

Personal Goals as Moderators of a Cognitive-Behavioural Intervention for Depressive Symptoms in College Students

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ABSTRACT

The objective of this pilot study was to assess the effects of the indicated level of a multilevel preventive program on depressive symptoms and to examine personal goals appraisal as a moderating factor among college students aged between 16 and 29 years old with depressive symptoms. Students were screened for anxious and depressive symptoms in the beginning of their semester. Those who scored higher than the cut-off score were invited to be part of the intervention group. A comparison group was formed with students who did not wish to participate with the intervention group. Thirty-six students were included in the analyses. Both groups completed pre-test, post-test, and follow-up questionnaires. Results indicated a reduction in depressive symptoms at post-test and these gains were maintained three months later. Students in the intervention group with a more positive appraisal of their academic and career goals showed fewer depressive symptoms than students in the intervention group with a less positive appraisal of these goals. Limitations and implications for further implementation are discussed.

Keywords: prevention program, depression, personal goals, college students

RÉSUMÉ

L'objectif de cette étude pilote était d'évaluer les effets d'une intervention ciblée sur les symptômes dépressifs et de vérifier le rôle modérateur de l'évaluation des buts personnels auprès de collégiens âgés de 16 à 29 ans présentant des symptômes dépressifs. Les étudiants ont rempli des questionnaires en début de semestre, permettant de dépister ceux qui présentaient des symptômes significatifs d'anxiété ou de dépression. Les étudiants dépistés ont été contactés afin de leur offrir de participer au groupe d'intervention. Un groupe témoin a été formé des étudiants qui ne souhaitaient pas participer au groupe d'intervention.

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Trente-six étudiants ont composé l'échantillon final. Les deux groupes ont rempli des questionnaires à 3 temps de mesures.

Les résultats indiquent une réduction des symptômes dépressifs au posttest et le maintien de ces gains 3 mois plus tard. De plus, les étudiants du groupe d'intervention qui présentent une perception plus positive de leurs buts scolaires et de carrière rapportent moins de symptômes dépressifs que les étudiants du groupe d'intervention présentant une perception moins positive de ce type de buts. Les limites et les implications pour l'implantation ultérieure de ce programme sont discutées.

Mots-clés : programme de prévention, dépression, buts personnels, collégiens

In the last decade, postsecondary institutions have been facing a new challenge: a growing proportion of the student body in need of mental health services (Daddona, 2011). The American College Health Association's latest report (ACHA, 2019) indicates that 46% of undergraduate students "felt so depressed that it was difficult to function" any time within the last year, an increase compared to the 32% shown in their Spring 2011 report (ACHA, 2011). An increase from 11% in 2011 to 20% in 2019 was also observed in undergraduate students reporting having been diagnosed or treated by a professional for depression in the last 12 months. Depressive students seem more likely to drop out of college (Arria et al., 2013; Boyraz et al., 2016). Fortin, Marcotte, Diallo, Potvin and Royer (2013) also identify depressive youth as a subgroup of students with a higher risk of dropping out of school.

ACHA's 2019 report suggests that less than half of undergraduate students receive psychological treatment for depression. Eisenberg, Golberstein and Gollust (2007) came to a similar conclusion. Their research showed that only a third of college students with clinically significant depressive symptoms received medication or therapy 12 months before the start of their study. Compared to adolescents, young adults seem to be less prone to seek treatment (Mojtabai et al., 2016). Arnett (2000) suggests the existence of a theoretically distinct developmental period that occurs between adolescence and adulthood: emerging adulthood. Although they are less supervised by their parents, emerging adults are not, for the most part, fully independent. They are at a stage in their lives where they make more decisions independently, without necessarily having all the tools to effectively do so. Findings from Eisenberg, Speer and Hunt (2012) underline this idea. Their research showed two of the main reasons reported by students with untreated mental health problems for not receiving services were "My problem will get better by itself" and "I prefer to handle my problems on my own." Thus, there seems to be a battle between their need for autonomy and their need to seek help. Nevertheless, students with major depression seem to be more likely to think that they need help (72%) compared to students with other mental health difficulties (51%; Eisenberg, Gollust et al., 2007).

Regarding mental health prevention and treatment, school settings provide an unparalleled opportunity to reach youth and address their needs (MacKean, 2011). The integration of mental health programs in schools helps to reduce the stigma associated with help-seeking and provides an opportunity to enhance treatment gains through the possible generalization of learning (Paternite, 2005). Moreover, while many programs have been developed based on the assumption that young people prefer online treatment, Bradford and Rickwood (2014) reported that only 16% of young people with depression indicated a preference for online treatment compared to face-to-face services. Previous studies have shown strong evidence regarding

the effectiveness of indicated cognitive-behavioural interventions on depressive symptoms in young people (Purcell et al., 2013). Indicated interventions are designed to decrease risk factors among students presenting subclinical symptoms, as well as to reduce symptomatology (Christner & Mennuti, 2009).

Data from a recent meta-analysis showed that indicated cognitive-behavioural interventions for depression in students pursuing a higher education yielded an effect size post-intervention of 0.60, compared to no-intervention or wait-list control groups (Conley et al., 2017). Moreover, the effect size estimated at follow-up revealed that the effects were maintained over time (Conley et al., 2017), with one study reporting effects up to 18 months later (Peden et al., 2001). Indicated interventions are designed for individuals who present mental health symptoms, but who do not meet diagnostic criteria for a clinical disorder. Cognitive-behavioural interventions usually include cognitive restructuring, problem-solving, psychoeducation, relaxation, conflict resolution, negotiation skills management, emotion recognition, social skills management, communication skills, pleasurable activities, and goal management (Fréchette-Simard et al., 2018). However, only a few studies assessed whether specific groups benefit differently from them, a concern noted by many authors (Conley et al., 2017; Horowitz & Garber, 2006; Stice et al., 2009).

Moderators of Intervention Effect

Results from Conley et al. (2017) showed that there was high heterogeneity in the outcomes of indicated interventions for depression among college students, which raises the question of potential moderating factors affecting the treatment response. Moderators are defined as variables present before the intervention and independent from the experimentation (Kraemer et al., 2002). They influence the outcome of the intervention and provide information on its effectiveness depending on specific characteristics of the individual participants.

Personal goals can constitute a relevant moderator in interventions targeting depression in college students. Having poorly defined personal goals was found to be the most predictive factor of self-reported depressive symptoms among college students, compared to family, personal, social, and academic factors (Villatte et al., 2017). In this context, it is therefore relevant to examine whether personal goals play a role in the way college students can benefit from an intervention aiming to reduce depressive symptoms.

Personal goals are defined as “an exhaustive image of an ideal stored in memory as a comparison to a current state; a representation of the future that influences the present; a desire; and an incentive to action” (Cochran & Tesser, 1996, p. 100). When it comes to the identification of personal goals, college students report goals pertaining to their education, work, relationships with friends, family or a romantic partner, personality, and leisure activities (Lecci et al., 1994; Salmela-Aro & Nurmi, 1997). Consistent with Arnett’s theory, emerging adults explore their identity more freely than adolescents and adults, especially in terms of career choices and romantic relationships. Moreover, Arnett suggests that emerging adults are centred on their development and needs, which explains why goals associated with leisure and self-development (e.g., “to eat healthier,” “take care of myself”) are important for college students. According to Nurmi and Salmela-Aro (2002), individuals whose goals reflect current life tasks are more likely to show higher levels of well-being. Thus, following these findings, it would be likely that college students with goals focused on

self-development would demonstrate greater well-being, and, as Arnett suggests, that emerging adults are in a period where they tend to focus on themselves.

However, these same authors (Salmela-Aro & Nurmi, 1997) also found that becoming interested in these types of goals during university was associated with an increase in depression during those years. These results were explained by referring to Ingram's notion (1990) that people who are depressed tend to focus on themselves more, and may have less energy to undertake other goals, such as academic ones. With regard to academic and career goals, Heckhausen, Chang, Greenberger and Chen (2013) concluded that commitment to educational goals at the beginning of college was associated with higher life satisfaction than a commitment to career goals. However, three years following the transition to college, commitment to either educational or career goals was associated with higher life satisfaction. It was also found that college students who reported achievement-related goals at the beginning of university were more likely to report higher self-esteem two years later than those who did not. Additionally, greater interest in achievement goals at the end of university was related to lower levels of depression. A similar conclusion was obtained for interpersonal goals (i.e., goals related to family, friends, or romantic relationships): college students who mentioned family-related goals at the beginning of university were more likely to report lower levels of depression two years later than college students who did not (Salmela-Aro & Nurmi, 1997).

In addition to the content of personal goals, the way individuals appraise their goals also seems to be linked with depressive symptomatology. In fact, depressive individuals tend to appraise their personal goals more negatively, especially on the following aspects: outcome expectancy, perceived skills to carry out goals, personal control, confidence in capacity to achieve goals, structure (knowing how to achieve a goal and having to do so), meaning, progress, enjoyment, visibility (others' awareness of our goals), stress, difficulty, and probabilities of goal actualization (Lecci et al., 1994; Meyer et al., 2004; Nurmi et al., 2009; Street, 2002). According to Salmela-Aro and Nurmi (1996), even though a bidirectional relationship exists between depressive symptoms and goal appraisal, depressive symptoms seem to be a stronger influence on goal appraisal rather than the opposite. Therefore, goal appraisal in depressive students prior to an intervention may provide information on these students' capacity to partake in behaviour change. Positive goal appraisal in depressed undergraduate students may imply that the motivational system has not yet been affected by the depressive state, which could possibly result in a greater commitment to the intervention. Conversely, depressed students with negative goal appraisal may experience a greater loss of interest and feel hopeless or helpless, which may lead to disengagement in intervention.

Moreover, while race and ethnicity have been studied as demographic moderators (Duong et al., 2016), parental education is not a common variable explored by depression intervention research. In fact, Curry and his colleagues (2006) suggested that children with externalized symptoms with more educated parents could benefit more from cognitive-behavioural interventions. However, this question does not seem to have been studied for internalized problems, such as depression. This question also does not appear to have been examined in emerging adults. It is possible that parental variables interact differently with interventions' outcomes in children and young adults.

In summary, a growing proportion of college students report depressive symptoms. While the consequences associated with depressive symptoms in postsecondary students are noteworthy, a lot of these students do not receive the help they need. To address this issue, cognitive-behavioural interventions provided

in schools seems to be a promising avenue. As outlined by previous research, it is necessary to explore different factors that may enhance or hinder outcomes of such programs. Given that college students are in a period of their lives where they are in the process of defining their identity on several levels, the study of personal goals as moderators of the intervention's effects seems relevant. Moreover, it is possible that parental education may interact differently with cognitive-behavioural intervention's outcomes in emerging students, compared to what was previously found in children with externalized symptoms.

To our knowledge, there is no comprehensive multilevel programs for depressive and anxious symptoms designed especially for postsecondary students. In this context, *Zenstudies: Making a Healthy Transition to Higher Education* was developed for CEGEP students,¹ based on the literature and the results of previous studies about the implementation of preventive programs with postsecondary populations. The first aim of this pilot study is to assess the effects of the *Zenstudies* program on depressive symptoms in a population of college students presenting significant depressive symptomatology. It is hypothesized that participants in the intervention group will show a decrease in depressive symptoms over time and that this effect will not be observed in the comparison group. The second aim of this study is to explore potential moderators of intervention, especially appraisal of personal goals. It is hypothesized that participants who show a more positive appraisal of their interpersonal, intrapersonal, and occupational goals will show greater improvement after the intervention. Also, based on previous research, it is hypothesized that young adults with more educated parents will benefit more from *Zenstudies*.

METHOD

Description of the Intervention Program

Zenstudies: Making a Healthy Transition to Higher Education is a mental health prevention program developed by Marcotte, Viel, Paré, and Lamarre (2016), the first multilevel program for mental health to be implemented in postsecondary institutions in Québec, Canada (see Marcotte, Paré, and Lamarre [2018] for more details on the program's development). It includes three levels, based on Christner and Mennuti's (2009) model of mental health services delivery in school contexts. The first level, universal prevention, is delivered by teachers during class time. It aims to develop knowledge about mental health and the transition between high school and college. The second level, selective prevention, is in the form of two workshops led by a mixed team of professionals and teachers. Students are self-referred to these workshops, in which cognitive distortions are addressed, and principles of mindfulness and behavioural activation are introduced. The third level, targeted-indicated prevention, includes 10 sessions of 90 minutes for groups of 5–10 students who experience significant anxious or depressive symptoms. The sessions are facilitated by two mental health professionals. *Zenstudies* includes 15 components, which are all addressed in the targeted-indicated level:

1. Presentation of the rationale of the intervention
2. Identification of stressors related to the transition between high school and college and issues involved in this transition

1. A CEGEP is a publicly funded postsecondary institution exclusive to the province of Québec, Canada. CEGEPs offer pre-university (2 years) and technical (3 years) programs. Students can be admitted after receiving a high school diploma. CEGEP students are usually aged between 16 and 20, although older adults can also pursue postsecondary studies in that institution.

3. Feeling of belonging to the college
4. Learning about depression and anxiety
5. Cognitive restructuring
6. Behavioural activation and increase in pleasant activities
7. Thinking about career choices
8. Anxiety management
9. Romantic relationships
10. Relationships with parents
11. Mindfulness practice
12. Social, communication, problem-solving, and conflict management skills
13. Study strategies
14. Healthy lifestyle habits
15. Relapse prevention

For each level, manuals are available for both the facilitators and the participants. The present paper focuses on the third level, targeted-indicated intervention. Over the 10 sessions, students participate in 36 activities. As examples, several activities invite the participants to reflect on their personal goals. The activity “My Values” guides the participants in their reflection on what is important for them in their career and education, their relationships, their self-development, and their leisure activities. Once participants have completed this reflection, they are invited to assess the coherence between their daily actions and the values they had identified.

Procedures

This study is part of a larger research project (see Marcotte et al., 2018), in the context of a university-college collaboration grant from the ministère de l'Éducation, de l'Enseignement supérieur et de la Recherche du Québec. Ethical approval was issued by the ethical Board Committee of the Université du Québec à Montréal. The pilot study was conducted over two academic years (2014–2015; 2015–2016) in a small regional college in Québec, Canada. A flowchart (Figure 1) depicts the general procedure in bold arrows and the additional criteria for inclusion in the current study with dashed arrows.

The larger research project had two goals, which led to two phases. The first phase had the objective to better understand the experience of students during the transition from high school to college. This first research phase also allowed the investigators to screen participants for the second phase, which had the objective to develop a prevention program for anxious and depressive symptoms. During the first phase, 862 first-year students participated in a mandatory course of their program, at the beginning of their semester. Research assistants presented the study's first phase goal (i.e., to better understand the experience of students during the transition to post-secondary studies), and invited the students to complete a survey in class. The survey included sociodemographic measures, measures to screen for depressive and anxious

symptomatology, and a measure to assess personal goals (see “Measures” section). Research assistants also explained the procedures that would be taken in order to maintain confidentiality. Students were invited to indicate their name and contact information if they were open to being contacted for a second phase, based on their answers. Students who did not want to complete the surveys were invited to do personal work in class. Very few students took that option, with most of students agreeing to complete the survey. Written consent from participating students to collect data was obtained at this time.

In the context of the larger study, students who were younger than 35 years old and who scored 15 or more on the Beck Depression Inventory or the Beck Anxiety Inventory were contacted and invited to participate in the indicated level of the program (see Intervention program section). Clinical exclusion criteria, described in the facilitator’s manual, were assessed by a mental health professional prior to the intervention. These were:

1. Presence of chronic depression with suicidal thoughts or planning
2. The manifestation of symptoms related to mental health disorders requiring the immediate assistance of a psychiatrist
3. Intake of drugs on a regular basis
4. Receiving ongoing psychological treatment that is incompatible with cognitive-behavioural therapy.

Two participants were excluded because they showed symptoms of a psychiatric disorder that required a psychiatric consultation. A referral to psychiatric services was provided. Students who opted out of the intervention group were offered the chance to join the comparison group, a no-intervention condition which required participants to complete the same questionnaires as the intervention group. Students in the comparison group were offered the chance to participate in the intervention in the subsequent semester, and were provided resources in the college and the community. Pre-test data consisted of the answers given by the students during the screening phase. The intervention group followed the program for 10 weeks. Group sessions took place at the college during lunch breaks, and lunch was provided by the research team. At the end of the program, the intervention group and the comparison group filled out the questionnaires again, constituting the post-test data. A follow-up measure was obtained three months after the end of the intervention. For post-test and follow-up questionnaires, \$15 was provided as financial compensation.

Participants

The purpose of this specific sub-study was to assess the effect of *Zenstudies: Making a Healthy Transition to Higher Education* on emerging adult students with significant depressive symptomatology. Thus, of the 63 students who took part in the larger quasi-experimental study, only 36 participants with a maximum age of 29 years old and who scored 14 or higher on the Beck Depression Inventory, second version, were included in the current study for analysis. Moreover, students who participated in at least 50% of the intervention sessions were included. This choice was based on the fact that a sufficient dosage, as defined by Nation et al. (2003), is needed in order to produce the desired effects in low intensity psychological interventions (such as psycho-educational group interventions using cognitive behavioural therapy principles) targeting anxious and depressive symptoms (Delgadillo et al., 2014). Results from ANOVAs and chi-square analyses

did not show any significant difference between students who participated in 50% of the sessions or more and students who attended less than 50% of sessions regarding sociodemographic characteristics and depressive scores at baseline.

Since the preliminary analyses did not find differences in demographic characteristics between the intervention and comparison groups, details are provided for the 36 students included in the analyses of this study. Mean age of the 36 Caucasians students was 18.89 ($SD = 2.72$). The subsample was composed mostly of females (91.67%), and 68.89% from the subsample were first-year students. In terms of college program, 13.89% were in a preparatory program, 19.44% were in a preuniversity program, and 66% were in a career program. Approximately three quarters (77.78%) lived with their family and 69.44% of students worked while being in college, for an average of 16.78 hours per week ($SD = 6.74$). One half (52.78%) of the students had a mother with postsecondary education.

Measures

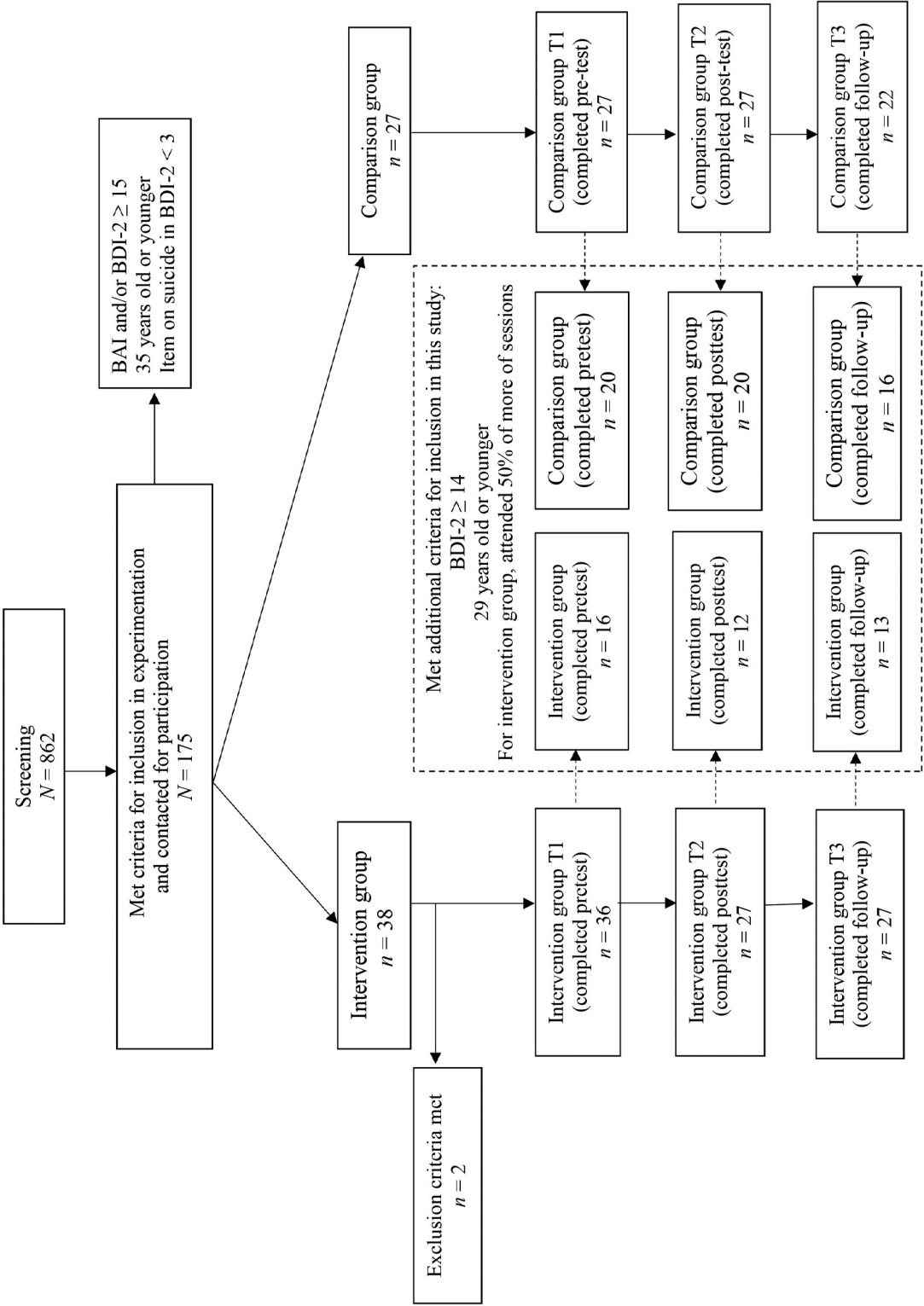
Sociodemographic variables. Age, gender, type of housing (living with one or two parents, in an apartment alone or with romantic partner, etc.), mother's educational level, type of college program and number of hours of paid work were measured by a self-reported questionnaire. Moreover, students were considered as first-year if they indicated that it was their first year in college and if they did not previously attend another college.

Depressive symptoms. Depressive symptoms were measured by the French version of the Beck Depression Inventory, second version (Beck et al., 1996; translated by Éditions du Centre de psychologie appliquée, 1998). Items are based on the diagnostic criteria of the DSM-IV, which are very similar to those included in the DSM-5. The self-reported questionnaire includes 21 items. For each item, participants must circle the sentence that relates most to their situation. The total score varies between zero and 63. Based on the norms established by the authors, a total score that falls between 14 and 19 would be associated with mild symptoms of depression, while a score between 20 and 28 or 29 and 63 would be associated with moderate or severe symptoms, respectively, of depression (Beck et al., 1996). The BDI-2 shows good psychometric qualities, as demonstrated by a validation study conducted in a sample of college students aged between 17 and 39 years old (Storch et al., 2004). Based on the current sample, the BDI-2 shows good internal consistency ($\alpha = .76$).

Personal goals. To consider the multiple dimensions of personal goals, a translated and adapted version of the Personal Project Analysis (PPA; Little & Gee, 2007) was administered. This measure allows the analysis of goal content and goal appraisal, which represents a strong asset compared to other goal measures.

Personal goal content. In a first step, students had to list three personal goals pertaining to any aspect of their life. Goals were then classified in categories inspired by Arnett's model of emerging adulthood (2000) in order to reflect the main developmental tasks experienced by the targeted population. Categories were also based on previous studies using the same measure with a similar population (Cantor et al., 1991; Cantor et al., 1987; Salmela-Aro et al., 2007; Salmela-Aro & Nurmi, 1997). Three categories were determined: (1) interpersonal goals, which includes romantic relationships, friendships, and family relationships; (2) intrapersonal goals, which includes the development of autonomy, leisure activities, and self-development;

Figure 1
Flowchart of Participants



and (3) occupational goals, which includes education, work, and career. All goals that did not fit these categories were coded as “Other goal.”

Personal goal appraisal. In a second step, students had to rate their goals on a four-point Likert appraisal scale (not at all; a little; a lot; very much). Items were (1) competence perceived in achieving the goal, (2) commitment to goal, (3) identity representativeness of the goal, (4) support perceived for the goal achievement, (5) challenge represented by the goal, (6) probability of success, (7) clarity of steps to achieve the goal, (8) difficulty associated with goal achievement, (9) autonomy perceived in goal achievement, and (10) perceived progression in goal achievement. The sum of these items formed an appraisal scale, calculated for each goal mentioned ($\alpha = .69$). Scores range from 10 to 40, where 40 represents a better goal appraisal. A global score of appraisals was obtained by computing the mean of the appraisal score of the three goals mentioned, regardless of goal content. To run analyses for specific types of goals, scores for interpersonal, intrapersonal, and occupation goal appraisal were computed, using weighted means to acknowledge the rank at which goals were listed.

Data Analysis

To assess the effect of *Zenstudies* on depressive symptoms, SPSS mixed procedure was used to run a repeated-measures ANOVA, using a mixed-effects model with maximum likelihood ratio estimation. Time was modeled at level 1 and group was modeled at level 2. All effects were fixed. First-order autoregressive covariance structure was chosen since it was assumed that the relationship between individual variances changes systematically over time. The use of G*Power (v.3.1.9.2) suggested that a sample of 28 participants was required to detect an effect size of .25 at a .80 power level (Faul et al., 2009).

To test moderation effects, multiple regressions were executed with the PROCESS macro, version 3.3 (Hayes, 2013). Depressive symptoms at pre-test were entered as a control variable. Group, moderators, and their interaction term were entered as predictors. Personal goal appraisal and mother's education were examined as separate moderators. Regarding personal goal appraisal, three variables were considered: total personal goal appraisal, which did not take into account the type of goal appraised, interpersonal goal appraisal, and occupational goal appraisal. Interpersonal goal appraisal could not be examined as only eight students in the intervention group and six students in the comparison group mentioned this type of goal. Mother's education was coded as a dichotomous variable, where the mother either did not have postsecondary education (achieved an educational level of elementary or high school) or did have postsecondary education (completed college or university studies). Moderation analyses to predict post-test and follow-up depressive symptoms were executed separately due to power issues. It was determined using G*Power (v.3.1.9.2) that a sample of 39 was required to detect an effect size of .40 at a .80 power level, when using four predictors (Faul et al., 2009).

Table 1
Group Characteristics at Pretest (T1)

	Intervention (n = 16)		Comparison (n = 20)	
	M	SD	M	SD
Personal goal appraisal	28.95	3.47	28.89	3.51
Interpersonal goal appraisal	31.65	5.37	32.77	7.40
Intrapersonal goal appraisal	28.75 ^a	5.46	26.09 ^b	3.38
Occupational goal appraisal	30.38 ^c	3.06	28.68 ^d	4.59
Depressive symptoms	25.17	6.66	21.34	5.04

Note. ^a n = 14. ^b n = 12. ^c n = 16. ^d n = 15.

RESULTS

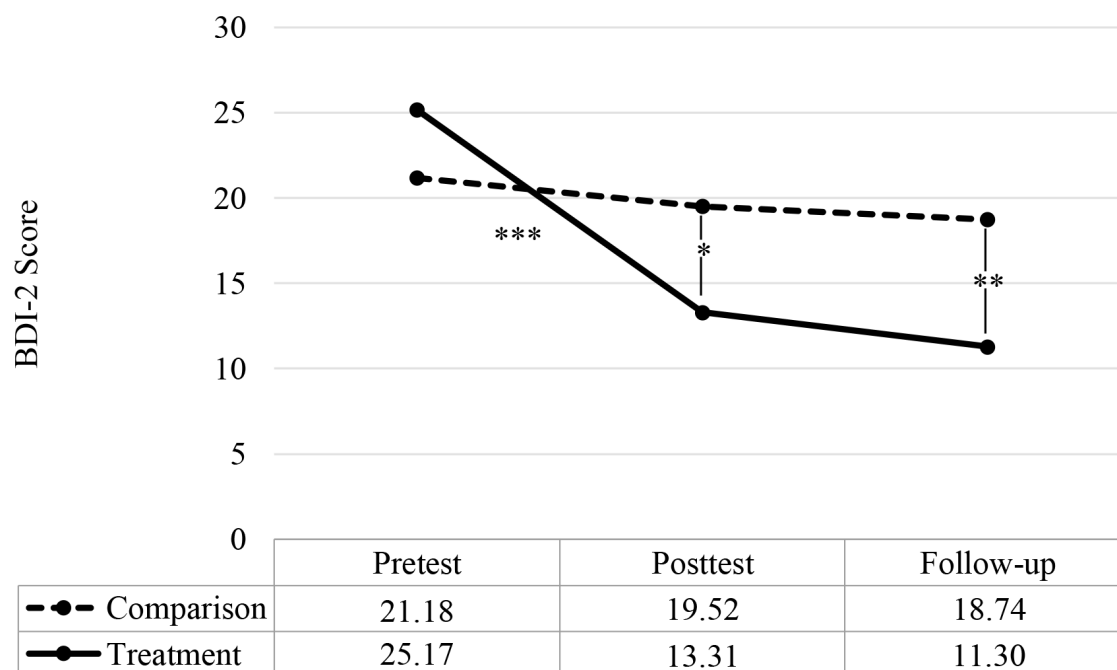
Baseline characteristics are presented in Table 1. The results from *t*-test analyses did not detect baseline differences between groups, including for depressive symptoms ($t[34] = -1.97, p = .06$). In terms of the type of goals reported by students, occupational goals (42.42%) and intrapersonal goals (41.41%) were the ones mentioned most often by students; 15.15% of goals reported by students were interpersonal goals. Only 1% of personal goals identified by students were categorized as “Other.”

In the intervention group, four students did not complete the post-test questionnaires (25%) and three did not complete the follow-up questionnaires (18.75%). Four students did not complete the follow-up questionnaire in the comparison group (20%). Missing values analysis indicates that students who did not complete depressive measures at post-test were younger (post-test: $M_{\text{present}} = 19.09, M_{\text{missing}} = 17.25, t[20.8] = -3.2, p = .004$).

Effects of the *Zenstudies* Program on Depressive Symptoms

The repeated-measures ANOVA yielded a significant interaction between group and time ($F[2, 63.81] = 7.91, p = .001$). The results are presented in Figure 2. Pairwise comparisons with Bonferroni corrections between time for each condition showed a significant difference in the intervention group between pre-test and post-test ($t[59.07] = 5.42, p < .001$), supporting a significant decrease in depressive symptoms between pre-test and post-test. The observed gains in the intervention group were maintained three months later at a follow-up, as there was no significant difference between post-test and follow-up ($t[61.75] = .86, p = 1$). The means in the intervention group were lower than the means in the comparison group at post-test ($t[83.04] = -2.20, p = .03$) and follow-up ($t[82.07] = -2.56, p = .01$). In the comparison group, depressive symptoms remained stable over time, as no statistical difference was found between the three-time point measurements in this group.

Figure 2
Depressive Score Means, by Group and Time



Note. * $p < .05$. * * $p < .01$. *** $p < .001$.

Moderators of Intervention Effects on Depressive Symptoms

Table 2 displays the results of the multiple regressions analyses. The global score of personal goal appraisal, which does not discriminate the different types of goals, did not significantly moderate the relationship between the groups and the level of depressive symptoms at post-test or follow-up. Moreover, intrapersonal goal appraisal did not significantly moderate intervention effects at post-test or follow-up either. However, a significant interaction was detected when testing the conditional effects of occupational goal appraisal on the relationship between groups and depressive symptoms at post-test. Results are presented in Figure 3. The Johnson-Neyman technique showed that depressive symptoms at post-test were significantly different between groups when occupational goal appraisal was higher than .12 standard deviations above the mean. Simple slope analysis revealed that students in the intervention group who had a more positive appraisal of their career or academic goals at pre-test showed fewer depressive symptoms at post-test ($B = -.80$, $S.E. = .36$, $p = .04$). Conversely, students in the comparison group did not report significant different levels of depressive symptoms at post-test based on the way they appraised their occupational goals at pre-test ($B = .34$, $S.E. = .19$, $p = .08$).

A significant interaction was also detected when testing the conditional effects of mother's education on the relationship between the groups and depressive symptoms at post-test (Figure 4). Among students whose mothers had postsecondary education, those who received the intervention reported lower depressive symptoms at post-test than those who did not receive the intervention ($B = -1.77$, $SE = .49$, $p = .001$). There was no significant difference between intervention and comparison group for students whose mothers had not completed any postsecondary studies ($B = -.34$, $SE = .46$, $p = .47$). Moreover, among students who received the intervention, a tendency was observed where those whose mothers has postsecondary education reported fewer depressive symptoms at post-test than students whose mothers did not complete postsecondary studies, although results were not statistically different ($B = -1.05$, $SE = .52$, $p = .06$). Mother's education did not significantly interact with group for depressive symptoms at the follow-up. This suggests that the indicated level of *Zenstudies* may be especially beneficial for students whose mothers completed postsecondary education.

Table 2
Regression Models with Personal Goal Appraisal and Sociodemographic Variables as Moderators

	Posttest (T2)				Follow-up (T3)			
	<i>F(df)</i>	<i>R</i> ²	β	<i>p</i>	<i>F(df)</i>	<i>R</i> ²	β	<i>p</i>
Global goal appraisal	2.33(4,28)	.26			2.00(4,23)	.26		
Constant			.29	.88			.47	.79
Group			-.83	.03			-.92	.02
Global goal appraisal			-.07	.34			-.19	.92
Group X Global goal appraisal			-.25	.46			.37	.37
Depressive symptoms at T1			.34	.06			.25	.17
Intrapersonal goals appraisal	2.03(4,17)	.32			1.64(4,15)	.30		
Constant			.65	.06			.63	.09
Group			-.1	.04			-.99	.05
Intrapersonal goals appraisal			.47	.28			.14	.75
Group X Intrapersonal goals appraisal			-.59	.26			.07	.89
Depressive symptoms at T1			.39	.10			.30	.23
Occupational goals appraisal	3.84(4,22)	.41			3.11(4,20)	.38		
Constant			.23	.31			.52	.04
Group			-.59	.11			-1.16	.004
Occupational goals appraisal			.34	.08			.46	.12
Group X Occupational goals appraisal			-1.13	.01			.09	.85
Depressive symptoms at T1			.23	.20			.23	.17
Mother's education	3.86(4,25)	.38			2.23(4,22)	.29		
Constant			.27	.37			.64	.13
Group			-.34	.47			-.84	.15
Mother's education			.38	.36			-.15	.77
Group X Mother's education			-1.43	.04			-.31	.69
Depressive symptoms at T1			.5	.01			.30	.12

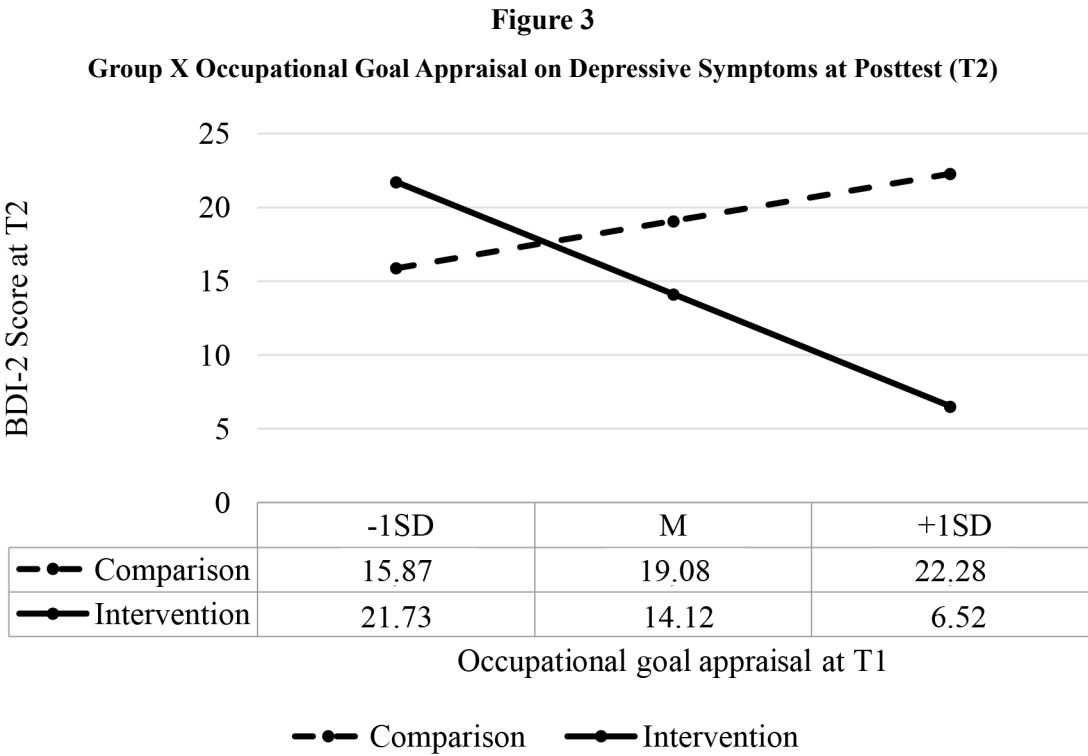
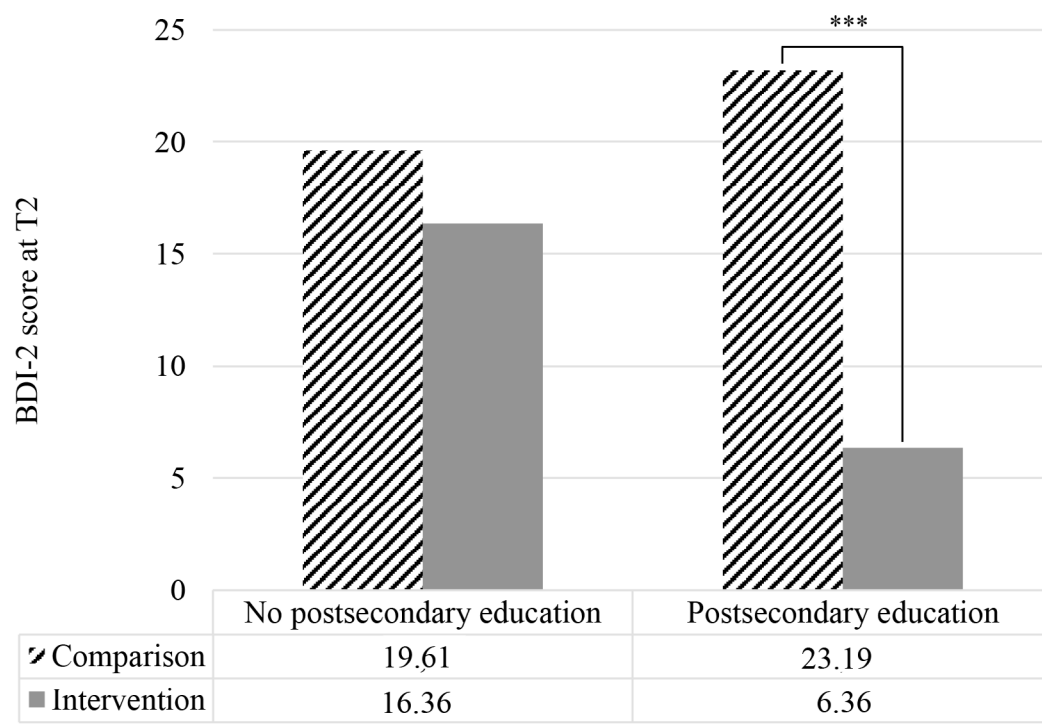


Figure 4**Group X Mother's Educational Level on Depressive Symptoms at Posttest (T2)**

Note. *** $p < .001$.

DISCUSSION

This pilot study had two main objectives. Firstly, it assessed the effects of the program *Zenstudies: Making a Healthy Transition to Higher Education* on depressive symptoms in students experiencing a significant level of depressive symptoms. Secondly, personal goal appraisal and mother's education were examined as potential moderators influencing the intervention response. As hypothesized, the results from this pilot study indicated a reduction in depressive symptoms in a group of college students exposed to a substantial portion of the intervention. This positive effect was observed immediately after completion of the program and was maintained three months later. These results support what was observed in Conley et al.'s (2017) meta-analysis of indicated programs targeting depression in postsecondary students.

Group interventions, such as the indicated level of *Zenstudies*, can reach many students simultaneously. When these interventions are effective and include relapse prevention, they may prevent the development or worsening of symptoms and may allow the students to require fewer mental health services in the future. Consequently, it also allows professionals to have more availability to meet the students' special needs or those who require an individualized approach. To this end, a relevant qualitative observation in this pilot implementation was expressed by the psychologist offering mental health services to college students. For students from the indicated group intervention who sought out psychological services after the program, counselling tended to be shorter compared to those who did not participate in the indicated intervention. Future studies should attempt to substantiate and quantify this observation more precisely to explore the potential cost-effectiveness of preventive programs to address depressive symptoms in a college population.

Other authors have raised concerns about the limited number of studies which address the factors that may enhance or hinder intervention effects in the college student population (Conley et al., 2017; Horowitz & Garber, 2006; Stice et al., 2009). The current study found that students from the intervention group with a more positive occupational goal appraisal reported fewer depressive symptoms at post-test than students from the intervention group with a less positive occupational goal appraisal. Moreover, among students reporting above-the-mean occupational goal appraisal, those who were in the intervention group reported significantly lower depressive symptoms than students in the comparison group. In line with Emmons' (1999) definition of goals as motivational units, having a positive appraisal of academic or career goals in college can be an incentive to initiate actions and to change when one is depressed. Thus, when provided help, depressed students who have a positive appraisal of their academic or career goals may be more motivated to engage in the change process guided by *Zenstudies* as well as to use the tools taught to get better and achieve their goals.

The results obtained in this study are somewhat similar to Brunstein's (1993), who examined the interaction of goal commitment and goal attainability on subjective well-being in college students. Brunstein uses *goal attainability* as a summary term to address the extent to which a person perceives favourable or unfavourable conditions to accomplish personal goals. For example, Brunstein indicates that favourable conditions include the perception of having enough time and opportunity to work on personal goals and that goal attainment is socially supported. Results from his study showed that students indicating a high level of goal commitment and who perceived favourable conditions to attain personal goals displayed an increase in subjective well-being later. Contrarily, students who reported high levels of goal commitment, but experienced unfavourable conditions, showed a decline in subjective well-being.

A similar phenomenon may explain the current study's results, where students who had the most positive appraisal of their goals and who participated in the intervention were the ones who reported the lowest level of depression at post-test. Participation in the intervention could have contributed to students' perception of being in more favourable conditions, as they received help and tools to manage depressive symptoms, which can be perceived as a hurdle in the goal attainment process. However, results from this study did not support the moderating effect of occupational goal appraisal at follow-up. It is possible that three months later, goal achievement or goal progress could influence depressive symptoms the most, rather than their initial appraisal.

Along these same lines, Brunstein (1993) concluded that progress in personal goals measured at mid-semester predicted students' subjective well-being at the end of the semester. While previous research (Lecci et al., 1994; Nurmi & Salmela-Aro, 2002; Salmela-Aro & Nurmi, 1997) and Arnett's theory have argued the relevance of intrapersonal goals for college students, the results of this study did not show that students benefitted differently from the intervention depending on how they appraised intrapersonal goal. While intrapersonal goals remain important for development of young adults, it is possible that their appraisal does not interact with an intervention that is designed for a school setting, as it can be perceived by students as more academically oriented. The current study examined two dimensions of personal goals, namely the type of goal and how they were appraised. However, personal goals are complex and multidimensional. In fact, other authors have studied goal regulation processes that are specific to depressive disorders (Dickson et al., 2017), how conflicting goals can increase negative affects (Dickson & Moberly, 2010), and how reduced specificity in goal formulation can be associated with depressive symptoms (Dickson & Moberly, 2013). It could be of interest to examine whether the program influences various facets of personal goals, and if so, whether the effect on goals may explain the reduction of depressive symptoms.

Mother's education did moderate the relationship between group and depressive symptoms at post-test. The program seemed especially beneficial for students whose mothers had completed postsecondary education. Thus, it is possible that, just as in children (Curry et al., 2006), parental education facilitates cognitive-behavioural intervention in emerging adults, even though they are in a developmental period in which they attempt to achieve independence from parents (Arnett, 2000). A stronger program commitment in students with more educated parents may explain this facilitation. According to Tinto's model of higher education persistence (1993), family background—including parents' education—influences institutional commitment. Since the program is provided in a school context, students with more educated parents may be more committed to their school and the program, and thus may be more inclined to get involved in *Zenstudies* and to use the tools offered.

These findings support *Zenstudies* as a potential preventive strategy to reduce depressive symptoms in college students, in a context where an increasing number of students need psychological services (ACHA, 2019). Less than half of students in need receive psychological treatment (ACHA, 2019; Mojtabai et al., 2016). The lack of resources may explain this in part. The Association for University and College Counseling Center Directors reports an average of one clinical staff for every 1,737 college students (Reetz et al., 2016). Multilevel intervention programs such as *Zenstudies* help address this problem by providing services to the entire student population, resulting in specialized services being offered to students who need them most (Christner & Mennuti, 2009).

A limitation regarding the internal validity of this pilot study is that students were not randomly assigned to either intervention or comparison groups due to implementation constraints. The comparison group comprised students who met the cut-off score for depressive symptoms and who were offered the intervention group, but who did not want to engage in the 10-week program. This observation therefore raises the question of the conditions and the motives for postsecondary students to take part in mental health interventions. Some college services have started to include the shared responsibility principle in their mental health services guidelines (e.g., Centre d'aide aux étudiants de Université Laval, 2017). This shared responsibility implies that college actors (professionals, professors, administrators) are required to offer services which meet the needs of students, while students are required to get involved in the processes proposed by these services. In the context of *Zenstudies*, one of the reasons for refusing to participate in the sub-study mentioned by the students was conflicting schedules. In view of this situation, the school's administration was asked to allow students to have free time during their breaks instead of having to attend mandatory activities. This point underlines the role of college staff in offering conditions that will allow students to seek help. However, even with favourable conditions, it can be expected that students will have various motives to engage in an intervention or not. It seems necessary to better understand these motives to be able to support students in their help-seeking process.

Regarding external validity, we cannot conclude that these results can be generalized to male college students. Indeed, the current sample did not include enough male participants to be able to draw valid conclusions about this subgroup. Previous studies have shown mixed conclusions for gender as a moderator of the effects of interventions for depression (e.g., Horowitz & Garber, 2006). Nevertheless, females are more likely to be diagnosed with depression (American Psychiatric Association, 2013). Thus, this pilot study suggests that *Zenstudies: Making a Healthy Transition to Higher Education* could reduce symptomatology in a group of people that are at higher risk of developing depressive disorders.

In conclusion, results from this pilot study are encouraging and support further implementation and program assessment. Larger sample studies should seek to confirm the effectiveness of *Zenstudies* using a rigorous research design. A larger sample would also allow use of statistical models that include the three-time point measurement for the moderators, which will offer a more comprehensive picture of how different variables affect intervention outcomes over time. The study of other moderators will also be important, such as the presence of anxiety as a comorbidity (Curry et al., 2006; Lamers et al., 2011), to address the question about for whom is this intervention is most appropriate. Future studies should also assess the intervention in various contexts and examine program implementation features, such as adherence, dosage, quality of implementation, participation, and differentiation (Poirier, 2012) to understand under which conditions this type of intervention is most effective.

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