder medication. Based on these results, the researchers suggested that a change in lifestyle, or more importantly diet, can have a huge impact on reducing not only anxiety, but other mental and physical disorders as well and should be considered as an alternate form of therapy.

A fourth way previously found to reduce anxiety is therapy where the individual is in contact with emotional support animals. For example, in a study by Barker et al. (2003), thirty-five individuals aged 18 and over with no allergies and suffering from anxiety or depression were exposed to animal therapy, where the individual had the opportunity to interact actively with a dog from Delta Society Pet Partners, before their electroconvulsive therapy. To measure the effectiveness of the theory, researchers assigned on different days the treatment that the conditions were fifteen minutes of AAT (Animal-Assisted Therapy) as a first variable, and the second variable involved fifteen minutes with magazines. These two conditions were applied on the same day. The level of anxiety was determined through a 15-cm line, where on the left side the level is null, while on the right side it is an extreme level. As a result of the study, statistics showed that AAT has a significant effect on reducing anxiety by 18%. However, the therapy has no significant effect on patients with depression. Based on these results, the researchers suggested that Animal-Assisted therapy might be useful in medical and psychiatric therapies in which the therapeutic method is intrinsically fearful or has a negative social impression.

A fifth way previously found to reduce anxiety is to identify, implement, and perform the best available methods to increase self-esteem. For example, in a study to assess the mediating effect of collective self-esteem and ethnic identity on anxiety and depression and quality of life by Urzua et al. (2022), 908 first-generation immigrants from Colombia, aged 18 to 89, living in Chile's major cities were surveyed. The researchers used three structural models to measure and analyze the variables present in the study. To measure collective self-esteem, the researchers used 4 items from the scale proposed by Luthanen and Crocker to ask about how the person felt about the current society he/she currently belongs to or his/her national group of origin. Anxiety was assessed using the Spanish version of BAI (Beck Anxiety Inventory), which asks about common symptoms connected with anxiety disorders. Prior to taking part, each participant signed an informed consent form. Anxiety and collective self-esteem were estimated using confirmatory factor analysis and subsequently, hypotheses were tested using three structural models. For the first two models, they estimated the effect of anxiety and depression on collective self-esteem, quality of life, and ethnic identity. The results showed that anxiety and depression have a small negative effect on collective self-esteem and ethnic identity while they both have moderate negative effects on quality of life. It was also found that anxiety and depression maintained a moderate positive relationship. After these findings, the mediating effect of collective self-esteem and ethnic identity on the effect of anxiety and depression on quality of life was observed. The results showed that collective self-esteem and ethnic identity manage to mediate the negative effect of

anxiety and depression on quality of life. Based on these results, the researchers suggested that A person's collective self-esteem significantly influences mental health problems such as anxiety.

1.3 Hypotheses

Based on the above literature review, we predicted the following hypotheses:

·Hypothesis #1: If playing music increases then anxiety will decrease.

·Hypothesis #2: If mindfulness increases then anxiety will decrease.

·Hypothesis #3: If a vegan diet increases then anxiety will decrease.

·Hypothesis #4: If exposure to animals increases then anxiety will decrease.

·Hypothesis #5: If self-esteem enhancing activities increase then anxiety will decrease.

2. Methods

2.1 Participants

The five authors of this paper served as the participants in its studies. The participants ranged in age from 18 - 33 years old, with an average age of 22.8 years, and included both male and female participants. The participants were all undergraduate students at Camosun College who completed the current studies as an assignment for Psyc 110 ("Experimental Psychology") and were grouped together due to their mutual interest in reducing anxiety. Throughout the week of the study, one of the participants was already experiencing higher levels of anxiety because of multiple midterms to study for and complete. At the end of the study week the remaining participants were also experiencing higher levels of anxiety due to projects and midterms.

2.2 Materials and Procedures

We performed a correlational study to test concurrently all of our hypotheses by examining naturalistic daily changes in their variables longitudinally. Each participant kept a study journal with them at all times over this study's one-week period in order to record self-observations of the following six variables: (1) music therapy, (2) mindfulness, (3) vegan diet, (4) animal therapy, (5) increase of self-esteem and (6) reducing anxiety.

Music Therapy - To measure the effectiveness of music therapy to reduce anxiety, a measurement of the amount of times we had music playing in our heads throughout the day was taken.

Mindfulness - To measure the effectiveness of being more mindful, we recorded each time we used practices such as deep breathing, self-awareness and taking time to be "in the moment".

Vegan Diet - To measure the effectiveness of a vegan diet, the technique used was a daily log of how many vegetables were consumed throughout the day.

Animal Therapy - To measure effectiveness of the animal therapy, the method used was to count the number of times an animal was interacted with or seen each day.

Increase of Self-esteem - To measure the effectiveness of the increase of self-esteem to anxiety reduction, activities that help boost self-esteem were recorded throughout the day.

Reducing Anxiety - To measure the effects of music therapy, using mindfulness and relaxation exercises, a vegan diet, animal therapy and increasing self esteem activities, the technique used was a daily completion of a 0-100 Likert anxiety subscale both prior to and after potential "treatments". Where 0 = not anxious at all

and 100 = extremely anxious. From these records, the anxiety level of each participant for each day was calculated.

2.3 Statistical Analyses

To assess the strength and statistical significance of associations between variables predicted by our five hypotheses, we performed Pearson product moment correlations of their predictor variables (music therapy, mindfulness, vegan diet, animal therapy, and increase of self-esteem) with their outcome variable (reducing anxiety). For testing Hypothesis #1, we correlated the number of times we played music in our heads with a reduction of anxiety. For testing Hypothesis #2, we correlated mindfulness with a reduction of anxiety. For testing Hypothesis #3, we correlated how many vegetables were consumed throughout the day with a reduction of anxiety. For testing Hypothesis #4, we correlated how often we see an animal with the reduction of anxiety. For testing Hypothesis #5, we correlated the difference of self-esteem from the beginning of the day compared to the end of the day and its relation to the reduction of anxiety. We performed all of the above correlations separately for each participant as well as using data pooled across all of the participants. For the correlations using pooled data, in addition to using the raw data, we also performed correlations after we had first transformed the data from each participant into *z*-scores in order to standardize differences in averages and variability seen between the participants in their data and thus make them more comparable. A correlation coefficient was considered statistically significant if the probability of its random occurrence (p) was $< .05$ (i.e., less than 5% of the time expected by chance alone)..

3. Results

As shown in Table 1, mindfulness had the most significant correlation with a reduction in anxiety. While not significant using pooled raw data ($r = .26$, $p = .13$; see Figure 5), their correlation using pooled standardized data values was significant ($r = .40$, $p = .02$; see Figure 6). The other four variables showed no significant correlations with anxiety. These were a vegan diet, self-esteem, music exposure and animal therapy. The lowest correlation with anxiety was animal therapy, using either pooled standardized data ($r = 0.02$, $p = 0.91$; see Figure 10) or pooled raw data as ($r = 0.05$, $p = 0.80$; see Figure 9). The other therapies fell in the middle. Vegan diet was not significantly correlated with anxiety using either pooled standardized data ($r = 0.14$, $p = 0.42$; see Figure 8) or pooled raw data ($r = 0.16$, $p = 0.36$; see Figure 7). Music was not significantly correlated with anxiety using either pooled standardized data ($r = 0.19$, $p = 0.51$; see Figure 2) or pooled raw data ($r = 0.05$, $p = 0.79$; see Figure 1). Self-esteem was not significantly correlated with anxiety using either pooled standardized data ($r = 0.27$, $p = 0.12$; see Figure 4) or pooled raw data ($r = 0.28$, $p = 0.10$; see Figure 3).

4. Discussion

4.1 Summary of Results

Based on the previous research, we hypothesized that increases in five variables would help reduce anxiety: Playing music (Hypothesis # 1), mindfulness (Hypothesis #2), vegan diet (Hypothesis #3), animal therapy (Hypothesis #4), and self-esteem (Hypothesis #5). Data pooled across participants in our correlational study supported and predicted the relationship of anxiety with mindfulness (Hypothesis #2)

but not with other self-esteem, music, vegan diet, and animal therapy.

4.2 Relation of Results to Past Research

Playing music showed a small correlation to anxiety in our correlational study, signifying that the results did not support the hypothesis. This reflects the findings of the study by Gutiérrez & Camanera (2015), because they also had the participants play instruments, which had an even greater reduction in anxiety result. This inconsistency shows how crucial the action is to a greater reduction in anxiety.

Mindfulness showed a significant correlation with anxiety in our correlational study and this confirmed the hypothesis in the study by Suranata, et al. (2021). Their study required participants to complete online relaxation and mindfulness exercises and they proved to be effective. While both showed a reduction in anxiety, mindfulness exercises ultimately proved to have a more significant correlation overall. Our group's correlational study - in which we tracked the number of times per day we spent time in a state of mindfulness - also had a significant correlation between anxiety and mindfulness.

The influence of a vegan diet showed an insignificant correlation to a reduction in anxiety, showing that the results did not support the hypothesis. The Null et al., (2017) study required participants to change their diet fully to an anti-inflammatory vegan diet which showed a high correlation with a reduction in anxiety. This study measured the quantity of vegetables consumed throughout the day instead of a full dietary change, which would explain why there was a lower correlation and it did not relate to past research. Participants in this particular study also did not consume the same quantity of vegetables as shown in the Null et al., (2017) study, which provided less data to study.

The results of the correlational study showed an insignificant correlation between self-esteem and anxiety, showing that the results did not support the hypothesis. The study by Urzúa et al. (2021) required participants to assess their self-esteem using four items from the scale proposed by Luthanen and Crocker. Anxiety was assessed using the Spanish version of the BAI (Beck Anxiety Inventory), which assesses anxiety levels. While Urzúa et al. (2021) had immigrants assess their feelings in the society they belong to, we focused specifically on college students and changes in their level of self-esteem in a day. The research methodologies used in this study and in the previous research, prove that self-esteem is not significantly correlated with anxiety.

Based on the results of the conducted study, we can conclude that animal exposure has the lowest correlation coefficient with anxiety reduction. In addition, the present research is not related to the previous research by Barker et at. (2003), since the first research showed a huge significance with anxiety reduction. This discrepancy may be due to the different ways in which the individuals were exposed to the treatment, as well as the time spent daily with the animal. Also, the type of animal can influence the results.

4.3 Implications of Results

It can be assumed, based on our correlational studies findings that if mindfulness activities are increased that anxiety will decrease. This can be applied to one's life at leisure and in correspondence with one's interests. For example, for those who enjoy yoga or meditation this can come very easily. Those who do not practice either

of those simply need to find small moments of time to integrate some acts of self-awareness or reflection. Even just incorporating a few minutes of deep breathing into your days can have an impact in reducing overall anxiety levels.

The research problem we began with is answered by our correlational study results. With an effort to increase mindfulness activities and exercises, some control can be reasserted over a person's struggle with anxiety. This alone may not be enough however, and should be happening in conjunction with proper personal care such as eating, sleeping and being hydrated enough.

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Table 1

Correlations for Study Variables

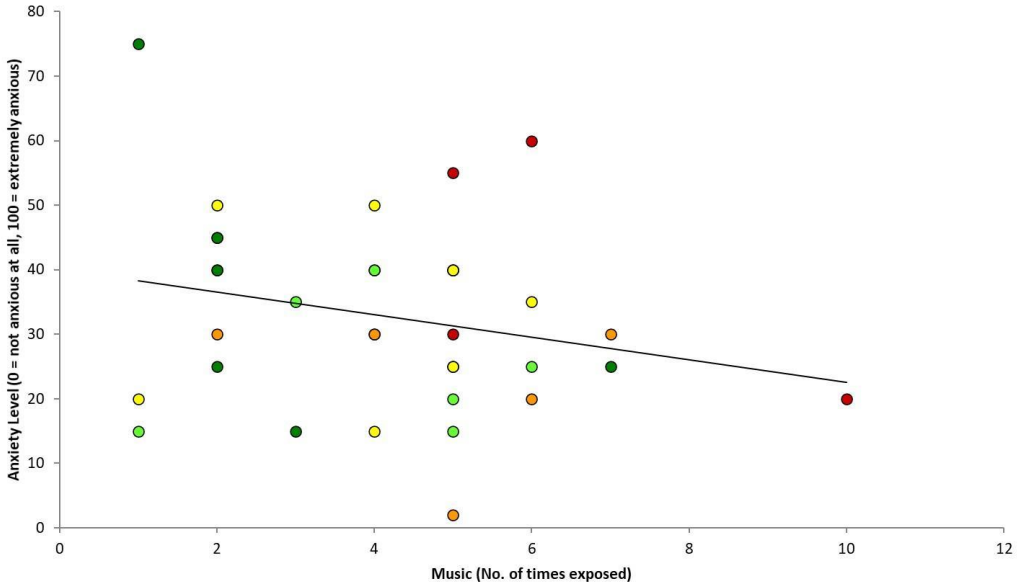
Variables	Participant #1		Participant #2		Participant #3		Participant #4		Participant #5		Pooled raw data		Pooled standardized data	
	r	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*
Music & anxiety	-0.13	7	-0.54	7	-0.40	7	0.39	7	0.05	7	-0.23	35	-0.19	35
Self-esteem & anxiety	-0.09	7	-0.53	7	-0.38	7	-0.92*	7	0.59	7	-0.28	35	-0.27	35
Animal therapy & anxiety			-0.55	7	-0.71	7	0.72	7	0.45	7	-0.05	28	-0.02	28
Vegan diet & anxiety	-0.56	7	-0.30	7	0.25	7	-0.71	7	0.61	7	0.16	35	-0.14	35
Mindfulness & anxiety	-0.43	7	-0.56	7	-0.68	7	-0.29	7	-0.06	7	-0.26	35	-0.40*	35

Notes. *r* = correlation coefficient, *n* = number of days sampled.

*$p < .05$.

Figure 1

Association Between Exposure to Music and Anxiety Using Pooled Raw Data



Notes. Marker colour differentiates participants: red = Participant #1, orange = Participant #2, yellow = Participant #3, light green =Participant #4, and dark green = Participant #5. Some data might not be visible in the figure due to overlapping markers.

Figure 2

Association Between Exposure to Music and Anxiety Using Pooled Standardized Data

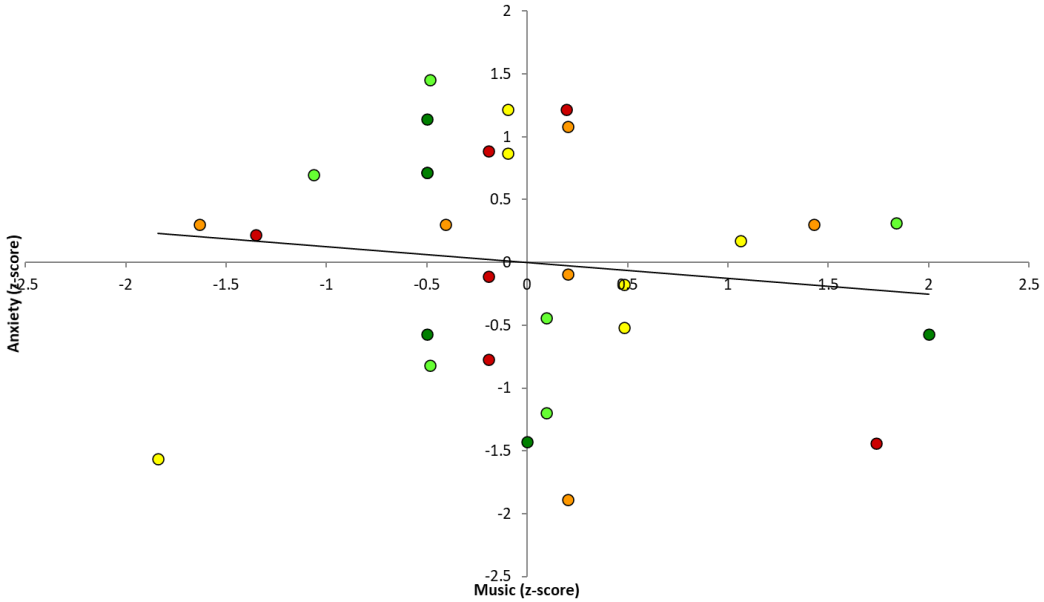


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Figure 3

Association Between Self-esteem Activities and Anxiety Using Pooled Raw Data

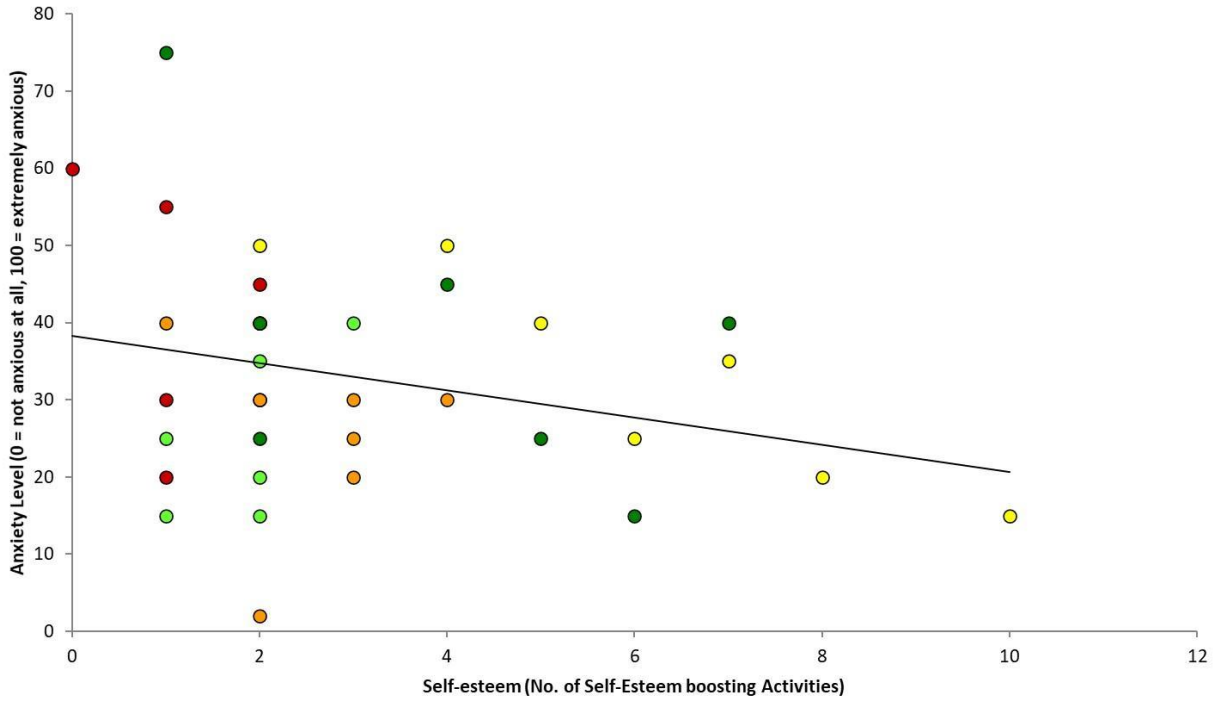

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Figure 4

Association Between Self-esteem Activities and Anxiety Using Pooled Standardized Data

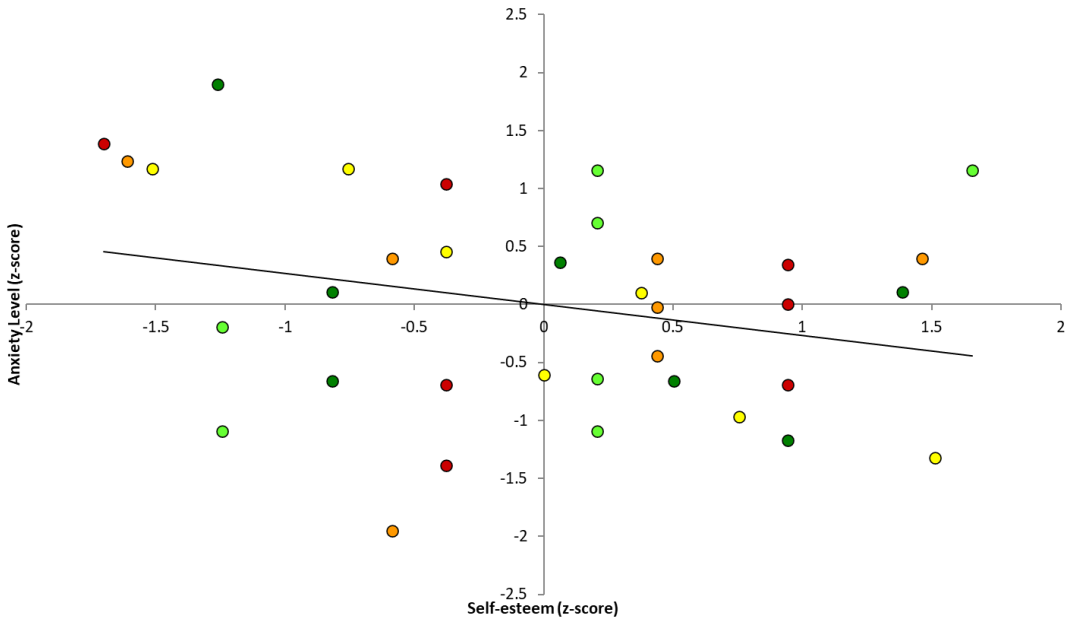

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Figure 5

Association Between Mindfulness and Anxiety Using Pooled Raw Data

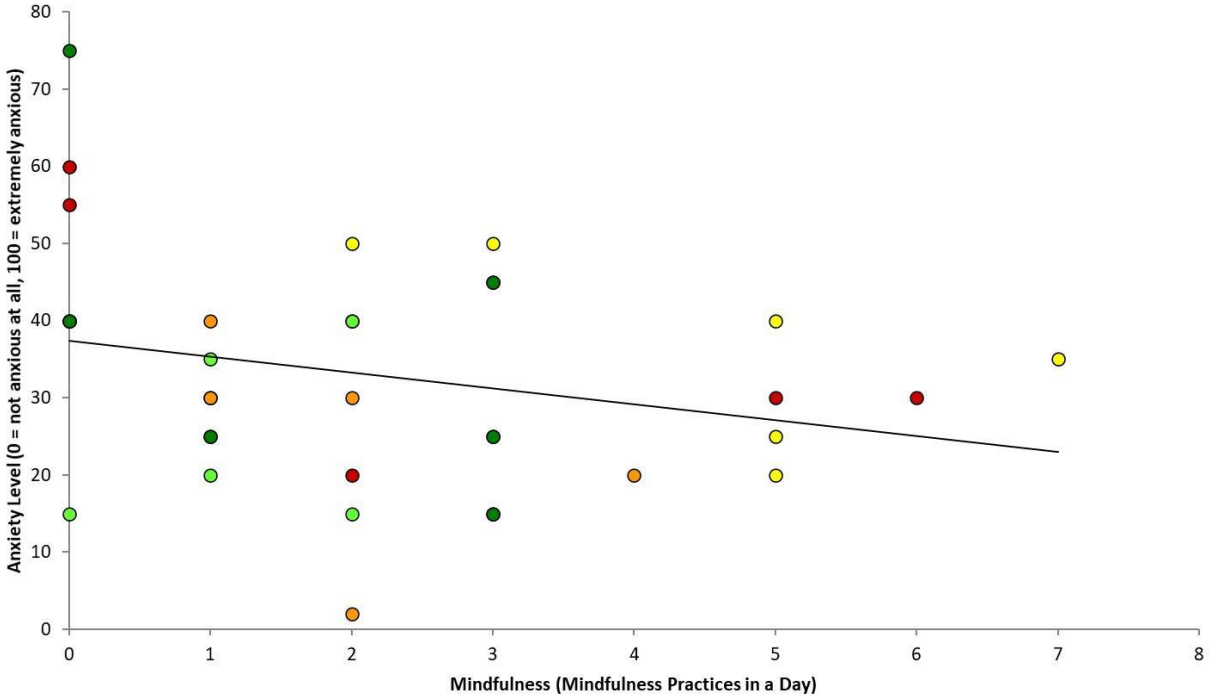

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Figure 6

Association Between Mindfulness and Anxiety Using Pooled Standardized Data

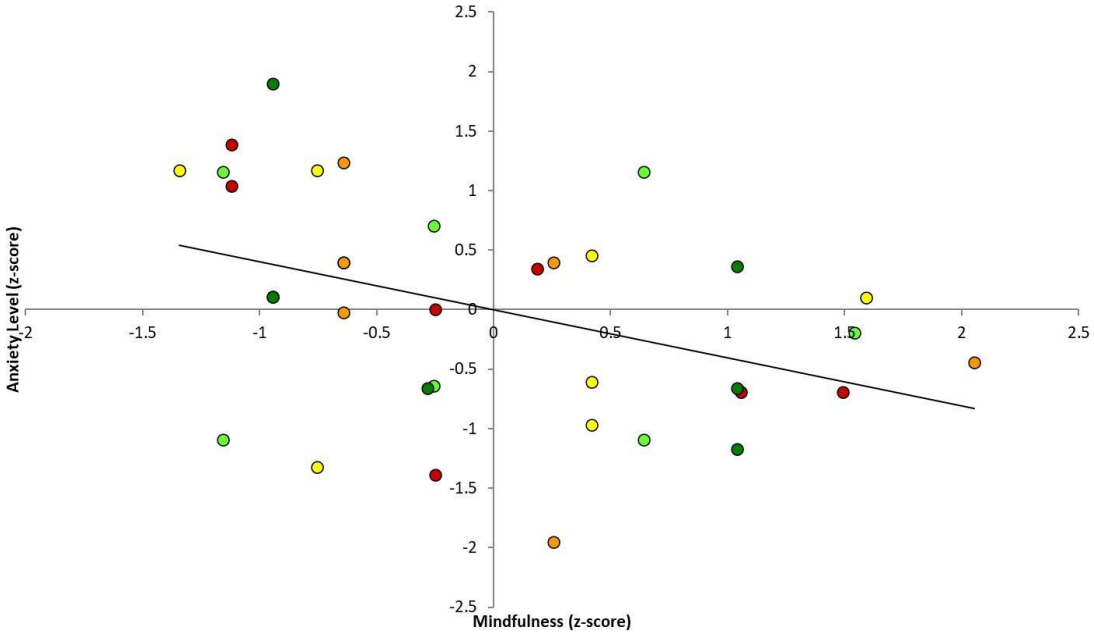

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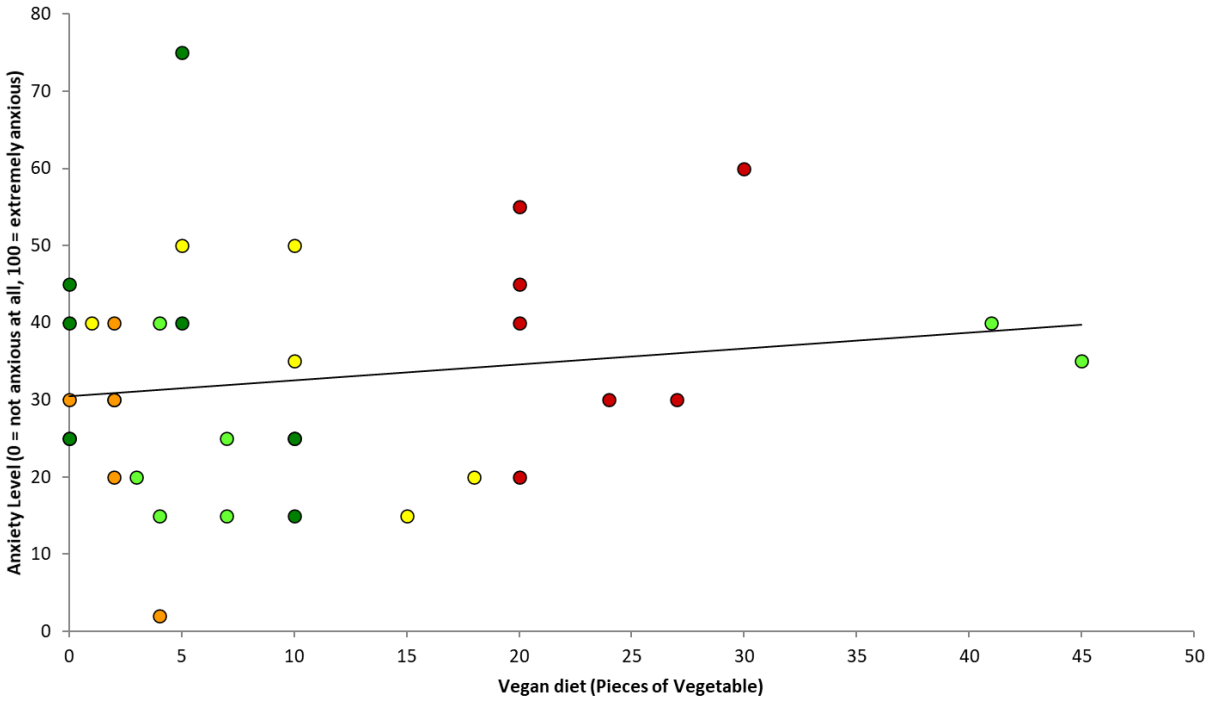
Figure 7

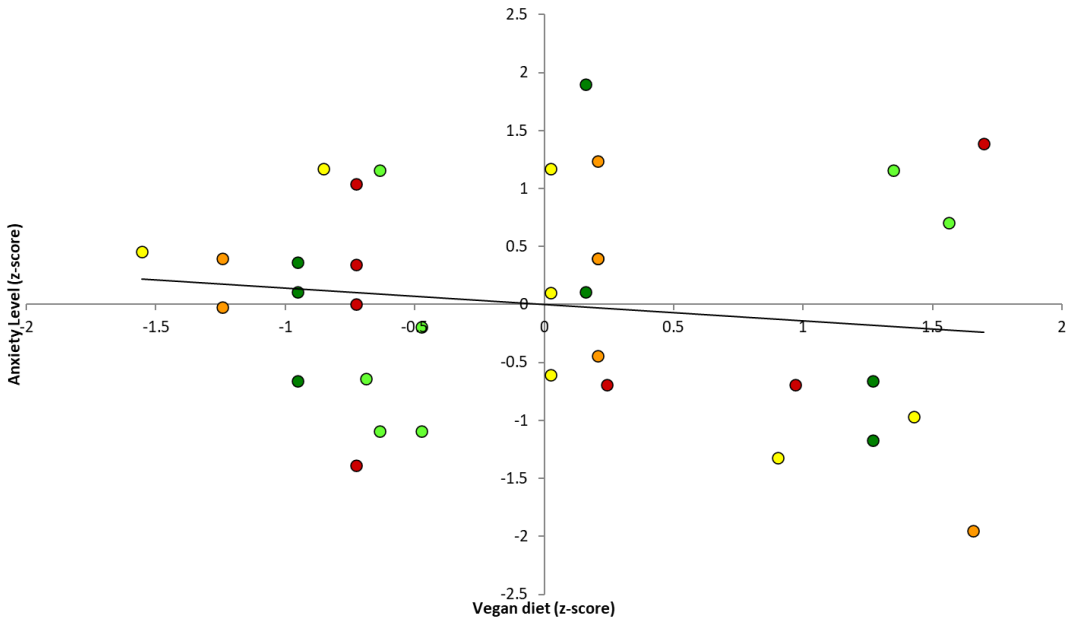
Association Between Vegan Diet and Anxiety Using Pooled Raw Data



Notes. Marker colour differentiates participants: red = Participant #1, orange = Participant #2, yellow = Participant #3, light green =Participant #4, and dark green = Participant #5. Some data might not be visible in the figure due to overlapping markers.

Figure 8

Association Between Vegan Diet and Anxiety Using Pooled Standardized Data



Notes. Marker colour differentiates participants: red = Participant #1, orange = Participant #2, yellow = Participant #3, light green =Participant #4, and dark green = Participant #5. Some data might not be visible in the figure due to overlapping markers.

Figure 9

Association Between Animal Exposure and Anxiety Using Pooled Raw Data

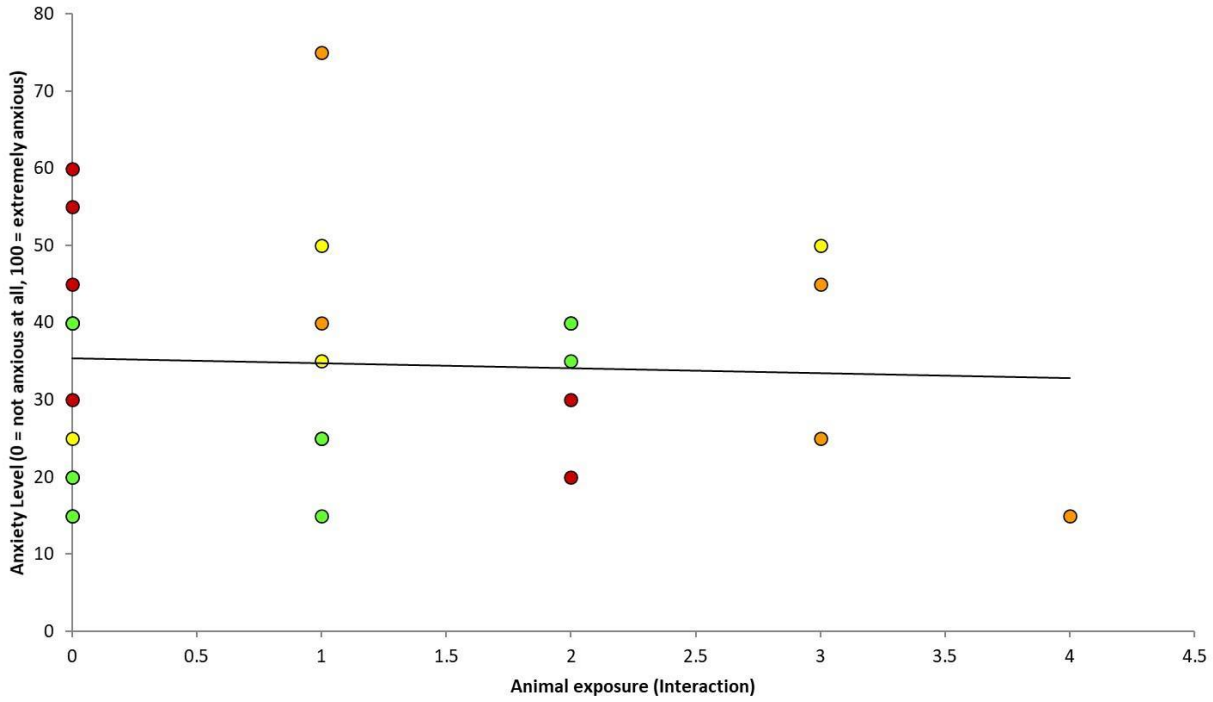


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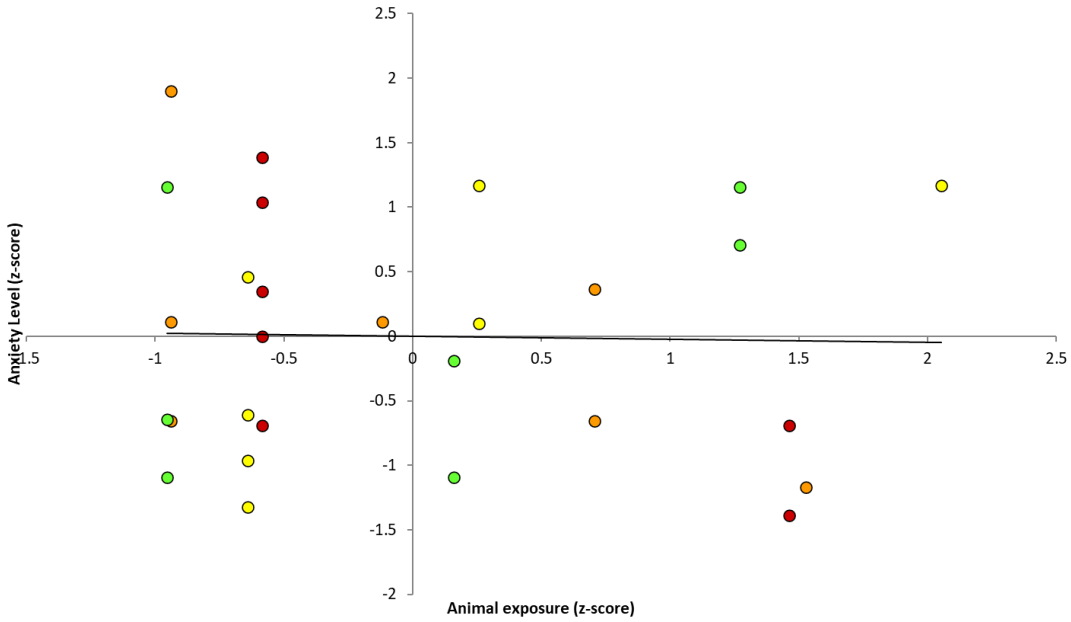
Figure 10

Association Between Animal Exposure and Anxiety Using Pooled Standardized Data



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