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Replication: Self-Compassion & Health-Promoting Lifestyle Behaviours in Albertan Post-Secondary Students During the COVID-19 Pandemic

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ABSTRACT

Self-compassion as a predictor for health-promoting behaviours has been the subject of several research studies. Self-kindness, common humanity, and mindfulness have been repeatedly positively correlated with health-promoting behaviours in individuals, such as eating well and doing physical activity (Gedik, 2019; Holden et al., 2020). We hypothesized that the positive components of self-compassion (self-kindness, common humanity, and mindfulness) would positively correlate with health-promoting behaviours. In an attempt to replicate Gedik's (2019) study, researchers recruited 294 Albertan post-secondary students to respond to an online-based questionnaire. Participants filled out both the Self-Compassion Scale (SCS) (Neff, 2003b) and the Health Promoting Lifestyle Profile II (Walker et al., 1995). Findings revealed that, unlike Gedik (2019), isolating behaviours such as feeling cut-off from the world are indicative of improved stress management. Therefore, Gedik's (2019) results were not replicated. This research's implications are essential when considering the factorial breakdown of self-compassion and how the factorial relationships to health behaviours are affected by varying populations and contexts. Specifically, the occurrence of the COVID-19 pandemic and its resulting restrictions must be considered when interpreting the results presented in this current study.

KEY WORDS: Self-compassion, health, health-behaviours, COVID-19, university students

1 | Replication: Self-Compassion and Health-Behaviours in Albertan University Students

Based on Buddhist philosophy, Neff (2003a) describes self-compassion as an attitude characterized by positivity, in which individuals recognize imperfection as a universal human condition and approach mistakes and failures without judgement. The concept of self-compassion is composed of three interrelated components: (a) self-kindness vs. self-judgment, (b) common humanity vs. isolation, and (c) mindfulness vs. over-identification. Research suggests that there is a positive association between elements of self-compassion and psychological well-being, such as positive affect (Barnard & Curry, 2011; Leary et al. 2007; Neff & Vonk, 2009), and protection against anxiety and depression (Neff et al., 2007; Zessin et al., 2015). This study will replicate previous research by Gedik (2019) and examine the association between self-compassion and health-promoting behaviours in Albertan post-secondary students.

Neff's later work led to the creation of the Self-Compassion Scale (SCS) (Neff, 2003b), which was designed to measure the three core dimensions of self-compassion and their roles. The scale measures six concepts: self-kindness vs self-judgement, common humanity vs isolation, and mindfulness vs over-identification. The self-kindness and self-judgement dimensions measure an individual's tendency to respond to personal failures with compassion and forgiveness rather than self-criticism and judgement. Individuals scoring high in self-kindness are tolerant of aspects of their personality they may not like, while low scorers are critical of perceived

flaws. The dimension of common humanity measures an understanding of one's experiences as being part of a larger human experience. Those scoring high in common humanity acknowledge that they are not the only person to experience a problem and that others are also capable of failure. In comparison, individuals measuring high in isolation tend to see their experiences as unique to them and highly isolating. Finally, mindfulness and isolation dimensions score an individual's ability to keep perspective while thinking of problems. Mindful individuals approach painful thoughts with understanding and a balanced mindset, while individuals scoring high in over-identification tend to fixate and obsess over a perceived mistake.

Previous research shows that the SCS is a psychometrically valid measure of self-compassion indicated by its strong positive correlation with happiness and life satisfaction (Neff, 2016; Pommier et al., 2019). Furthermore, the SCS has been shown to maintain high levels of validity across populations, language, and gender (Tóth-Király & Neff, 2021). With time and research, self-compassion and the SCS have both emerged as valid predictors of mental and physical health outcomes (MacBeth & Gumley; Kotara et al., 2019; Dunne et al., 2018).

Multiple studies have explored the relationship between self-compassion as a six-factor variable and physical health behaviours. Participants with higher self-compassion engaged in more health-promoting behaviours, which was associated with better physical health (Dunne et al., 2018). This pattern of results suggests the relationship between self-compassion and physical health is partially mediated by health-promoting behaviours (Dunne et al., 2018). Self-compassion has also been positively correlated with factors such as immunity, sleep, and global physical health in a recent meta-analysis (Phillips & Hine, 2019). Additionally, people aged 20 years or older demonstrate the relationship between self-compassion and improved physical health (Phillips & Hine, 2019).

Self-compassion can be implicated in mental health as well. Participants with high levels of self-compassion, specifically self-kindness, have higher emotional, social, and psychological well-being (Shin & Lim, 2019). Higher self-compassion has been associated with fewer mental health problems compared to students with lower self-compassion (Kotera et al., 2019). Additionally, self-compassion was more strongly associated with mental health than resilience (Kotera et al., 2019). The connection between self-compassion and

mental health may be influenced by health behaviour intentions, which have yet to be examined.

These implications of self-compassion on physical and mental health may be described as the result of self-compassion's effect on health behaviour intentions. Individuals with higher self-compassion were found to have stronger intentions to participate in health-promoting behaviours (Sirois, 2015). High self-efficacy, low negative affect, and high positive affect mediate the relationship between self-compassion and health-behaviour intentions, suggesting that self-compassion can be utilized as a variable to influence individuals to make healthier choices overall (Sirois, 2015). Due to the established impact that self-compassion has on both mental and physical health and health behaviour intentions, exploring this relationship within the context of COVID-19 may lead to interesting results.

Studies conducted during the COVID-19 pandemic show that people have been experiencing more negative emotions such as anxiety, depression, and anger since the beginning of the pandemic (Mohammadpour et al., 2020). A local survey has also reported a decline in the emotional, physical and mental well-being of individuals in Edmonton, Alberta, over the past few months (City of Edmonton, 2021). When survivors of a previous pandemic, SARS, were studied, it was found that this type of pandemic-induced anxiety persists even after the outbreak (Kavaklı et al., 2020). When studying the relationship between self-compassion and health-promoting behaviours, it is vital to acknowledge the higher-than-normal levels of stress and anxiety that people are experiencing during the current COVID-19 pandemic.

Self-compassion has been widely reported to help people navigate unpredictable and stressful situations (Biber & Ellis, 2017; Mohammadpour et al., 2020; Kavaklı et al., 2020). The existing literature suggests that self-compassion mediates the relationship between perceived COVID threat and death anxiety (Kavaklı et al., 2020). Death anxiety refers to the psychological pain and discomfort that stems from the subjective awareness of death. People who have higher self-compassion levels will be less anxious about death and feel less threatened by the COVID pandemic (Kavaklı et al., 2020). These findings could be attributed to self-compassion encouraging a realistic evaluation of worries, as well as better emotional and behavioural regulation in the face of death anxiety and threat triggers, such as exposure to a number of

deaths and misinformation (Biber & Ellis, 2017; Kavaklı et al., 2020).

To limit the spread of COVID, specific health and safety behaviours such as handwashing and observing social distancing are encouraged. This social expectation puts a greater health responsibility on the individuals. However, it is important to highlight that some people are inherently more likely to follow these health practices than others. A cross-sectional study conducted by Mohammadpour et al. (2020) suggested that people who exhibited a higher level of self-kindness were more likely to engage in handwashing and social distancing practices than people with a high level of self-judgment.

This current study was designed to replicate a study conducted by Gedik (2019), which reported the effect of self-compassion on health-promoting behaviours in Turkish university students in the pre-COVID era. It was found that the constructs of self-compassion (ie. self-kindness, common humanity, and mindfulness) had significant positive associations with health-promoting behaviours. Contrasting variables on the SCS such as self-judgement, isolation, and over-identification were positively associated with spiritual growth, stress management, and interpersonal relationships. Overall, self-compassion was suggested to be correlated with more health-promoting behaviours (Gedik, 2019).

This study aims to test this relationship in an Albertan post-secondary student population. It is essential to acknowledge that the inclusion of previously uncommon practices such as increased sanitation and social distancing imposes an increased level of health responsibility on an individual. The relationship between self-compassion and health-promoting behaviours can fluctuate due to different pandemic-related stress levels and an increased need for health responsibility since these factors were absent when the original study was conducted (Gedik, 2019). This study is significant as it examines the relationship between self-compassion and health-promoting behaviours in a population that is different from the population examined by Gedik (2019). Therefore, our results will demonstrate how previous research findings can or cannot be generalized. Furthermore, this current study will allow us to examine relationships within the specific context of COVID-19, helping us better understand how correlations between self-compassion and health-promoting behaviours may change in specific contexts, starting with a global pandemic.

Results revealed in this study may have implications in the promotion of positive mental health for individuals in certain populations. For example, suppose relationships between certain aspects of self-compassion and health-promoting behaviours are discovered, this could suggest ways to provide the most effective support to post-secondary students to encourage health promotion. This would allow major provincial institutions, such as universities and colleges, to provide more targeted support for students, demonstrating to them which factors of self-compassion could be focused on to most efficiently benefit the health of individuals. The specific context of this study enables our results to help institutions better understand the effects that COVID-19 had on individuals and clarify how to enhance health promotion both during and after the global pandemic.

The goal of our study was to replicate research conducted by Gedik (2019) on the association between self-compassion and health-promoting behaviours in post-secondary students. The following research questions will be addressed: (1) Are components of self-compassion such as self-kindness, mindfulness and common humanity positively correlated with health-promoting behaviours? (2) Is negative self-compassion such as self-judgement, isolation and over-identification negatively correlated with health-promoting behaviours? We hypothesize that as self-compassion has consistently been linked to mental (Kotera et al., 2019; Shin & Lim, 2019) and physical health (Dunne et al., 2018; Phillips & Hine, 2019), self-compassion (specifically self-kindness, common humanity, and mindfulness) will be positively correlated with health behaviours. Furthermore, we expect to find similar results as Gedik (2019).

2 | METHODS

Participants

The data for this replication study was collected between January 2021 and March 2021. 294 students from varying colleges and universities across Alberta, Canada, participated in our study. Permission to conduct the study was obtained through the Research Ethics Board at the University of Alberta. To ensure the students were from post-secondary schools in Alberta, we requested that they use their school email to sign into the Google form containing the questionnaires. We removed this personal information from the data once we closed the survey and began our analysis. Before beginning the study, students were given informed consent and the opportunity to withdraw their consent, knowing that the information gathered was only to be used for the purpose of this study. In an effort to maintain

anonymity, we did not ask the participants for their gender or age. Participation in our study was voluntary, and no compensation was given to participants. The data analysis was finalized with 279 participants, with 15 removed because of incomplete data, non-school associated email, consent not provided, etc.

Materials

The participants accessed the surveys through a Google form that required logging into a post-secondary email account on their laptop or computer. They first filled out Neff's (2003b) *Self-Compassion Scale* (SCS), containing 26 5-point Likert scale questions with responses ranging from *Never* to *Always* (Fig. A1). Each question was related to one of 6 different factors (3 pairs). These factors include (a) *self-kindness* vs. *self-judgement*, (b) *common humanity* vs. *isolation* and (c) *mindfulness* vs. *over-identification*. One example of a question regarding self-kindness is, "I try to be understanding and patient towards those aspects of my personality I don't like." A complete list of questions for each of the factors is provided in Figure A1.

The questions were ordered in such a way that the factors were spread out evenly throughout the SCS. The participants then filled out the *Health Promoting Lifestyle Profile 2* (HPLP-II), a questionnaire created by Walker et al., (1995). The HPLP-II contains 52 questions relating to six categories: *Health Responsibility, Physical Activity, Nutrition, Spiritual Growth, Interpersonal Relations,* and *Stress Management.* Each question asked participants how often they engage in healthy behaviours related to the six categories listed previously. Participants responded with *Never, Sometimes, Often,* or *Routinely*. These questions were also ordered in such a way that the categories were spread out evenly throughout the HPLP-II.

Procedure

Participant recruitment occurred entirely online through social media sites, the University of Alberta's Student Digest emails, as well as through emails distributed to University of Alberta professors requesting class participation. Participants were mainly recruited from the University of Alberta, but recruitment was extended to other post-secondary students across Alberta. Responses were only received from those at the University of Alberta, The Northern Alberta Institute of Technology (NAIT), the University of Calgary, and MacEwan University. To confirm post-secondary enrollment, students signed in to the study using their school-provided email address. All participant

data attached to an email address that did not belong to an Albertan post-secondary institution were omitted from the analysis. The questionnaires were done entirely on the Google form after the participants read and provided informed consent. Their responses were then automatically transferred to a spreadsheet where they were averaged and prepared for data analysis.

Analyses

The relationships between the HPLP-II and the SCS dimensions were examined through Microsoft Excel. The analysis included Pearson correlations as well as a hierarchical multiple linear regression (MLR) model. Pearson correlations were carried out between all 12 dimensions (6 from SCS and 6 HPLP-II) and total mean SCS and HPLP-II scores. The correlation matrix was used to assess the significance of the HPLP-II's relationship with all SCS dimensions. The goal was to replicate the strong positive correlations between HPLP-II and self-kindness, common humanity, and mindfulness as revealed in Gedik's (2019) earlier study, "Self-Compassion and Health-Promoting Lifestyle Behaviors in College Students.". The MLR model includes all six factors of the SCS and each of their relationships with total mean HPLP-II scores. The MLR model was used to assess which SCS dimensions explain most of the variability in total mean HPLP-II scores. Significant correlations and linear regressions that were significant at the $p < 0.10$ and $p < 0.05$ level are indicated individually in Table B1 and Table B2 below. All six factors of the Self-Compassion Scale (SCS) (self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification) were entered as predictor variables for the multiple linear regression (MLR).

3 | RESULTS

Unlike the original study by Gedik (2019), healthy behaviours were not found to be correlated with self-kindness, self-judgment, common humanity or mindfulness. Instead, the multiple regression in Table B1 indicates that overidentification explains most of the variability in total HPLP-II scores (β = 0.114, SE = 0.056). Specifically, overidentification was found to be significantly positively correlated with stress management ($r = 0.120$, $p < 0.05$), which might indicate that isolating when stressed leads to better management of the stress or stressors. The correlation between overidentification and overall healthy behaviours was not significant at the $p < 0.05$ level. Even though overidentification was found to be a significant predictor of healthy behaviours (Table C2), the multiple regression model only explains 1.9% ($R^2 = 0.019$) of the variability in HPLP-II

scores. This could be because gender and age were not included in the model or because the questionnaires did not entirely capture the intended parameters. Even if overidentification was a significant predictor, there is much more that explains the variation in the HPLP-II that is not captured here. Overall, healthy behaviour amid a pandemic seems to be correlated with isolating oneself. This finding could be related to the participants' willingness to follow local COVID-19 restrictions, although we did not explicitly test for this.

It was hypothesized that different positive components of self-compassion (self-kindness, common humanity, and mindfulness) would have a significant positive association with health-promoting behaviours. This was based on the findings of several research studies that have attempted to correlate the same variables. The findings of our study were inconsistent with the hypothesis.

4 | DISCUSSION

The results in this study were inconsistent with Gedik's (2019) findings. We found no relationship between health-promoting behaviours and the positive aspects of self-compassion. Over-identification was found to be significantly positively correlated with stress management at the $p < 0.05$ level. Over-identification was associated with increased physical activity and better nutrition, but these relationships were not found to be significant at the $p < 0.05$ level. Additionally, isolation was linked with increased health responsibility, but again, this relationship was not significant at the $p < 0.05$ level. Apart from the association between over-identification and stress management, this study's findings directly contrast with the original study by Gedik (2019).

However, caution must be exercised while drawing conclusions from the findings of this study due to the following factors that limited the scope of our results. Firstly, this was a cross-sectional study, and the surveys were posted on various social media websites. Our study used a convenience sample. Because of this, there is no way to identify or account for systematic differences between the people who responded to the survey versus those who did not. The findings are correlational in nature, and it is not possible to estimate which construct caused the other. Secondly, for complete anonymity, the study did not control for meaningful confounds such as age, post-secondary institution, and gender. Therefore, potential differences among these variables must be considered. Post-secondary students can fall within a wide age interval; thus, age could act

as a meaningful confound, potentially affecting the relationships examined. Age and gender were not found to have a significant effect on the relationship between self-compassion and health behaviours in Gedik's (2019) original study. However, the absence of this data categorization must still be considered when interpreting the results of this current study. Additionally, the eligibility criteria were modified from students of a single post-secondary institution to students of several post-secondary institutions in the province. This increased the study's relative external validity but at the cost of internal validity since the influence of specific post-secondary institutions and respective cities was not controlled. Finally, and most importantly, it is reasonable to expect that different self-compassion and health behaviour measures could vary systematically because of the global pandemic. The study did not adjust for these potential variations, so the study results are not generalizable in a non-pandemic world.

Our main findings contrast with studies that have examined the relationship between self-compassion and health-promoting behaviours. Dunne et al. (2018) found that higher self-compassion was consistently related to engaging in healthier behaviours, and promoting lower physical symptoms. Further, when considering the factorial structure of self-compassion, self-kindness, common humanity, and mindfulness have been found to correlate positively with all tested domains of health-promoting behaviours (Holden et al., 2020). Holden et al. (2020) also found negative correlations between negative self-compassion domains (over-identification, isolation, and self-judgment) and three domains of health-promoting behaviours (nutrition, spiritual growth, and health responsibility). The significant findings of these studies contrast sharply with our results. This suggests a potential measurement error or the possibility of confounding variables that must be considered. These differing findings may prompt consideration of the factorial breakdown of self-compassion, or how self-compassion factors may interact with health-promoting behaviours differently in various contexts or with different populations.

Expanding on the issue of contrasting results leads us to consider Gedik's (2019) study, which was the replication basis for the current research. Overall, the present study failed to replicate Gedik's (2019) findings, and in some cases, found contradicting correlations. Gedik (2019) emphasized the positive correlation between self-kindness, common humanity, and mindfulness and health-promoting behaviours. He also found that self-judgment, isolation, and

overidentification were not associated with health-promoting behaviours (Gedik, 2019). When comparing our results to Gedik's (2019), we are prompted to consider possible explanations for the opposition.

We speculate that the context in which this current study was conducted – during the COVID-19 pandemic – may serve as a partial explanation for these results. For example, the positive correlation between health responsibility and isolation was found to be significant only at the $p < 0.10$ level, but can still be explained by the context of the pandemic, as individuals accept imposed COVID-19 regulations to take responsibility for themselves and others' health. The significant relationship between stress management and over-identification may also be explained by the current context in which individuals are forced to isolate themselves, and they consider the stressors in their immediate environment. However, these are only speculations to explain the contrasting results compared to Gedik's (2019) findings. More research would have to be conducted to further explore the multiple components of self-compassion and their relationship to health-promoting behaviours in various contexts.

The findings of this research have implications for how healthcare practitioners might approach mental and physical health during the COVID-19 pandemic and in future global emergencies. The relationship between self-compassion and self-isolation is particularly relevant. Perhaps when social experiences expose individuals to potential health risks, self-isolation acts as a form of self-compassion and self-care. Furthermore, our research suggests that the only significant predictor of health-promoting behaviours was students' stress management skills. These findings may help school administrators and mental health practitioners at universities implement more effective techniques to bolster student health, such as online workshops and classes targeted at improving students' stress management skills. This may be especially relevant for students experiencing high levels of isolation, such as international students and physically disabled students who may be less able to participate in traditional campus activities.

5 | CONCLUSIONS

This research aimed to conduct a replication of research conducted by Gedik (2019) on the association between components of self-compassion and health-promoting behaviours in post-secondary students. As in the original study, students who scored high on self-compassion measures would also score higher on health-promoting behaviours. As previously mentioned, other studies have found that participants with higher self-compassion engaged in more health-promoting behaviours, which was associated with better physical health. According to Dunne et al. (2018), these results suggest that health-promoting behaviours at least partially mediate the relationship between self-compassion and physical health. Ultimately, we were unable to replicate Gedik's (2019) findings. Instead, our results suggested that negative self-compassion elements such as over-identification and isolation were related to health-promoting behaviours. While no definite conclusion can be made, it is a strong possibility that the presence of the COVID-19 pandemic in Canada may have influenced the relationship between self-compassion and health behaviours. Future research needs to be conducted to understand how global threats such as COVID-19 affect the nature of self-compassion and its relation to health.

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APPENDIX A

Figure A1. Self-Compassion Scale (SCS) Subcategories and Questions.

Category	Questions
Self-Kindness	I try to be understanding and patient towards those aspects of my personality I don't like
	I'm kind to myself when I'm experiencing suffering
	When I'm going through a very hard time, I give myself the caring and tenderness I need
	I'm tolerant of my own flaws and inadequacies
	I try to be loving towards myself when I'm feeling emotional pain
Self Judgment	When I see aspects of myself that I don't like, I get down on myself
	When times are really difficult, I tend to be tough on myself
	I can be a bit cold-hearted towards myself when I'm experiencing suffering
	I'm disapproving and judgmental about my own flaws and inadequacies
	I'm intolerant and impatient towards those aspects of my personality I don't like
Common Humanity	When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people
	I try to see my failings as part of the human condition
	When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am
	When things are going badly for me, I see the difficulties as part of life that everyone goes through
Isolation	When I fail at something that's important to me I tend to feel alone in my failure
	When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world
	When I'm feeling down I tend to feel like most other people are probably happier than I am
	When I'm really struggling I tend to feel like other people must be having an easier time of it
Mindfulness	When something upsets me I try to keep my emotions in balance
	When I'm feeling down I try to approach my feelings with curiosity and openness
	When something painful happens I try to take a balanced view of the situation
	When I fail at something important to me I try to keep things in perspective
Over-Identification	When something upsets me I get carried away with my feelings
	When I'm feeling down I tend to obsess and fixate on everything that's wrong
	When something painful happens I tend to blow the incident out of proportion
	When I fail at something important to me I become consumed by feelings of inadequacy.

APPENDIX B

Table B1. Intercorrealtions, means and standard deviations of scores on the SCS and HPLP-II

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	M	SD
1.SK	1.000														2.888	0.738
2.SJ	-0.705	1.000													3.555	0.815
3.CH	0.563	-0.456	1.000												3.112	0.979
4.I	-0.497	0.578	-0.391	1.000											3.458	0.914
5.M	0.624	-0.501	0.505	-0.480	1.000										3.205	0.802
6.OI	-0.519	0.638	-0.320	0.522	-0.566	1.000									3.461	0.833
7.SCS	0.189	0.294	0.465	0.397	0.253	0.394	1.000								3.280	0.288
8.HR	-0.075	0.059	-0.018	0.107*	-0.076	0.079	0.045	1.000							2.394	0.761
9.PA	-0.005	0.044	-0.043	0.029	-0.052	0.108*	0.038	0.356	1.000						2.652	0.930
10.N	0.007	0.032	-0.017	0.005	0.004	0.112*	0.067	0.376	0.505	1.000					3.008	0.684
11.SG	0.043	-0.023	0.018	-0.043	0.075	0.044	0.051	0.392	0.420	0.400	1.000				3.048	0.797
12.IR	-0.020	0.049	0.031	0.017	0.048	0.032	0.079	0.396	0.235	0.365	0.592	1.000			3.352	0.784
13.SM	-0.050	0.095	-0.054	0.005	-0.011	0.120**	0.049	0.332	0.305	0.375	0.601	0.442	1.000		2.826	0.629
14.HPLP	-0.021	0.058	-0.019	0.029	-0.004	0.115*	0.076	0.669	0.693	0.700	0.799	0.707	0.690	1.000	2.880	0.543

* $p < 0.10$ ** $p < 0.05$

SK: self-kindness, SJ:self-judgement, CH: common humanity, I: isolation, M: mindfulness, OI: over-identification, HR: Health

Responsibility, PA: Physical Activity, N: Nutrition, SG: Spiritual Growth, IR: Interpersonal Relations, SM: Stress Management

Table B2.Summary of hierarchical regression analysis for variables predicting health-promoting lifestyle habits (N = 278)

Variable	Model 1	
	β	SE(β)
SK	0.018	0.072
SJ	0.005	0.066
CH	-0.014	0.042
I	-0.014	0.046
M	0.058	0.058
OI	**0.114***	0.056
R^2		0.019

*$p < 0.05$

SK: self-kindness, SJ: self-judgement, CH: common humanity, I: isolation M: mindfulness, OI: over-identification