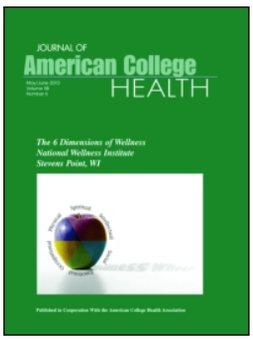

Journal of American College Health

ISSN: 0744-8481 (Print) 1940-3208 (Online) Journal homepage: http://www.tandfonline.com/loi/vach20

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To cite this article: Diane Marcotte, Marie-Laurence Paré & Cynthia Lamarre (2018): A pilot study of a preventive program for depressive and anxious symptoms during the postsecondary transition, Journal of American College Health, DOI: 10.1080/07448481.2018.1518907

To link to this article: https://doi.org/10.1080/07448481.2018.1518907

Published online: 26 Oct 2018.

JOURNAL OF AMERICAN COLLEGE HEALTH
https://doi.org/10.1080/07448481.2018.1518907

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BRIEF REPORT

A pilot study of a preventive program for depressive and anxious symptoms during the postsecondary transition

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ABSTRACT

Objective: To examine the effects of the indicated level of the prevention program *Zenétudes*: making a healthy transition to college on anxious and depressive symptoms. **Participants**: 65 college students participated in the study, from September 2014 to August 2016. From that initial sample, 53 students (ages 16–34) were included in analyses. **Methods:** First-year students were screened for anxious and depressive symptoms at the beginning of their semester. Students who scored higher than the cutoff score were invited to be part of the study. Both treatment and comparison groups completed pretest, post-test, and follow-up questionnaires. **Results:** Results show significant differences between treatment and comparison groups in both depressive and anxious symptoms at follow-up. **Conclusion:** The results of this pilot study support the positive effects of *Zenétudes* on anxious and depressive symptoms. Larger studies should be conducted to identify which components of the program mediate its efficacy.

ARTICLE HISTORY
Received 8 January 2018
Revised 23 July 2018
Accepted 20 August 2018

KEYWORDS
Anxiety; college students; depression; prevention program

Introduction

The postsecondary transition constitutes a vulnerability period for students who experience depressive or anxious symptoms.[1,2] While more young people are now pursuing postsecondary studies, between 25% and 40% of them interrupt or drop out of college.[3,4] Many of these experience mental health problems.[5] Furthermore, more than 85% of counseling services' directors have reported an increase in severe psychological problems[6] and demands for mental health services in college and university students.[7] Several studies clearly show the negative effects of depression and anxiety on school performance,[8,9] particularly since their symptoms (e.g. difficulty concentrating, fatigue, and insomnia) affect cognitive functions, such as working memory, attention, and problem solving.[10,11] The results of previous studies tend to show that depression precedes a more dramatic deterioration of school performance than the reverse, particularly among boys, although it is likely that a two-way relationship exists.[12]

To date, scientific literature suggests very few preventive programs or strategies to facilitate, on the one hand, adjustment when shifting to postsecondary studies, and on the other, the academic adjustment of students presenting symptoms of depression or anxiety. However, there seems to be a certain consensus about the value of intervening in the first year of postsecondary studies, because this is often the time when students drop out.[13,14] Recently, a cognitive-behavioral program named *Zenétudes: vivre sainement la transition au college* (making a healthy transition to college)[15,16] was developed to prevent depressive and anxious symptoms in students experiencing postsecondary transition. A recent meta-analysis showed that indicated cognitive-behavioral interventions could significantly reduce depressive and anxious symptoms in higher education students, in comparison to "No-Intervention" or "Wait-List" control groups. Improvements in cognitive-behavioral groups were observable immediately after the intervention and were maintained over time.[17]

This pilot study aims at measuring the effects of *Zenétudes* indicated level (part 3 of the program, described below) on depressive and anxious symptoms, as it was recently implemented for the first time. Based on the results from previous studies on indicated programs in college students,[17] the hypotheses suggest that anxious and depressive symptoms will be lower after participation to the program and that these improvements will be maintained three months later.

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Table 1. Components of the *Zenétudes* prevention program.

	Components
1	Presentation of the rationale of the intervention
2	Identification of stress related to the transition between high school and college and issues involved in this transition
3	Feeling of belonging to the college
4	Learning about depression and anxiety
5	Cognitive restructuring
6	Behavioral activation and increase in enjoyable activities
7	Thinking about career choices
8	Managing anxiety
9	Romantic relationships
10	Relationships with parents
11	Mindfulness
12	Social, communication, problem-solving, and conflict management skills
13	Study strategies
14	A healthy lifestyle
15	Relapse prevention

Methods

The Zenétudes: vivre sainement la transition au collège *(making a healthy transition to college) program*

Zenétudes is a mental health prevention program developed by our team.[15,16] The intervention is multidimensional and specific, that is, the specific components were developed based on the targeted subpopulation and cover a variety of dimensions, such as social skills, cognitive distortions, self-control, family support, and study strategies. In line with the perspective of the multilevel model of mental health services delivery in school contexts of Christner and Mennuti,[18] *Zenétudes* is delivered in three parts or levels of prevention. Teachers in class deliver part 1, the *universal prevention*. It aims to develop knowledge about mental health and the transition between high school and college and to help students to learn preventive strategies to make the transition effectively. A central objective of this first part is also to screen students who will be invited to participate in other parts of the program, that is, those who show needs not sufficiently addressed by part 1 and who require more intensive help. The second part, the *selective prevention*, is in the form of two workshops led by mixed teams of professionals and teachers with subgroups of "self-referred" participants. Cognitive distortions or unrealistic thoughts associated with depression and anxiety are identified in addition to introducing students to the practice of mindfulness. The workshop can be offered preventively to students with risk factors for depression or anxiety but who do not present any symptoms, or it may serve to introduce the targeted level of the intervention. Part 3 of the program, the *targeted intervention*, proposes 10 sessions for groups of 6 to 10 students led by 2 professionals. This more clinical section includes all 15 components of *Zenétudes* (see Table 1). It targets students experiencing symptoms of anxiety and depression that were screened in part 1 of the program.

For example, of the 36 activities proposed, *The smiling experiment* makes participants aware of the positive impacts of smiling. Other social skills are also taught, such as those associated with starting a conversation. Activities with the objective of learning mindfulness are presented using a hierarchical approach during the 10 meetings. They first get students to learn basic concepts, such as automatic pilot, from the "thinking self" to the "observing self," or the rebound effect of thought suppression, and they then address accepting painful emotions. The feeling of belonging to the college is developed by having participants identify specific things they like about the school, in addition to encouraging participation in extracurricular activities. The program uses many ways to intervene, ranging from presentations—like presenting the rationale for understanding mechanisms like avoidance in anxiety—to role-playing, scenarios, and exercises to do between meetings. Each of these three parts of the program includes a leader's guide[15] and a participant workbook.[16] The manuals clearly present the program content in detail to make it easy to use. A *User guide* (included in the leader's guide) presents the factors to optimize implementation of the program.

This brief paper presents the preliminary results of the implementation of part 3 of our program.

Participants and procedure

The Ethical Board Committee of the University of Quebec in Montreal issued ethical approval. A flowchart (see Figure 1) depicts participation in the study. The pilot study occurred over two academic years

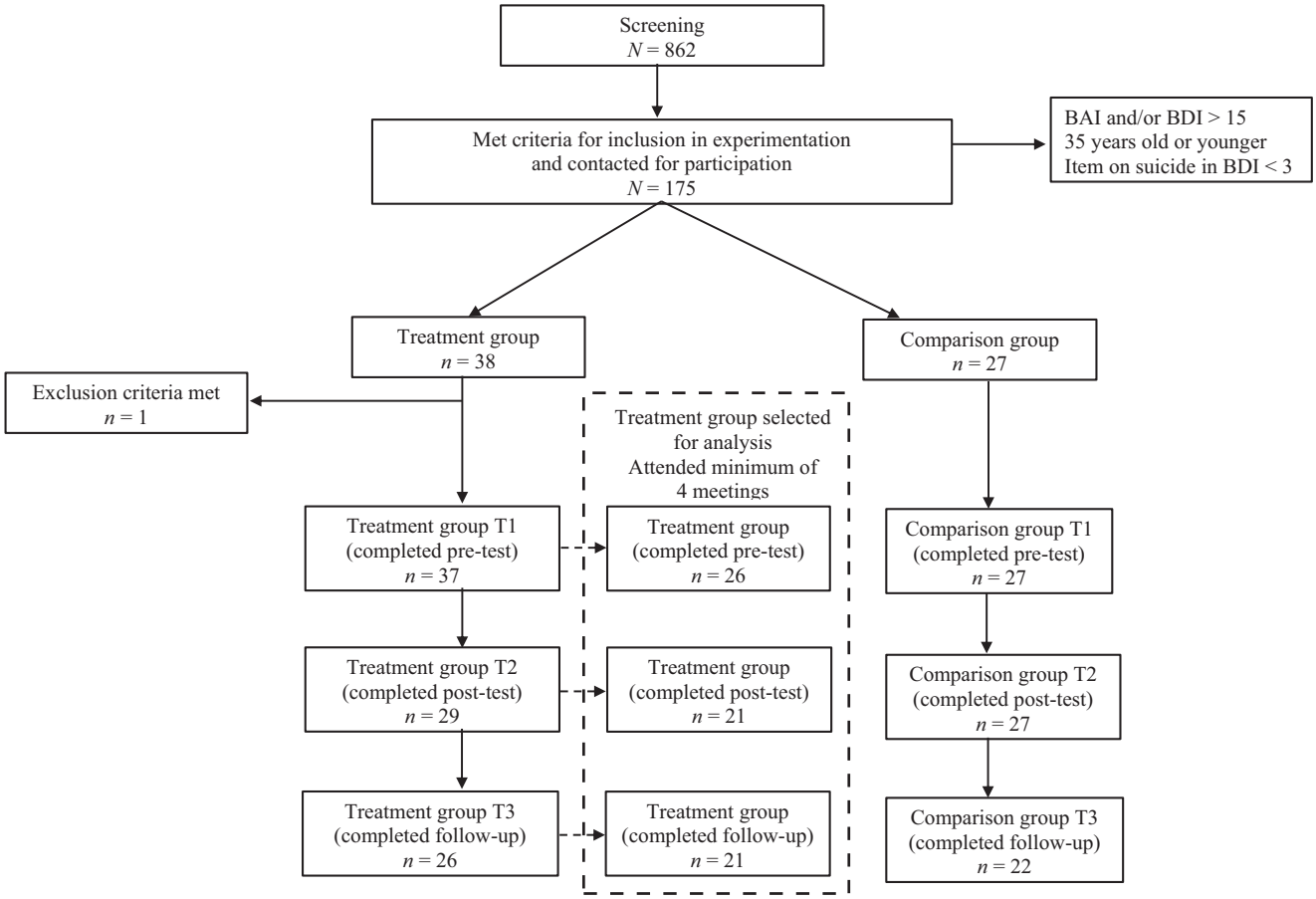

Figure 1. Flowchart of participant.

(2014–2015; 2015–2016) in a regional college in Quebec, Canada.

The screening was done in three waves (Autumn 2014, Autumn 2015, and Winter 2016). At the beginning of their semester, students completed a questionnaire to screen for moderate to high depressive and anxious symptomatology, which stood as pretest (Time 1). Students with 15 or more on the Beck Depression Inventory and/or the Beck Anxiety Inventory were contacted and invited to the targeted-indicated level of the program. This cutoff score was chosen because it has repeatedly been linked to significant distress (see Measures section). In the context of this quasi-experimental study, students who could not participate or who refused to be part of prevention groups were invited to be part of the comparison group (no intervention condition), and completed the same questionnaires as the treatment group, at each time point. Students who accepted to be part of the study met with the project coordinator to assess if they met exclusion criteria. These criteria included suicidal planning, a manifestation of symptoms related to severe mental health disorders requiring immediate assistance of a psychiatrist, intensive use of drugs on a regular basis, and ongoing psychological treatment incompatible with cognitive-behavioural therapy.[15] Only one student met an exclusion criterion. Students in comparison and treatment groups received an amount of $15 to complete post-test questionnaires (Time 2), immediately after the end of the program, and $15 to complete follow-up questionnaires (Time 3), three months after the last session. The participants in the treatment group were provided lunch since the interventions occurred during college lunch breaks. The participants signed an informed consent at each step of the research. Since the program was implemented at each semester, students who chose not to participate could receive the treatment in the following semesters.

The final sample included 53 Caucasians students aged between 16 and 34 ($M = 19.08$; $SD = 3.23$), and females represent 85.2% of the sample. In this study, 18.87% of students reported working 20 hours or more. Table 2 presents characteristics per group. Participants in the treatment group ($n = 26$) and the comparison group ($n = 27$) did not differ on these characteristics, based on t-tests analyses.

Table 2. Characteristics at pretest, mean (SD).

	Treatment group ($n = 26$)	Comparison group ($n = 27$)
Age	19.42 (2.85)	19.07 (3.86)
Gender (% women)	84.62%	85.19%
Sexual orientation (% other than heterosexual)	26.92%	25.93%
First-year students (% yes)	53.84%	66.67%
Mother's education (% postsecondary education)	53.85%	55.56%
Family income lower than 30 000$	15.38%	11.11%
Family income higher than 75 000$	7.69%	22.22%
Hours of paid work	10.13 (9.00)	12.76 (8.61)
Depressive symptoms T1	22.05 (10.32)	18.36 (7.04)
Anxious symptoms T1	29.72 (11.48)	24.91 (10.62)

Regarding attrition, both groups lost five participants between pretest and follow-up, which represent ~19% of their respective group. Results of missing values analyses showed that mother's educational level of participants who completed depressive symptoms measures at post-test was significantly higher than those who did not complete it.

Measures

Depressive symptoms

Depressive symptoms were assessed by the French version of the Beck Depression Inventory, second version.[19] Total score varies between 0 and 63. Norms established by the authors suggest that a score between 0 and 13 is associated with an absence of depression, a score between 14 and 19 with mild depression, between 20 and 28 with moderate depression, while a score between 29 and 63 would reveal severe depression.[17] The measure shows good psychometric qualities.[20]

Anxious symptoms

The French version of the Beck Anxiety Inventory[21] was used to measure levels of anxiety in students in the previous week. Self-reported, this questionnaire includes 21 items assessing symptoms associated with anxiety. Total score varies between 0 and 63. Scores between 0 and 7 show an absence of anxiety, 8 to 15 mild anxiety, 16 to 25 moderate anxiety, and 26 to 63 severe anxiety.[21] This measure shows good psychometric qualities.[22]

Statistical analyses

Hierarchical linear growth models were used to test the effect of treatment on primary outcome variables. Each outcome measure was modeled as a function of treatment condition, assessment occasion (time, i.e., pre, post, and follow-up), and their interaction. Statistical analyses related to the treatment group were carried on participants who attended at least four sessions in the program. Model estimates were obtained using restricted maximum likelihood estimation implemented with the mixed linear models' module of SPSS. An unstructured covariance matrix was used in the specification of the model.

Table 3. Coefficients from the linear growth curve model for the measurement of depressive and anxious symptoms over time.

	Estimates	Lower control limit	Upper control limit	*p*-value
		Depression		
Intercept	18.37	15.18	21.57	**<0.001**
Group	2.66	−1.90	7.23	0.25
Time	−0.28	−2.42	1.86	0.79
Group × Time	−5.13	−8.20	−2.05	**<0.005**
		Anxiety		
Intercept	23.81	19.80	27.82	**<0.001**
Group	4.42	−1.32	10.15	0.13
Time	−2.35	−4.87	0.17	0.07
Group × Time	−6.33	−9.95	−2.72	**<0.005**

Results

The estimates of the model for measures of depressive and anxious symptoms over time are shown in Table 3. A significant interaction between group and time indicated between-groups differences in both depression and anxiety measurement over time. To investigate further the meaning of these interactions, marginal means of the models were estimated for each group at pre, post, and follow-up measures, as shown in Figures 2 and 3. Simple effect analyses showed that differences between comparison and treatment groups emerged at post-test and were statistically confirmed at follow-up for depression ($t[46.53] = 2.07$, $p = .04$) and anxiety measures ($t[42.29] = 2.72$, $p = .01$) (see Table 4). Students in the treatment group showed fewer symptoms than students in the comparison group. Examination of the slope of change for each group also supported improvement in treatment groups for both depression and anxiety. A significant decrease in symptoms over

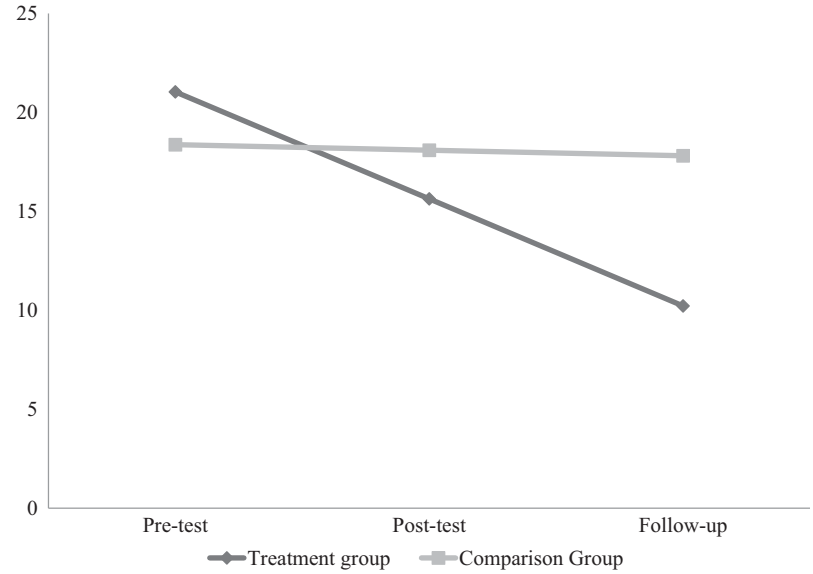

Figure 2. Marginal means estimated from the depression model.

time was observed in treatment group ($B_{depression} = -5.49$, $p < .001$; $B_{anxiety} = -8.75$, $p < .001$), whereas comparison group did not experience significant change over time ($B_{depression} = -.22$, $p = .84$; $B_{anxiety} = -2.36$, $p = .09$).

Comment

The goal of that brief paper was to present the preliminary results of a pilot study of the implementation of the targeted level of a new prevention program for anxiety and depression in first-year postsecondary students. The current results, while preliminary, confirm the positive effect of the program on both symptoms of depression and anxiety; the differences between comparison groups and those who received treatment emerged at the post-test and were confirmed at follow-up. The participation of 26 students who were present for a minimum of four meetings for this first data collect supports the feasibility of the implementation of the program. Moreover, the percentage of 20% of students who respond to the selection criteria (see Figure 1) appeared to be especially high but is in line with the prevalence rates reported in the literature as well as with the increase in needs for mental health services in postsecondary school institutions.

Limitations

Although the *Zenétudes* program offered the possibility to detect and to offer a preventive intervention to at-risk students, it remains that several students who were identified as reporting high levels of depressive or anxious symptoms did not accept or were not available to participate to the treatment group. Among the reasons explaining this difficulty convincing young adults to commit to the program, students reported not having time to participate because of their many involvements. These involvements were not only in studies but also in a job – in the present study, 20% of students reported to work more than 20 hours a week in a student job. This overload related to being committed to many different activities limit them to participate in the program, and, at the same time, is a factor contributing to their distress. Moreover, it is also possible to postulate that stigma still attached to mental health disorders could be a barrier to the participation in the program, especially because of its group format. Also, there is a need for autonomy and independence specific to this age group, which also makes them reluctant to ask for help when in emotional distress.[23,24] There may be a difference in these variables between students who participated in the program and those who preferred

Table 4. Marginal means estimated from the model (depression and anxiety).

	Treatment group			Comparison group			
Time	Marginal mean	Lower control limit	Upper control limit	Marginal mean	Lower control limit	Upper control limit	*p*-value
			Depressive symptoms				
Pre	21.04	17.77	24.31	18.37	15.18	21.56	0.25
Post	15.63	12.43	18.83	18.09	15.00	21.18	0.27
Follow-up	10.22	5.78	14.66	17.81	13.55	22.07	**<0.05**
			Anxious symptoms				
Pre	28.23	24.12	32.33	23.81	19.80	27.82	0.13
Post	19.55	16.47	22.62	21.46	18.49	24.43	0.37
Follow-up	10.86	6.93	14.79	19.11	15.33	22.89	**<0.005**

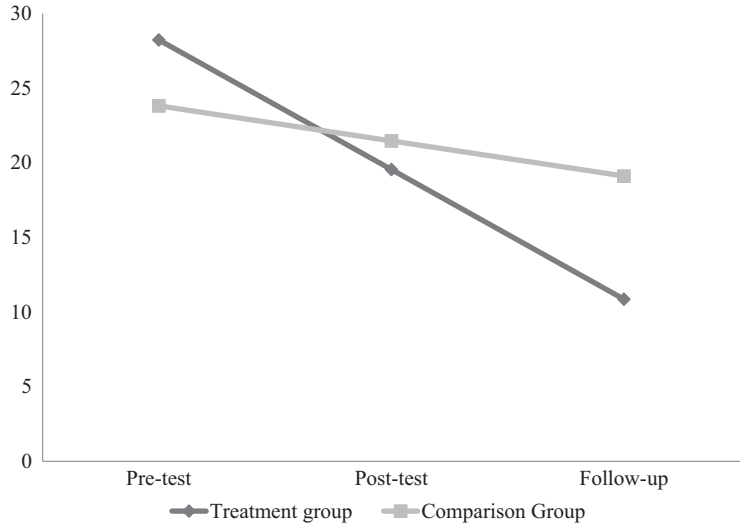

Figure 3. Marginal means estimated from the anxiety model.

the comparison group, potentially influencing the internal validity of the results. Furthermore, our control condition of "no intervention" could not acknowledge the effects of extraneous variables associated with receiving any intervention (e.g. a sense of belonging, social support). Next implementation should address these issues to confirm the results here obtained. The inclusion of a control group offering an alternative intervention or treatment could increase the validity of the results.

Regarding external threats, the sample was relatively small and thus small effect may have gone unnoticed due to a power limitation. Moreover, the sample included mostly females. The program could have a different effect in males. Mixed conclusions were reported to date regarding the differential effect of gender on treatment outcome in younger people.[25,26] Also, since the sample included only Caucasians, the program's effect on other ethnicities are currently unknown.

Conclusion

We intend to proceed in the next years to a larger implementation study to pursue the assessment of the program. The first and second part of the program will also be tested in this larger study. Among the several questions that should be addressed, this future study will examine if the program meets the needs of the targeted population represented by the depressed and anxious students. Likewise, the process or the mechanism by which the outcome results are obtained should be explored to identify which components of the program mediate the efficacy; as well as the moderator effect as the age, gender, and symptoms level, on the outcome measures. Finally, the aspects of the program and the characteristics of the participants that are predictive of maintaining the benefits of the program on a long-term basis should be examined.

Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of Canada and received approval from the University of Quebec in Montreal.

Funding

This research was supported in part by the Ministère de l'Éducation de l'Enseignement supérieur et de la Recherche du Québec, in the context of a University-College collaboration grant.

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