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Mental health and physical activity motivation during COVID-19

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by

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Abstract

The COVID-19 pandemic resulted in worldwide lockdown measures which saw individuals confined to their homes and isolated from one another. This isolation led to reduced opportunities to engage in physical activity. The aim of this study was to investigate the impact that the COVID-19 pandemic had on individuals' motivation to be physically active. Subsequently the impact of COVID-19 on various motivation types was investigated. Individuals who reported higher levels of autonomous physical activity motivation did not report greater satisfaction with mental health than participants with less autonomous motivation. However, 90.9% of individuals who reported less autonomous motivation reported that they were not satisfied with their current mental health. Of individuals who were autonomously motivated, 66% were unhappy with their mental health. The results showed that there is no significant relationship between physical activity motivation and mental health satisfaction. The results also showed that 70.3% of participants are currently unhappy with their mental health. The study was limited by the fact that individuals' previous levels of activity were unknown. Further studies should be conducted to investigate the source of the reported dissatisfaction with mental health.

Keywords: COVID-19, mental health, motivation, physical activity

Introduction

The current study investigated physical activity (PA) motivation and mental health satisfaction during the COVID-19 pandemic. During the pandemic, individuals were isolated from one another, and did not have access to facilities such as gyms, pools, or playing fields where they could engage in physical activity. Individuals' physical activity levels were often dependent on home workouts and the motivation to engage in such activities. For many, exercise is a means of catharsis and promotes good mental health. Therefore, individuals with greater levels of autonomous PA motivation were expected to report greater satisfaction with mental health than individuals with less autonomous motivation. Participants in the study who reported lower levels of autonomous physical activity motivation during lockdown were also expected to report lower levels of satisfaction with body weight. Participants were isolated from friends and family during the pandemic. Due to isolation, participants may not have received external motivation to engage in PA leading to negative impacts on body weight and mental health.

Background

COVID-19

The Merriam-Webster English Dictionary defines COVID-19 as “a mild to severe respiratory illness that is caused by a coronavirus (*Severe acute respiratory syndrome coronavirus 2* of the genus *Betacoronavirus*), is transmitted chiefly by contact with infectious material (such as respiratory droplets) or with objects or surfaces contaminated by the causative virus, and is characterized especially by fever, cough, and shortness of breath and may progress

to pneumonia and respiratory failure." First reported in Wuhan, the virus soon spread worldwide to become the fifth pandemic since the flu of 1918. Within two years 4.6 million people had died as a result of COVID-19, while over 200 million cases were confirmed worldwide (Henderson, 2021). In response to the pandemic, restrictions were put in place across the globe. Travel was restricted and social distancing measures enforced to prevent the spread of the disease. Restrictions quickly began to become more strict as it was clear the spread of COVID-19 was continuing at an alarming rate. Many countries enforced stay-at-home or isolation rules in a bid to stop the spread. The World Health Organization also introduced a mask-wearing policy. Business and public areas closed to discourage congregations of crowds, meaning individuals were confined to their own homes.

Physical Activity

Put simply, physical activity is movement of the body which requires energy. Physical activity is vital to human health and can be performed in a variety of ways. However, physical activity is also limited by numerous factors. Space, equipment and availability of facilities are among such factors. The strict measures (highlighted above) that were imposed on the public during the COVID-19 pandemic, significantly impacted peoples' ability to engage in physical activity. Gyms, playing fields and other exercise facilities were closed. Mail services and industrial production lines were drastically impacted, meaning that it even became difficult to order exercise equipment online. Many people were even forbidden by law to leave their homes

as they would be then be in a restricted (formerly public) area. Overall, opportunities to engage in physical activity were diminished, and thus individual activity levels suffered.

Motivation

Motivation refers to the underlying reasons behind behavior. The two main types of motivation are intrinsic motivation and extrinsic motivation. Intrinsic motivation stems from internal factors, while extrinsic motivation is a result of external factors. Many people (especially in the realm of exercise and physical activity) receive extrinsic motivation from those around them - i.e mentors or coaches. During the pandemic individuals were isolated from such figures and therefore may have experienced a decline in motivation to be physically active. The following study was conducted in order to investigate the relationship between the COVID-19 pandemic and individuals' motivation to be physically active.

Method

Participants

Psychology students at St. Mary’s University were recruited to participate in an online survey via the Psychology Participant Pool on CANVAS and email announcements from the psychology department's administrative associate. All participants were required to be at least 18 years old. Participants earned one point of required research credit if they were enrolled in a general psychology course or one point of extra credit if they were enrolled in other psychology courses. Students were also offered one additional credit if they recruited one additional participant. N participants responded to the survey (N male, N female, N other). Participant ages

ranged from X to Y (SD = n), with X% identifying as Caucasian, Y% as African American, Z% as Hispanic/Latino, and P% as other.

Materials

The Behavioral Regulation in Exercise Questionnaire (BREQ-2; Markland & Tobin, 2004; Moreno, Cervello & Martinez, 2007) was used to measure participants' motivation to engage in physical activity. Students answered 19 items using a 5-point Likert scale (0=not true for me, 4=very true for me). Scores from the five BREQ-2 subscales were individually summed, multiplied by a weighted constant, and then collectively summed to provide the relative autonomy index (RAI). The RAI score provided an index of the degree to which respondents feel self-determined with regard to physical activity. Higher RAI scores indicated greater relative autonomy and lower scores indicated more controlled regulation.

The Brunel Lifestyle Physical Activity Questionnaire (BLPAQ; Karageorghis et al., 2005) was also used to investigate participants' engagement in both pre-planned and unplanned physical activity.

Procedure

Participants answered the survey online and all the data was compiled. A one-way analysis of variance was used to assess the difference between individuals' motivation to be physically active as measured by the BREQ-2.

Literature Review

The vast majority of individuals engage in some form of physical activity during their lifetime. Whether it be walking up the stairs or running a marathon, physical activity is a significant part of our lives. During the COVID-19 pandemic opportunities to engage in physical activity were significantly reduced. For some, this may have had little impact on day to day life and mental health. However, for many people, the absence of physical activity in day-to-day life placed significant strain on their physical and mental health. Athletes for example, whose lives and livelihood are founded in high levels of physical activity, suddenly found themselves unable to compete for a significant amount of time. There has been research conducted on the effects of COVID-19 on physical health, and various reports detail the effects and death tolls associated with the pandemic. However, little research has been done to investigate the effects of the COVID-19 pandemic and subsequent isolation on mental health. This study aims to investigate this relationship in order to provide knowledge on how individuals may still be suffering from the effects of the pandemic. Research in this area could highlight the mental health issues associated with isolation during the pandemic, and thus enable impacted individuals to receive the appropriate care.

On March 11, 2020, the outbreak of COVID-19 was officially declared a pandemic by the World Health Organization (Palmer et al., 2021). Since then, measures have been put in place by various government bodies to maintain the health and safety of the public. Such measures have included mask mandates and social isolation restrictions to prevent and/or slow the spread of COVID-19 (World Health Organization, 2020). Gyms were shut down for a period of time, and

group sports of all levels were put on hold, meaning that many people no longer had access to common means of physical activity (Spence et al., 2021). Lockdown and isolation measures also meant many individuals could not leave home for significant periods of time. Research shows that isolation measures have had a significant impact on individuals' mental health (De France et al., 2021) and physical activity levels (Brand et al., 2020).

One study showed that individuals who were physically active before the pandemic and maintained exercise levels during isolation showed significantly less depressive symptoms than individuals who were less active (Laurier et al., 2021). In one study of 133 adolescents, 66.9% reported high levels of distress during lockdown, while participation in organized sports before lockdown was associated with fewer symptoms of depression and individuals who exercised more also displayed better moods than individuals who were less active (Brand et al., 2020).

A study of 283 French and Swiss participants also examined the evolution of physical activity habits during COVID-19 lockdown (Maltagliati et al., 2021). Participants answered an online survey on physical activity habits, behaviors and autonomous motivation for three time-points, before-, mid-, and end-lockdown. Results showed that individuals’ strong before-lockdown habits saw a significant decrease, while mid-lockdown physical activity habits were positively related to end-lockdown physical activity behaviors. Results also suggest that autonomous motivation was directly associated with physical activity habits. The study showed that physical activity habits are sensitive to context changes, and that lockdown saw a decrease in global physical activity levels (Maltagliati et al., 2021).

One effect of low physical activity levels in lockdown could be a change in body image. In a study that explored the effects of COVID-19 lockdown on body image, eating and exercise, (Robertson et al., 2021) women and young people were most likely to report changes in thoughts and behaviors. Data were collected from 264 adult respondents from the UK using an online survey. Participants answered demographic questions as well as questions regarding mental health, eating, exercise, body image, and psychological distress. Women and younger people exercised more than men during lockdown and perceived changes in body image were associated with higher levels of psychological distress. While 50.4% of participants reported exercising more during lockdown, 30% reported some form of psychological distress. In addition, 48.5% reported being more concerned about how they look compared to before the pandemic (Robertson et al., 2021).

Such concerns regarding body image may also stem from negative diet-related behaviors that developed during lockdown (Rogers et al., 2021). In an attempt to explore the persistent effects of COVID-19 lockdown measures on diet, exercise and food insecurity in the US participants answered questions on the topics in both April and November 2020. Results showed that while exercise frequency went unchanged during this time, 29% were eating fast-food more frequently by November and 29% and 30% had began eating lunch and dinner outside of the home respectively. Levels of anxiety and other quality of life measures had also significantly increased from April to November (Rogers et al., 2021).

Despite heightened levels of depression and anxiety during lockdown, particularly in adolescents, (Laurier et al., 2021), a study in Hungary reported desirable changes in smoking as well as alcohol and cannabis consumption among university students (Lukacs, 2021). The study explored changes in the lives of students due to COVID-19 and student levels of fear regarding the consequences of the pandemic. The 476 students from the University of Miskolc (Hungary), participants completed an online survey consisting of questions about physical activity, mental well-being, worry about COVID-19, and drug consumption. The results suggest that fear of COVID-19 did not affect mental well-being. Another study has shown that adolescents who continued to be physically active during lockdown reported significantly fewer depressive symptoms than peers who were less active (Laurier et al., 2021).

Not only is physical activity reported to have a positive impact on mental health in general (Laurier et al., 2021), but physical activity can also protect against another negative health impact of the COVID-19 lockdown, weight gain. One study (Woolford et al., 2021) found significant weight gain among children during the pandemic. A retrospective cohort study using Kaiser Permanente Southern California (KPSC) electronic health record data found that youths experienced significant weight gain during lockdown. Researchers believe that if the results are generalizable to the greater population of the United States, the results may indicate a pediatric increase in obesity due to the pandemic in the US. Another study showed that greater changes in eating were associated with elevated psychological distress during lockdown (Robertson et al., 2021). Negative changes in eating in turn result in undesirable changes in body weight. Physical activity, through preventative effects regarding negative mental health symptoms, can also be

used to prevent undesirable changes in weight. Hence the importance of remaining physically active during lockdown despite the closure of facilities.

Individuals seem to have managed to remain active despite the closure of such facilities. One study showed that due to the lack of access to work-out facilities during lockdown, physical activity levels in the home and neighborhood were either maintained or increased during isolation with individuals making the most of whatever equipment was available at home or taking to the neighborhood roads to engage in cardio activities such as walking, running, and cycling (Spence et al., 2021). The proportion of individuals who met physical activity guidelines in the UK was low, with a significant increase in engagement in sedentary behavior. The proportion of participants who increased physical activity during lockdown reported that they had the physical opportunity to do so and that they felt motivated to do so. The results demonstrate the importance of motivation in physical activity levels (Spence et al., 2021).

The purpose of the current study was to explore the relationship between physical activity motivation and mental health during COVID-19 lockdown. Participants who reported greater levels of autonomous physical activity motivation during lockdown were expected to report greater satisfaction with mental health. While isolated from friends and family, autonomous motivation is expected to result in greater participation in physical activity, leading to less distress and greater satisfaction with mental health. Past studies have shown that motivation is an important predictor of physical activity (Spence et al., 2021), and that physical activity can prevent and/or improve negative mental health symptoms (Robertson et al., 2021) Individuals who reported lower levels of autonomous physical activity motivation during lockdown are also

expected to report lower levels of satisfaction with body weight as lower levels of autonomous motivation during a time of social isolation from friends and family are expected to lead to less engagement in physical activity and thus weight gain.

Results

Physical Activity Motivation and Mental Health Satisfaction

A chi-square test of independence was conducted to investigate the relationship between physical activity motivation and mental health satisfaction. No significant relationship was found, $\chi^2(1)= 2.699$, $p>.05$. Participants' physical activity motivation was independent of mental health satisfaction. RAI scores as well as individual subscale scores are presented in Figure 1, while satisfaction with mental health compared to RAI scores is presented in Table 1. Individual responses to the mental health satisfaction question (independent of RAI) are displayed in Figure 2.

Physical Activity Motivation and Body Weight Satisfaction

A chi-square test of independence was conducted to investigate the relationship between physical activity motivation and body weight satisfaction. No significant relationship was found, $\chi^2(1) = .002$, $p>.05$. Participants' physical activity motivation was independent of body weight satisfaction. Satisfaction with body weight compared to RAI scores is displayed in Table 2, while individual responses to the bodyweight satisfaction question (independent of RAI) are presented in Figure 3.

Discussion

The first objective of this study was to investigate the relationship between physical activity motivation and mental health satisfaction during COVID-19 isolation. The findings show that contrary to the hypothesis, individuals who reported higher levels of autonomous physical activity motivation did not report greater satisfaction with mental health than participants with less autonomous motivation. However, 90.9% of individuals who reported less autonomous motivation reported that they were not satisfied with their current mental health (Table 1.). Of individuals who reported autonomous motivation, 66% were unhappy with current mental health (Table 1.). The results show that there is no significant relationship between physical activity motivation and mental health satisfaction. The results also show that 70.3% of participants are currently unhappy with their mental health.

The second objective was to investigate the relationship between physical activity motivation and body weight satisfaction. Contrary to the hypothesis, individuals who reported higher levels of autonomous physical activity motivation did not report greater satisfaction with body weight than participants with less autonomous motivation. Of the participants who reported less autonomous motivation, 58.3% reported dissatisfaction with body weight (Table 2.). Of the participants who reported autonomous motivation 59% were unhappy with body weight (Table 2.). The results show that satisfaction with body weight is not related to motivation to be physically active. The majority of participants were dissatisfied with body weight (58.9%).

This study was limited to a small sample from the population of St. Mary's University. The study was also limited by the fact that participants' physical activity levels were unknown which may affect their need for motivation to be physically active as well as the type of motivation they require. A study should be conducted with student-athletes to investigate the relationship between mental health and physical activity in individuals who regularly perform intense exercise, and participants for whom exercise plays a significant role in day-to-day life.

Although results showed that motivation to be physically active was not related to body weight satisfaction, the results did show that the majority of participants were unsatisfied with current body weight. Further studies should be conducted to investigate the nature of this dissatisfaction in order to address the issue. Future study should also be conducted into the field of physical activity motivation to investigate what, if not mental health, determines the level of autonomous motivation an individual experiences.

In conclusion, this study did not highlight a relationship between physical activity motivation and mental health satisfaction. In addition to this no relationship was found between physical activity motivation and body weight satisfaction. However, the results did demonstrate that the majority of participants were unhappy with both their mental health and body weight. Despite the dissatisfaction with mental health and body weight, the majority of participants reported high levels of autonomous physical activity as measured by the RAI.

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Table 1.

RAI2CATS * mentalhealthsatisfaction Crosstabulation

			mentalhealthsatisfaction		
			yes	no	Total
RAI2CATS	1.00	Count	1	10	11
		Expected Count	3.3	7.7	11.0
		% within RAI2CATS	9.1%	90.9%	100.0%
		% within mentalhealthsatisfaction	5.3%	22.2%	17.2%

		% of Total	1.6%	15.6%	17.2%
		Adjusted Residual	-1.6	1.6	
	2.00	Count	18	35	53
		Expected Count	15.7	37.3	53.0
		% within RAI2CATS	34.0%	66.0%	100.0%
		% within mentalhealthsatisfaction	94.7%	77.8%	82.8%
		% of Total	28.1%	54.7%	82.8%
		Adjusted Residual	1.6	-1.6	
Total		Count	19	45	64
		Expected Count	19.0	45.0	64.0
		% within RAI2CATS	29.7%	70.3%	100.0%
		% within mentalhealthsatisfaction	100.0%	100.0%	100.0%
		% of Total	29.7%	70.3%	100.0%

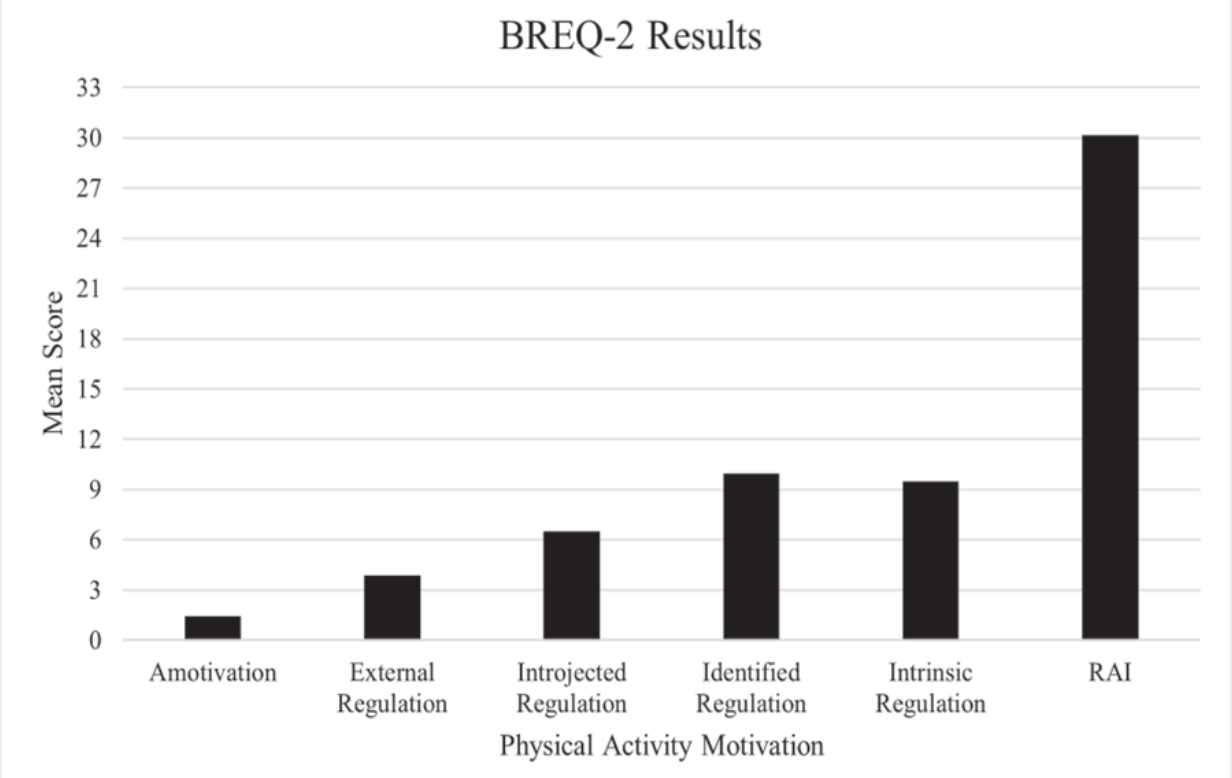
Table 2.

RAI2CATS * bodyweightsatisfaction Crosstabulation

			bodyweightsatisfaction		
			no	yes	Total
RAI2CATS	1.00	Count	7	5	12
		Expected Count	7.1	4.9	12.0
		% within RAI2CATS	58.3%	41.7%	100.0%
		% within bodyweightsatisfaction	16.3%	16.7%	16.4%
		% of Total	9.6%	6.8%	16.4%
		Adjusted Residual	.0	.0	
	2.00	Count	36	25	61
		Expected Count	35.9	25.1	61.0
		% within RAI2CATS	59.0%	41.0%	100.0%
		% within bodyweightsatisfaction	83.7%	83.3%	83.6%
		% of Total	49.3%	34.2%	83.6%
		Adjusted Residual	.0	.0	
Total		Count	43	30	73
		Expected Count	43.0	30.0	73.0

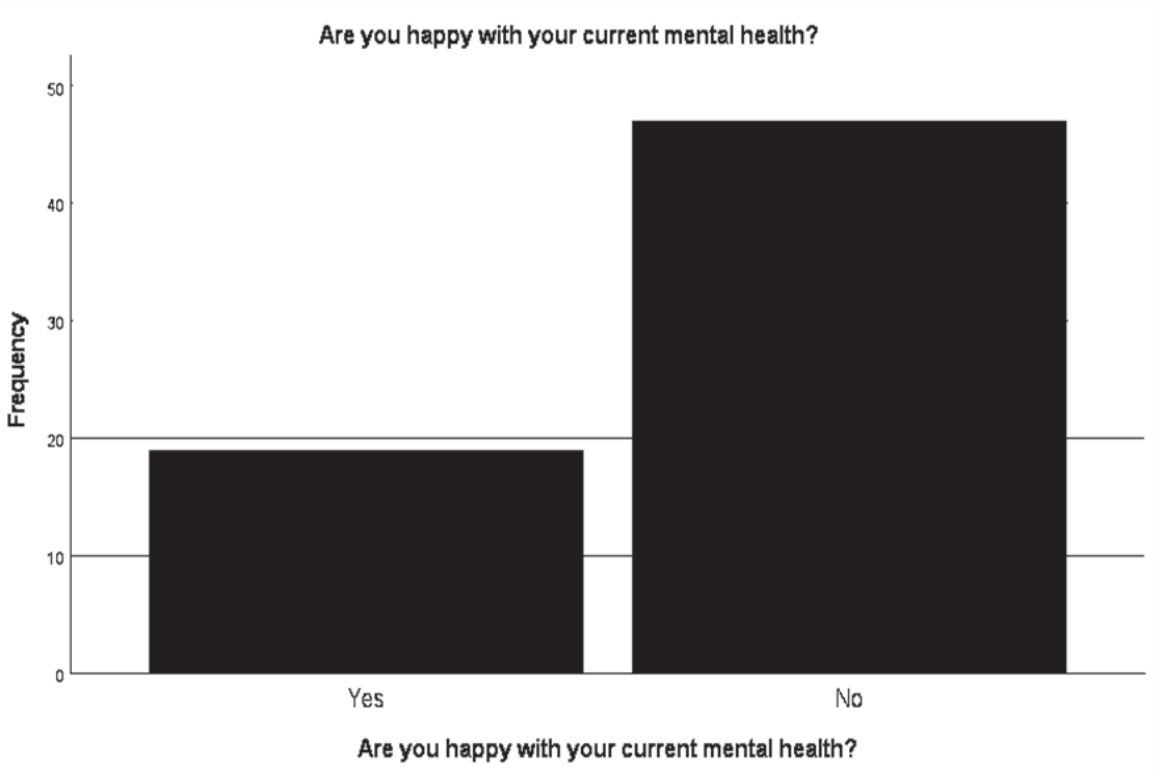
	% within RAI2CATS	58.9%	41.1%	100.0%
	% within bodyweightsatisfaction	100.0%	100.0%	100.0%
	% of Total	58.9%	41.1%	100.0%

Figure 1.



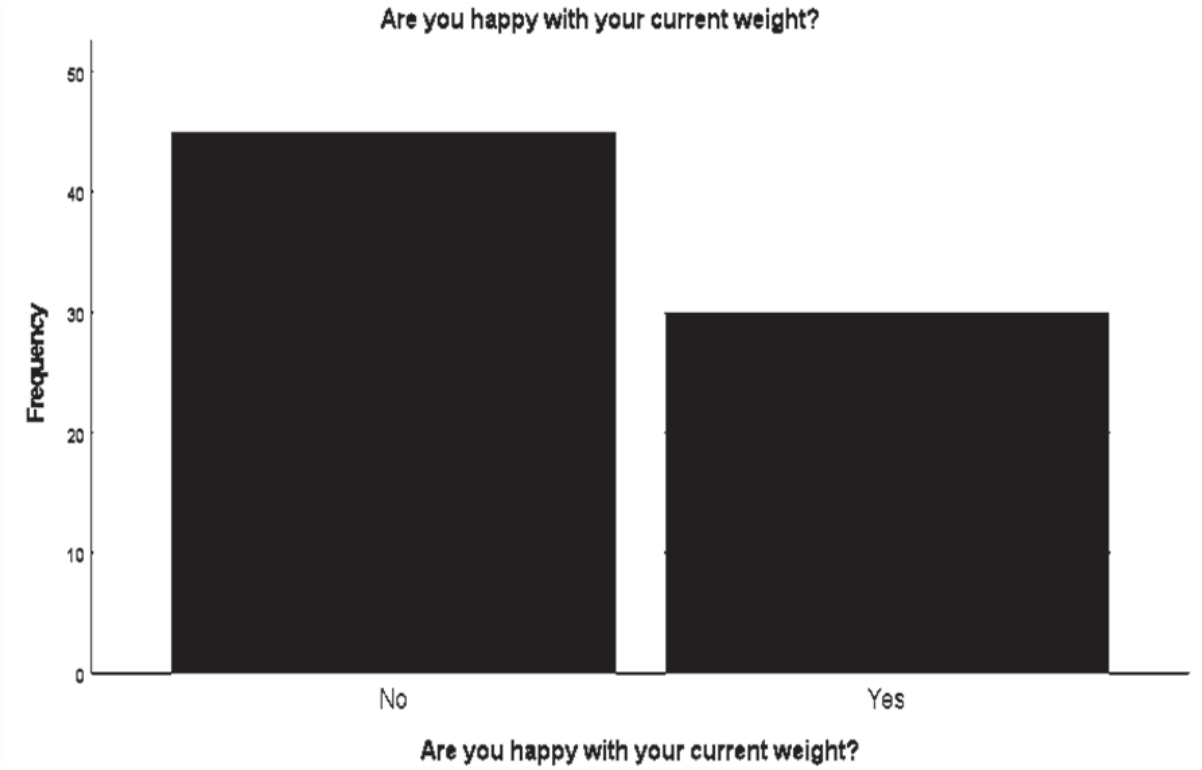
BREQ-2 Results

Figure 2.



Mental Health Satisfaction

Figure 3.



Bodyweight Satisfaction