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THE EFFECTIVENESS OF SELF-COMPASSION AND SELF-ESTEEM WRITING TASKS IN IMPROVING POSITIVE BODY IMAGE AND MENTAL HEALTH: A RANDOMIZED CONTROLLED TRIAL

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ABSTRACT

The present study aimed to evaluate the effectiveness of a brief online intervention to promote positive body image and other aspects related to mental health. Ninety-four Brazilian college students of both sexes were randomly assigned to one of three groups: self-compassion, self-esteem, or control written intervention. The participants responded to instruments measuring self-compassion, self-esteem, body appreciation, body functionality appreciation, symptoms of anxiety, depression, and common mental disorders before the intervention, immediately after the intervention, and two weeks after the intervention (follow-up). This is therefore a randomized clinical trial of 3 x 3 design, with a parallel, three-arm, single-blind intervention model. The results indicated an effect of time on self-compassion, body appreciation, depression symptoms, and common mental disorders. No group effects were found for any of the variables under study. A group and time interaction effect was found for only the overidentification subscale of the self-compassion measure. The results are discussed in light of brief interventions, with emphasis on the roles of sociocultural variables, the online format of the intervention, and the timing of the COVID-19 pandemic, which may have played important roles in the effectiveness of the interventions conducted.

Keywords: Body image. Internet-based intervention. Mental health. Self-compassion. Self concept.

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INTRODUCTION

One of the lines of work with body image focuses on so-called positive body image, which consists of cultivating a positive attitude toward one's body, respecting it, accepting it, and protecting it (Avalos, Tylka, & Wood-Barcalow, 2005). Interventions aimed at promoting positive body image have been shown to have a significant impact on the health and well-being of individuals (Guest et al., 2019). Among the possibilities for promoting positive body image is the cultivation of self-compassion (Andrew, Tiggemann, & Clark, 2016; Braun, Park, & Gorin, 2016; Tylka & Wood-Barcalow, 2015b). According to Neff (2003a), self-compassion involves treating oneself with kindness, being touched, and being open to one's own suffering without avoiding it, directing oneself toward the relief of that suffering. It also involves offering oneself understanding without judgment in one's own pain, inadequacy, or failure, viewing one's experience as part of the larger human experience (Neff, 2003a).

Another possibility for promoting positive body image refers to working with self-esteem (O'Dea, 2012), an already more traditional concept that can be defined as a global judgment about one's own worth (Crocker, 2001), considering the extent to which an individual tends to view him or herself favorably (Ellis, Hoskin, & Ratnasingam, 2018). Previous studies have compared the results obtained in interventions focused on both self-compassion and self-esteem (Leary, Tate, Adams, Allen, & Hancock, 2007; Seekis, Bradley, & Duffy, 2017), including those conducted in an online format (Moffitt, Neumann, & Williamson, 2018), and have generally reported better results when working with self-compassion, with increases in variables such as body appreciation and motivation for self-improvement and decreases in variables such as body dissatisfaction and negative affect. Surveys in an online format have advantages such as lower costs and greater speed and reach (Fielding, Lee, & Blank, 2017) and have grown greatly during the pandemic in the face of the restrictions imposed on social contact (De Man, Campbell, Tabana, & Wounters, 2021).

Previous studies have already pointed out the potential beneficial effects of interventions from writing exercises (Alleva, Martijn, Breukelen, Jansen, & Karos, 2015; Leary et al., 2007). The present study therefore comprises a brief online intervention based on the work of Seekis et al. (2017), who investigated whether a single face-to-face session involving self-compassion and self-esteem writing tasks would decrease body image concerns evoked by a previous negative induction with 96 female college students. In that

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study, the self-compassion task showed better results when compared to the self-esteem task and the control task, especially in the assessment right after the intervention, while the self-esteem task showed, in general, better results compared to the control task (Seekis et al., 2017).

In this context, we aimed to evaluate the effectiveness of brief online self-compassion and self-esteem interventions in increasing body appreciation, body functionality appreciation, self-compassion, and self-esteem and in decreasing symptoms of anxiety, depression, and the presence of common mental disorders in a sample of young Brazilian university students, pointing out the following hypotheses:

Hypothesis 1: The brief intervention in self-compassion and the brief intervention in self-esteem will be effective in significantly increasing self-compassion, self-esteem, body appreciation and body functionality appreciation and in significantly reducing anxious and depressive symptoms and the presence of common mental disorders;

Hypothesis 2: The control group will have no significant change in the variables over time; and

Hypothesis 3: The self-compassion intervention will be significantly superior to the self-esteem intervention and the control group in increasing self-compassion, self-esteem, body appreciation, and body functionality appreciation and in reducing anxious, depressive symptoms and the presence of common mental disorders.

MATERIAL AND METHODS

DESIGN

This is a study characterized as a randomized clinical trial. For the general description of the study, we chose to follow the steps outlined in the CONSORT (2017) recommendations.

A 3 (interventions: self-compassion, self-esteem, control) x 3 (times: preintervention, postintervention, follow-up) mixed experimental format was used. The study had a parallel intervention model, since the groups received the interventions in parallel; a three-armed model, since the participants were distributed among three possible interventions; and a single-blinded model, since the participants were not aware of their distribution in different interventions, but the researchers were.

The participants were randomly allocated to the three intervention groups by choosing which date and time to participate from the options provided by the researchers.

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At each intervention date/time, the type of intervention to take place during it was previously determined, but the participants did not know this. Only the conductors of the intervention knew the type of intervention chosen for that date/time, which was determined by alternating among the three existing types to achieve a numerical balance of participants among the three groups. In this way, the allocation was considered random.

ELIGIBILITY CRITERIA FOR PARTICIPANTS

The participants were college students of both sexes from two federal public educational institutions in Brazil (campuses of Governador Valadares/MG of IFMG and UFJF). The inclusion criteria for the participants were being regularly enrolled in an undergraduate course at these institutions and agreeing to participate voluntarily in the research. Individuals outside the age range 18 to 35 years old were excluded, as well as those who showed inattention to the proper completion of the instruments, being classified as random respondents through low scores on the Conscientious Responders Scale (Marjanovic, Struthers, Cribbie, & Greenglass, 2014).

The sample calculation was performed in G*Power 3.1.9.7 software, considering the following parameters: (a) use of ANOVA test of repeated measures with mixed effects; (b) effect size f = 0.2526456, calculated from ηp2 (partial eta-squared) = 0.06, the smallest effect size pointed out in the study by Seekis et al. (2017); (c) p = 0.05; (d) power = 0.80; (e) number of groups = 3; (f) number of measures = 3; (g) correlation between repeated measures = 0.3; and (h) correction for nonsphericity ε = 1. This resulted in a minimum sample size of 48 participants, to which a 10% loss rate was added (Martínez-Mesa, González-Chica, Bastos, Bonamigo, & Duquia, 2014; Wang & Ji, 2020), yielding a final minimum sample value of 53 participants.

MEASURES

The following briefly describes the measurement instruments used in the present study. The primary outcomes are those from the self-compassion, self-esteem, and body appreciation scales. The results of the other instruments were considered secondary outcomes.

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SOCIODEMOGRAPHIC QUESTIONNAIRE

The sociodemographic questionnaire was designed to gather general information from the students, such as sex, age, race/ethnicity, height, weight, etc.

SELF-COMPASSION SCALE (SCS)

The SCS was developed by Neff (2003b), with its Brazilian version carried out by Souza and Hutz (2016). It is a 26-item scale, answered on a 5-point Likert-type scale, used to assess an individual's levels of self-compassion through six factors: self-kindness, mindfulness, sense of common humanity, self-judgment, overidentification, and isolation. According to the authors of the original version, a mean score of up to 2.5 indicates that the respondent has a low level of self-compassion, between 2.5 and 3.5 indicates a moderate level, and above 3.5 indicates a high level of self-compassion. The internal consistency of the SCS in the present study was high at preintervention (0.94), postintervention (0.95), and follow-up (0.96).

SELF-ESTEEM SCALE (SES)

The SES was created by Rosenberg (1965), and the Brazilian version was developed by Hutz and Zanon (2011). It is a 10-item scale, answered on a 4-point Likert-type scale, whose purpose is to assess the individual's overall self-esteem. The higher the score obtained by the respondent, the higher his or her level of self-esteem. In this study, the internal consistency of the scale was high in the three evaluations: preintervention (0.90), postintervention (0.92), and follow-up (0.93).

BODY APPRECIATION SCALE-2 (BAS-2)

The BAS-2 is a scale developed by Tylka and Wood-Barcalow (2015a), with a Brazilian version developed by Junqueira et al. (2019). It is composed of 10 items, answered on a 5-point Likert-type scale, and aims to assess body appreciation based on positive body image characteristics. The higher the score is, the higher the level of body appreciation of the individual. In the present study, it showed high internal consistency in the preintervention (0.95), postintervention (0.94), and follow-up (0.96) phases.

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FUNCTIONALITY APPRECIATION SCALE (FAS)

The FAS was developed by Alleva, Tylka, and Diest (2017), and its Brazilian version was developed by Faria et al. (2020). It is a 7-item scale, answered on a 5-point Likert-type scale, that aims to assess the appreciation of body functionality. The higher the score obtained by the respondent, the higher his or her level of body functionality appreciation. The instrument showed high values of internal consistency in the preintervention (0.88), postintervention (0.86), and follow-up (0.91) phases of this study.

STATE-TRAIT ANXIETY INVENTORY (STAI)

The STAI is an inventory authored by Spielberger, Gorsuch, and Lushene (1970), whose short Brazilian version was developed by Fioravanti-Bastos, Cheniaux, and Landeira-Fernandez (2011); it is a 12-item instrument answered on a 4-point Likert-type scale, with 6 items intended to assess the anxious state and 6 items intended to assess the anxious trait of the individual. The higher the score is, the higher the level of anxiety of the respondent. It showed, in this study, high internal consistency in the preintervention (0.89), postintervention (0.88), and follow-up (0.90) phases.

BECK DEPRESSION INVENTORY II (BDI-II)

The BDI-II was developed by Beck, Steer, and Brown (1996), with a Brazilian version developed by Finger (2008). It is an inventory with 21 items, with 4 alternatives each, that aims to assess the intensity of depressive symptoms. According to the interpretation proposed by the authors of the original study, scores of up to 13 points indicate a minimum level of depressive symptoms; scores between 14 and 19 points indicate a mild level; scores between 20 and 28 points indicate a moderate level; and scores of 29 points or more indicate a severe level. In this study, the BDI-II showed high internal consistency in the preintervention (0.94), postintervention (0.95), and follow-up (0.95) phases.

SELF-REPORTING QUESTIONNAIRE (SRQ-20)

The SRQ was originally authored by Harding et al. (1980) and the Brazilian version by Mari and Williams (1986). It is an instrument that aims to detect psychiatric morbidity in the general population, including 20 items with binary answers (yes or no), designed to track nonpsychotic disorders. In this study, the single cutoff point of 8 points proposed by Gonçalves, Stein and Kapczinski (2008) was adopted, after which the presence of common

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mental disorders is indicated. It showed high internal consistency at the preintervention (0.91), postintervention (0.90), and follow-up (0.90) phases in this study.

CONSCIENTIOUS RESPONDERS SCALE (CRS)

The CRS was developed by Marjanovic et al. (2014) and freely adapted by the authors of this study. It aims to filter out respondents who may not be paying attention to the questions in the assessment instruments. It consists of 5 items distributed among the items of the other instruments used in a survey, having a Likert scale response format, with a variable number of points, depending on the instrument in which it is inserted. The authors of the original study propose a cutoff point starting from 3 correct answers, when the individual is considered a conscientious respondent.

CREDIBILITY CHECK

These are 3 items, answered on a 5-point Likert-type scale, identical to those used in Seekis et al. (2017) and freely adapted by the authors of this study into Brazilian Portuguese, that were used to assess the level of credibility of the scenario used before the writing exercises in the interventions. The items assess the perceived realism of the scenario, the appropriateness of the example used, and the participants' ability to assume the role of the proposed character. The higher the score is, the higher the level of credibility.

PROCEDURE

The present study was approved by the Ethics Committee for Research with Human Beings (approval opinion under No. 3.627.114) affiliated with the authors of the research. The study is also registered with the Brazilian Registry of Clinical Trials (ReBEC) under number RBR-35dtsg.

Participants were recruited via email and messaging apps. The assessment instruments were answered in all phases via Google Forms. In the first phase (T1), upon agreeing to participate in the research, the participants answered the assessment instruments for the first time. Approximately 10 to 14 days later, they participated in the intervention phase, taking part in one of three possible interventions, which was conducted via a Google Meet video call. Each call had 1 to 5 participants present to maintain greater control. The type of intervention to be performed in a video call was determined a priori, so the allocation of subjects was random. The interventions consisted of Brazilian versions of

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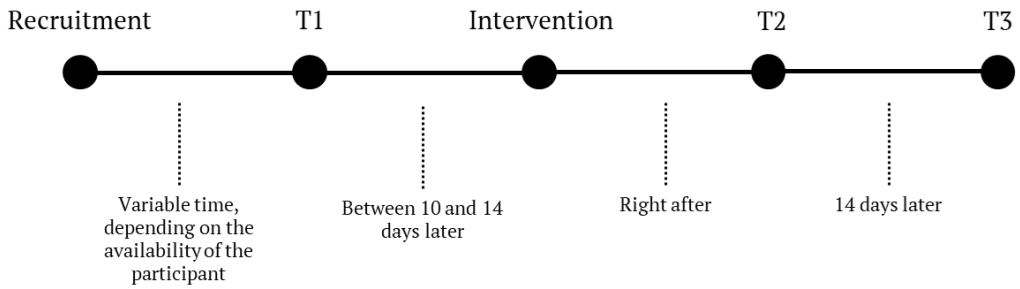
the original interventions described in Seekis et al. (2017), adapted by the authors of this study, which can be found in the supplemental materials. Immediately after the interventions, the participants answered the assessment instruments a second time (T2). Then, two weeks later, they received a new link to answer the instruments a third time (T3). The data collection took place during 2020. The phases of the study can be visualized in a flowchart in Fig 1.

Figure 1. Flowchart of study steps



DATA ANALYSIS

A descriptive data analysis was first performed to visualize the characteristics of the three intervention groups. Additionally, to compare the intervention groups at baseline and to assess whether there were significant differences among them, the χ2 (chi-square) test was performed for categorical variables and the one-way ANOVA test for numerical variables.

An analysis of the retention of participants who chose to participate in the remaining phases of the study was performed by viewing the relative frequency and performing the χ2 to see if there were significant differences among the groups regarding participant loss.

The internal consistency of the instruments was assessed through Cronbach's α and is considered satisfactory with values of 0.60-0.70 (Hair Jr., Black, Babin, Anderson, & Tatham, 2009). Pearson's test was performed to evaluate the correlations between the instruments; according to Dancey and Reidy (2013), r values above 0.7 indicate strong correlations, values above 0.4 indicate moderate correlations, and values below 0.4 indicate weak correlations.

The credibility of the scenario used in the intervention was assessed by analyzing the participants' responses to specific questions present in T2, immediately after the intervention. The means and standard deviations of the answers were estimated, and a

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one-way ANOVA was performed to compare the groups, checking to see if there were significant differences among them regarding the credibility of the scenario.

We proceeded, in time, to impute missing data through the expected maximization method (Dong & Peng, 2013; Kang, 2013) to consider the intention to treat of individuals who chose to participate in the intervention but did not participate in the last stage of the study.

A mixed repeated-measures ANOVA test was then performed, evaluating the effects of allocation group, time, and group x time interaction on participants. In the case of significance, effect sizes were also observed through ηp2 (partial eta-squared), where values above 0.14 indicate a large effect, values above 0.06 indicate a moderate effect, and values above 0.01 indicate a small effect (SPSS, 2021).

RESULTS

Fig 2 shows the flowchart of the distribution of participants throughout the stages of the study. The 94 participants included in the analysis were aged between 18 and 35 years (M = 23.73; SD = 4.10). There were 50 females and 44 males, with 33.0% being white, 48.9% being brown, and 18.1% being black. It was also observed that 86.2% of the sample was single, and 87.2% had no children. According to BMI classification, 6.4% of the participants were underweight, 50.0% were of appropriate weight, 27.7% were in the overweight category, and 16.0% were obese. By performing the χ2, no significant differences were observed among the three intervention groups for these variables. The numerical descriptive data can be seen in Table 1. Additionally, no significant differences were found among the groups regarding these variables at the study baseline. The values of the correlations between the instruments can be seen in Table 2 and show moderate or strong correlations between all the study variables.

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Figure 2. Participant distribution chart

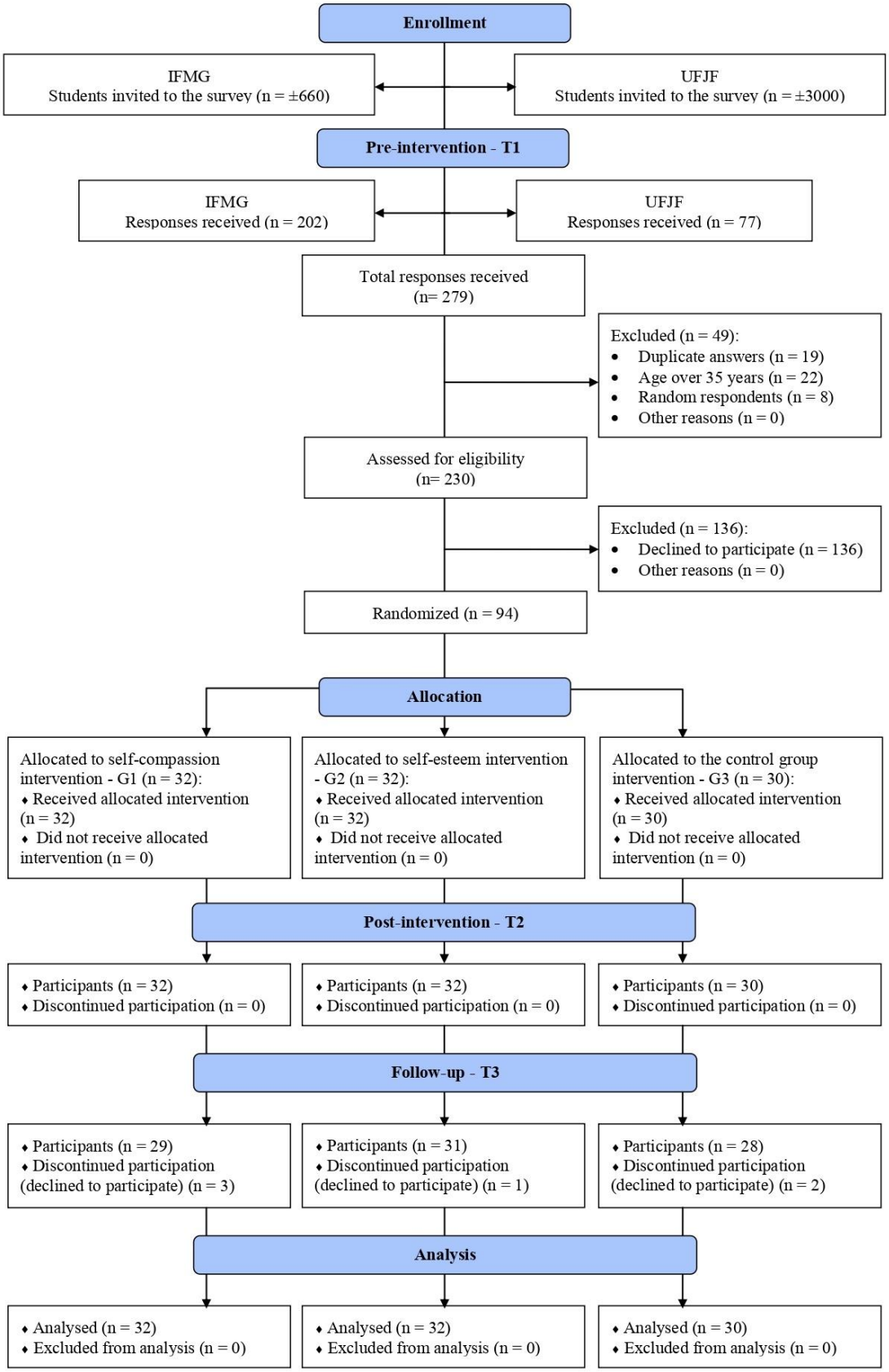

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Table 1. Descriptive data of numerical variables and comparison test between groups (N = 94)

	Group	N	Range	Mean	Standard deviation	Median	Minimum	Maximum	Comparison test between groups
Age	Self-compassion	32	-	23.06	4.42	21.50	18.00	35.00	F(2.91) = 1.320 *p* = 0.272 ηp^2 = 0.028
	Self-esteem	32	-	23.50	3.49	23.00	18.00	32.00	
	Control	30	-	24.70	4.31	24.00	18.00	35.00	
	Total sample	94	-	23.73	4.10	23.00	18.00	35.00	
BMI	Self-compassion	32	-	23.94	4.25	23.64	18.29	34.57	F(2.91) = 0.697 *p* = 0.501 ηp^2 = 0.015
	Self-esteem	32	-	25.09	5.39	24.19	17.04	38.42	
	Control	30	-	25.20	4.27	24.78	17.96	35.16	
	Total sample	94	-	24.73	4.66	24.16	17.04	38.42	
SCS	Self-compassion	32	1-5	2.76	0.75	2.71	1.42	4.69	F(2.91) = 0.899 *p* = 0.411 ηp^2 = 0.019
	Self-esteem	32	1-5	2.85	0.76	2.71	1.85	4.92	
	Control	30	1-5	2.58	0.93	2.44	1.04	4.73	
	Total sample	94	1-5	2.74	0.81	2.62	1.04	4.92	
SES	Self-compassion	32	10-40	28.16	6.59	28.00	12	40	F(2.91) = 0.992 *p* = 0.375 ηp^2 = 0.021
	Self-esteem	32	10-40	29.25	6.61	29.00	17	40	
	Control	30	10-40	26.73	7.91	25.00	14	40	
	Total sample	94	10-40	28.07	7.04	28.00	12	40	
BAS-2	Self-compassion	32	10-50	34.81	8.43	35.00	16	50	F(2.91) = 0.123 *p* = 0.884 ηp^2 = 0.003
	Self-esteem	32	10-50	35.16	10.02	35.50	18	50	
	Control	30	10-50	33.97	10.53	35.00	13	50	
	Total sample	94	10-50	34.66	9.59	35.50	13	50	
FAS	Self-compassion	32	7-35	29.16	4.16	29.50	18	35	F(2.91) = 0.034 *p* = 0.967 ηp^2 = 0.001
	Self-esteem	32	7-35	28.84	5.33	30.50	15	35	
	Control	30	7-35	28.90	5.74	29.00	17	35	
	Total sample	94	7-35	28.97	5.05	30.00	15	35	
STAI	Self-compassion	32	12-48	32.25	7.50	32.50	13	46	F(2.91) = 0.688 *p* = 0.505 ηp^2 = 0.015
	Self-esteem	32	12-48	30.41	8.86	31.00	13	47	
	Control	30	12-48	32.73	8.49	35.50	12	47	
	Total sample	94	12-48	31.78	8.27	32.00	12	47	
BDI-II	Self-compassion	32	0-63	16.97	12.19	14.50	0	54	F(2.91) = 1.457 *p* = 0.238 ηp^2 = 0.031
	Self-esteem	32	0-63	18.78	13.90	17.50	2	49	
	Control	30	0-63	22.53	12.99	23.00	0	46	

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	Total sample	94	0-63	19.36	13.11	17.00	0	54	
SRQ-20	Self-compassion	32	0-20	8.38	5.41	8.00	0	18	F(2.91) = 0.885 p = 0.416 ηp^2 = 0.019
	Self-esteem	32	0-20	8.94	6.04	9.50	1	20	
	Control	30	0-20	10.27	5.72	11.50	0	20	
	Total sample	94	0-20	9.17	5.72	9.00	0	20	

N = absolute number of participants; BMI = Body Mass Index; SCS = Self-Compassion Scale; SES = Self-Esteem Scale; BAS-2 = Body Appreciation Scale-2; FAS = Functionality Appreciation Scale; STAI = State-Trait Anxiety Inventory; BDI-II = Beck Depression Inventory-II; SRQ-20 = Self-Reporting Questionnaire-20; F = ANOVA test result; p = p value; and ηp^2 = effect size indicated by partial eta-squared.

Table 2. Bivariate correlations among the study instruments (N = 94)

	1	**2**	**3**	**4**	**5**	**6**	**7**
1. SCS	1						
2. SES	0.74*	1					
3. BAS-2	0.64*	0.71*	1				
4. FAS	0.56*	0.52*	0.72*	1			
5. STAI	-0.70*	-0.64*	-0.63*	-0.61*	1		
6. BDI-II	-0.69*	-0.72*	-0.57*	-0.48*	0.69*	1	
7. SRQ-20	-0.59*	-0.65*	-0.51*	-0.41*	0.73*	0.85*	1

N = Absolute number of participants; SCS = Self-Compassion Scale; SES = Self-Esteem Scale; BAS-2 = Body Appreciation Scale-2; FAS = Functionality Appreciation Scale; STAI = State-Trait Anxiety Inventory; BDI-II = Beck Depression Inventory-II; SRQ-20 = Self-Reporting Questionnaire-20; * = the correlation is significant at the p < 0.01 level.

Evaluating the retention rate of participants in the three intervention groups—self-compassion, self-esteem, and control—we obtain 90.6%, 96.9%, and 93.3%, respectively. According to the results of the χ2 test, with correction performed by Fisher's exact test, there were no significant differences among the groups regarding the loss of participants, obtaining χ2 (2) = 1.105; p = 0.687; V = 0.106.

In assessing the credibility of the scenario used in the intervention, an overall mean of 4.60±0.48 was obtained on a scale of 1 to 5. Performing a one-way ANOVA to check if there were differences among the groups regarding the credibility of the scenario, no significant difference was found, obtaining F(2, 91) = 0.301; p = 0.741.

The missing data imputation process was then performed through the expected maximization method, supplying the missing data of the six individuals who did not participate in the last evaluation (T3), considering their intention to treat in carrying out subsequent analyses. At T2, there was no sample loss.

Moving on to the results of the mixed repeated-measures ANOVA evaluating the effects of group, time, and group x time interaction, we observed a small to moderate effect

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of time on four of the variables analyzed, namely, self-compassion (SCS; F(2, 163) = 7.117, p = 0.002, ηp2 = 0.073), body appreciation (BAS-2; F(2, 182) = 9.449, p < 0.001, ηp2 = 0.094), and depressive symptoms (BDI-II; F(2, 182) = 8.106, p < 0.001, ηp2 = 0.082) with moderate effects, and common mental disorders (SRQ-20; F(2, 161) = 4.265, p = 0.019, ηp2 = 0.045) with a small effect.

Considering the factors or subscales of the instruments used, small effects of time were also found for four subscales of the self-compassion measure (SCS): self-kindness (F(2, 162) = 3.701, p = 0.031, ηp2 = 0.039); common humanity (F(2, 182) = 5.204, p = 0.006, ηp2 = 0.054); overidentification (F(2, 182) = 5.104, p = 0.007, ηp2 = 0.053); and isolation (F(2, 168) = 3.490, p = 0.036, ηp2 = 0.037). Regarding state and trait anxiety (measured by the STAI), a small effect of time was found for the state subscale (F(2, 182) = 3.143, p = 0.045, ηp2 = 0.033). For depressive symptoms (measured by BDI-II), a moderate effect of time was found for the cognitive-emotional subscale (F(2, 164) = 8.431, p = 0.001, ηp2 = 0.085) and a small effect for the behavioral/somatic subscale (F(2, 182) = 4.574, p = 0.012, ηp2 = 0.048). Regarding the symptoms of common mental disorders (measured by SRQ-20), a small effect of time was found for the subscales decreased energy (F(2, 167) = 4.848, p = 0.011, ηp2 = 0.051) and depressive-anxious mood (F(2, 182) = 3.498, p = 0.032, ηp2 = 0.037). Finally, a small effect of the group x time interaction was found for only the superidentification subscale of the SCS (F(4, 182) = 2.457, p = 0.047, ηp2 = 0.051). It is worth noting that no group effect was found in the analyses performed.

DISCUSSION

The objective of evaluating the effectiveness of brief online interventions involving writing exercises on self-compassion and self-esteem, in increasing body appreciation, body functionality appreciation, self-compassion and self-esteem, and in decreasing symptoms of anxiety, depression, and the presence of common mental disorders in a sample of young Brazilian college students was achieved. Regarding the hypotheses, only Hypothesis 2, which concerned the behavior of the control group, was confirmed.

The importance of the present study lies in the possibility of finding effective interventions in promoting positive body image among young college students, a construct that has been linked to higher rates of psychological well-being and lower rates of mental illness (Avalos et al., 2005; Gillen, 2015; Linardon, Anderson, Messer, Rodgers, & Fuller-Tyszkiewicz, 2021).

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The effect of time found denotes that the passage of time alone was able to produce significant changes in some variables. In contrast, the absence of the group effect indicates that the interventions did not produce significant effects on individuals in the variables evaluated. In the absence of the group x time interaction effect for all variables, with the presence of only one exception, it indicates that the interventions, even combined with the passage of time, were not able to produce significant effects on the participants.

Although the methodology used was similar to the one developed in the study by Seekis et al. (2017), the similarity was not repeated in the results. While in the cited study, a significant improvement in positive body image indicators was obtained—with emphasis on the effect of the self-compassion intervention on body appreciation—in the present study, such effects were not replicated. Seekis et al. (2017), in their respective study, found a group effect on self-compassion: $F(2, 93) = 17.81$, $p < 0.001$, $\eta p2 = 0.28$, with higher means for the self-compassion intervention group relative to the self-esteem and control groups. The authors also found a group effect for self-esteem: $F(2, 93) = 12.00$, $p < 0.001$, $\eta p2 = 0.21$, with higher means for the self-esteem intervention group relative to the self-compassion and control groups. They also found a group effect on body appreciation: $F(2, 92) = 13.76$, $p < 0.001$, $\eta p2 = 0.25$, with higher means for the self-compassion group relative to the self-esteem group at only the assessment immediately after the intervention, with no significant differences among them at the two-week follow-up. The self-compassion group also had higher mean scores on body appreciation, both postintervention and follow-up, than the control group. For this variable, the self-esteem and control groups did not differ significantly at either the postintervention or the follow-up. No effect of time or group x time interaction was observed for the variable in question (body appreciation). The authors also evaluated the effect of the interventions on body satisfaction (with a significant difference among the groups) and appearance anxiety (with no significant difference), variables not included in the present study.

One can hypothesize many reasons for such a result, despite the use of similar methodologies. Initially, it is possible that the intervention protocol used in the baseline study is culturally sensitive (Castro, Barrera Jr., & Steiker, 2010; Menezes & Murta, 2018; Resnicow, Soler, Braithwaite, Ahluwalia, & Butler, 2000). In the present study, there was no systematic cultural adaptation of the interventions performed but rather a simplified adaptation of the writing activities, according to the description present in the original study, and other adaptations depending on the reality faced at the time of the fieldwork.

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In this sense, another factor that may have influenced the results of the interventions is the pandemic reality in which the study was conducted. There are already studies pointing to the great impact of the COVID-19 pandemic on mental health worldwide (Zhang & Lange, 2021), with an even more deleterious potential in low- and middle-income countries, as is the case in Brazil (Kola et al., 2021).

There is also the fact that the intervention was conducted online, unlike the baseline study, which was conducted in a face-to-face format. It is noteworthy that, given the reality mentioned in the previous paragraph, which imposed a necessary social distance, the online format was the only one possible at the time for the intervention. Having said that, studies have pointed out a trend toward fewer effects in interventions carried out online (Guest et al., 2019), although we emphasize the growing potential of these interventions due to the ease of implementation and reduced costs (Albertson, Neff, & Dill-Shackleford, 2015; Toole & Craighead, 2016; Wet, Lane, & Mulgrew, 2020), based on which we considered the implementation of this study's interventions in an online format as an opportunity to test in-person interventions, with significant results already reported, in a new format. It is also pointed out that online surveys have already been conducted, systematized, and improved for some time (Fielding et al., 2017), before the insurgence of the pandemic made them one of the few possible options in the face of the need to minimize face-to-face contact.

Moving on to other factors with the power to influence the results, the fact that the intervention is very brief and the follow-up time is also short may interfere with obtaining significant results in some variables, as pointed out by Diedrichs et al. (2015), Fuller-Tyszkiewicz et al. (2019), and Wilson, Marshall, Murakami, and Latner (2020) in their respective studies. Such variables may require a longer intervention time, possibly with multiple sessions, to undergo significant change, as well as a longer space of time after the completion of the sessions for the individual to assimilate the effects of the intervention and then for their psychological functioning to undergo detectable changes through self-report instruments. Sundgot-Borgen et al. (2019), for example, found the greatest effects of an intervention conducted after a 12-month follow-up. Meanwhile, Stice, Shaw, and Marti (2007) endorse that multisession programs tend to show greater effects, which is in contrast to the single-session model performed here.

Another possible bias worth mentioning is the fact that certain interventions tend to show greater effects in individuals who have specific conditions (such as disorders, for

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example) that may be affected by the intervention, because if the variables related to the condition usually show more unfavorable values, there will be more room for change and improvement. Although the intervention may produce significant effects in the general population, i.e., including healthy individuals and/or those who do not have specific conditions related to the study, it is pointed out that when the indicators evaluated are already considered good/favorable before the intervention, there may be no room for significant improvement. Alleva, Sheeran, Webb, Martijn, and Miles (2015) cite, for example, how the presence of negative body image may influence the effect size of body image interventions. Similarly, Yamamiya, Cash, Melnyk, Posavac, and Posavac (2005) found, in their study, significant effects from interventions conducted only in participants classified as having high internalization of media messages. For those classified as having low internalization, no effect was found. Along these lines, Stice et al. (2007), through meta-analysis, observed that selective programs, i.e., working with individuals who have risk factors for eating disorders, tend to show greater effects when compared to universal programs, i.e., aimed at the general population. Therefore, it is reiterated that the interventions carried out here were with a universal sample, without discriminating individuals with specific conditions, which could present a greater margin for improvement.

We also point to the fact that an active control group was used here, which has already been associated with a greater likelihood of finding significantly smaller interventional effects when compared to studies that used a passive control group (Alleva & Sheeran et al., 2015). An occurrence was observed, for example, in the study by Wet et al. (2020), who also used an active control group and found no group effects or group x time interaction in their results. This may occur due to unintended effects of control interventions that somehow promote aspects related to psychological well-being, which may in turn end up positively interfering with aspects of body image (Mulgrew, Prichard, Stalley, & Lim, 2019).

According to what was exposed throughout the executed study, it can be concluded that the interventions carried out here, characterized as brief online interventions based on writing exercises on self-compassion and self-esteem, did not show efficacy in promoting/significantly increasing body appreciation, body functionality appreciation, self-compassion, and self-esteem or in significantly decreasing symptoms of anxiety, depression, and the presence of common mental disorders.

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Regarding the generalization of the results, the sample is considered representative of college students aged 18 to 35 years from public higher education institutions in the city of Governador Valadares/MG, Brazil.

Although the interventions carried out here did not show significant results, it alludes once again to the potential of interventions carried out in the online format, not only aiming to promote positive body image but also to promote diverse aspects of mental health. Online interventions were especially timely during the global pandemic, when face-to-face contact had to be limited, and are proving to be a trend in an increasingly virtually connected society.

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