

Internet-Based Stress Management Intervention: Feasibility Study

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Abstract

Psychological distress is a common phenomenon that can be seen in students, and particularly university students who are exposed to high levels of stress at university due to the large and new responsibilities or challenges related to this period. The aim of this study is to expose the feasibility of Internet-based stress management intervention for response of the problem above. The present study was led by an Internet-based stress management intervention composed of four sessions and by a battery of self-report questionnaires online, including four questionnaires: Perceived Stress Scale (PSS-10), Rosenberg Self-Esteem Scale (RSES), Satisfaction with Studies Scale (ESDE); General Health Questionnaire (GHQ-28), during the “pre-intervention” and the “post-intervention” stages. Our results have shown that the stress levels and well-being are improvable according to time (pre/post intervention). Specifically, the results showed that effect sizes is small effects for Self-esteem, Satisfaction in studies and Psychological distress; medium effects for two sub-factors of GHQ-28 Anxiety/insomnia and Social dysfunction; large effects for PSS-10(Perceived Stress) and his sub-factors: Perceived helplessness and Perceived self-efficacy. Despite of many advantages, this type of intervention on stress management has its limits and a major methodological problem, which is the high attrition rate.

Keywords: *Internet-Based; Stress Management; University Students; Psychological Distress*

Abbreviations

PSS-10: Perceived Stress Scale; RSES: Rosenberg Self-Esteem Scale; ESDE: Satisfaction with studies Scale; GHQ-28: General Health Questionnaire

Introduction

University students present, according to scientific literature, a high level of stress [1,2]. The rates of psychological morbidity among university students are higher than declared in the general population [3]. According to scientific literature, the mental health distress rate varies between 21 % to 82% of university students [4,5], the low self-esteem rate is 58% to 60% [6,7], and the stress rate is 51% to 69% [8-10].

In response to this problem, the studies validated the utility of an stress-managing programs to strengthen the mental health and wellbeing [11-13].

However, according to a study undertaken by Zivin and his team, 50% of students who declared having mental health issues such as anxiety or depression, did not seek help [14].

In response to this problem, the Internet has become an indispensable tool in the field of “self-help” interventions in mental health. This type of intervention via the Internet has several goals and advantages such as their accessibility and round-the-clock availability, its

confidentiality and its discretion especially for people who do not want to seek medical help in a health centre, as well as the opportunity to spread the program to a large population, in an economical way [15]. Online application studies in this field are being developed to treat several problems, such as depression [16], insomnia [17], psychological distress [18] and stress management [19] etc.

The aim of this study is to measure the feasibility of an online stress management program on university students based on several mental health variables such as self-esteem and perceived stress.

Materials and Methods

Ethics

The ethics committee of the Psychological Science and Learning Science department at the University of Paris Nanterre, UFR SPE (Department of Psychology and Education). We also obtained written consent from each student prior to their participation, as required by the Helsinki Declaration. The research obtained written permission from the creators of “Funambule”, giving us the right to take inspiration from their program to create an intervention program adapted to the Internet.

Recruitment and Procedure

The research has been presented as a study on the assessment of a stress management intervention carried out on university students, whose participation was anonymous and voluntary. The recruitment took place by email.

Stages of research

The research took place between November 2015 and March 2016.

- **Pre-intervention (Baseline):** After submitting their consent and to perform tasks between the sessions, the subjects received an internet link to take part in the research online.
- **Intervention:** In January, the participants were invited to visit the website once a week and to spend at least 30 minutes on it each time. They could visit the page for longer or more frequently if they wished.
- **Post intervention assessment:** Just after the end of the intervention in March, the participants were invited to answer the battery of questionnaires by email for the “post-assessment”.

Population’s Criteria

17 voluntary students signed up for baseline, with female majority (70.59%). The average age in the whole sample is 23.64 years (SD: 5.26). Students are from many academic years, from first year at the university to PhD, and are from different study programs: Philosophy, Languages, Literature, Economy, Management, Psychology and Law, etc.

| Participants’ characteristics | | Percentage frequency (n = 17) | |
|-------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------|--------|
| | | n | % |
| Gender | Women | 12 | 70.59% |
| | Men | 5 | 29.41% |
| Year of studies | L1: First academic year | 0 | - |
| | L2: Second academic year | 7 | 41,18% |
| | L3: Third academic year | 3 | 17,65% |
| | M1: First year of Master’s degree | 3 | 17,65% |
| | M2: Second year of Master’s degree | 0 | - |
| | Ph.D | 4 | 23,53% |
| Academic sector according to UFR classification | Foreign cultures and languages (LCE) | 2 | 11,76% |
| | Philosophy, Information-Communication, Language, Literature, Performing Arts (PHILLIA) | 2 | 11,76% |
| | Economics, Management, Mathematics, Computer Science (SEGMI) | 3 | 17,65% |
| | Law and Political Science (DSP) | 2 | 11,76% |
| | Psychological Sciences and Educational Sciences (SPSE) | 4 | 23,53% |
| | Social Sciences and Administration (SSA) | 2 | 11,76% |
| | Other | 2 | 11,76% |
| Repetition of academic year | No | 13 | 76,47% |

Table 1: Participants’ characteristics (n = 17).

Research Tools

A battery of self-report questionnaires online, including four uploaded ones during the pre-intervention (T1) and post-intervention (T2) stages

The questionnaires are:

- To measure perceived stress, we decided to use a 10-item version of the Perceived Stress Scale (PSS-10), Cohen and his team [20]. Then later translated and validated into French by Bellinghausen and his team. It consisted of 2 subscales that evaluate perceived helplessness and perceived self-efficacy [21].
- To evaluate self-esteem, we decided to use a 10-item version of the Rosenberg Self-Esteem Scale (RSES), which was established by Morris Rosenberg [22] then later translated and validated into French by Vallieres and his team [23].
- To measure the participants' satisfaction in their studies, we opted for the 5-item version of (ESDE), developed by Bissonnette and Vallerand [24], which was translated to French and validated by Vallerand and his team [25].
- In order, we measured psychological distress by using the 28-item General Health Questionnaire (GHQ-28), a method developed by Goldberg [26] then translated and validated to French by Bolognini and his team [27]. It consisted of 4 subscales that evaluate somatic symptoms, anxiety/insomnia, social dysfunction and severe depression [26].

The students, also, filled in socio-demographic data concerning their gender, age, current year of studies and study program.

Internet-based stress management

We created an online stress management pilot program. It was inspired by the "Funambule" program for teenagers, developed by Dumont and his team [28] in Canada, in which cognitive-behavioural therapy techniques are used over 8 sessions weekly of at least One hour and half for each [28,29].

Our program is made up of four sessions, 30 minutes long for each, including psycho-education, practical exercises and one to two weekly activities in which, the participant is asked to complete (prescription of tasks, as is customary in cognitive-behavioural techniques).

An email was sent to invite the participants at the start of each session to go online if they had not visited the website spontaneously. The students could contact us any time via a specific email address for any questions or complementary information regarding the program. The goal for the students is to learn easy techniques to help them face stressing situations in a better way.

Themes of Internet-based stress management intervention:

- The first session "The definition of stress" is "psycho-education" with information for the students to spot and understand stress, measure its level, and determine its sources. Using exercises such as: Measure your stress levels; Identify sources of stress in your life and List of fears.
- The second session "Exercises on the body" aims to work on body relaxation with practical exercises adapted to the Internet, with exercises such as: Your symptoms of stress; The contract-release method; The diaphragmatic breathing.
- The objective of the third session "Exercises on the thinking" is to work on positive thinking. This session is based on cognitive behavioural techniques, with exercises such as: Beck's three columns; the Meichenbaum method; Problem solving.
- The fourth session "Exercises on adaptive strategies" focuses on adaptation strategies, with exercises such as: Improve your time management; Exam preparation. Use of DIY anti-stress cards; Advise a stressed person [28,29].
- The final session is to collect the students' opinion on the program in order to assess it.

Statistics

A standard descriptive analysis assessed sample characteristics. For the comparisons between the two time (Pre/post evaluation: T1= pre-assessment, T2= post assessment), we applied the Wilcoxon matched pairs test, because the variables did not follow a normal distribution. Effect sizes and 95% Confidence Interval (95% CI) were calculated using Cohen’s d among those who completed the questionnaire at baseline and at follow-up. The value of 0.2 is generally interpreted as being suggestive of small effects, 0.5 of medium effects and 0.8 of large effects. The significance level was fixed at 0.05. All analyses were performed with Statistical (v. 13).

Results

The average level of perceived stress is 31.11 ($\sigma = 5.909$) according to the PSS-10 scale, with 82.35% of students suffering from psychological distress according to the GHQ-28 scale.

17 participants started the research and sent an email confirming their participation after this stage. Just 5 students finished up the phases until the post-assessment. There was a rate of general follow-up of 29% in post-assessment.

The Wilcoxon test for matched samples showed no significant results. However, we noted an improvement of self-esteem and satisfaction with studies, a decrease of the PSS-10 and his sub-factors (Perceived helplessness and Perceived self-efficacy) and a decrease of GHQ-28 and two of its sub-factors (Somatic symptoms and Anxiety/insomnia).

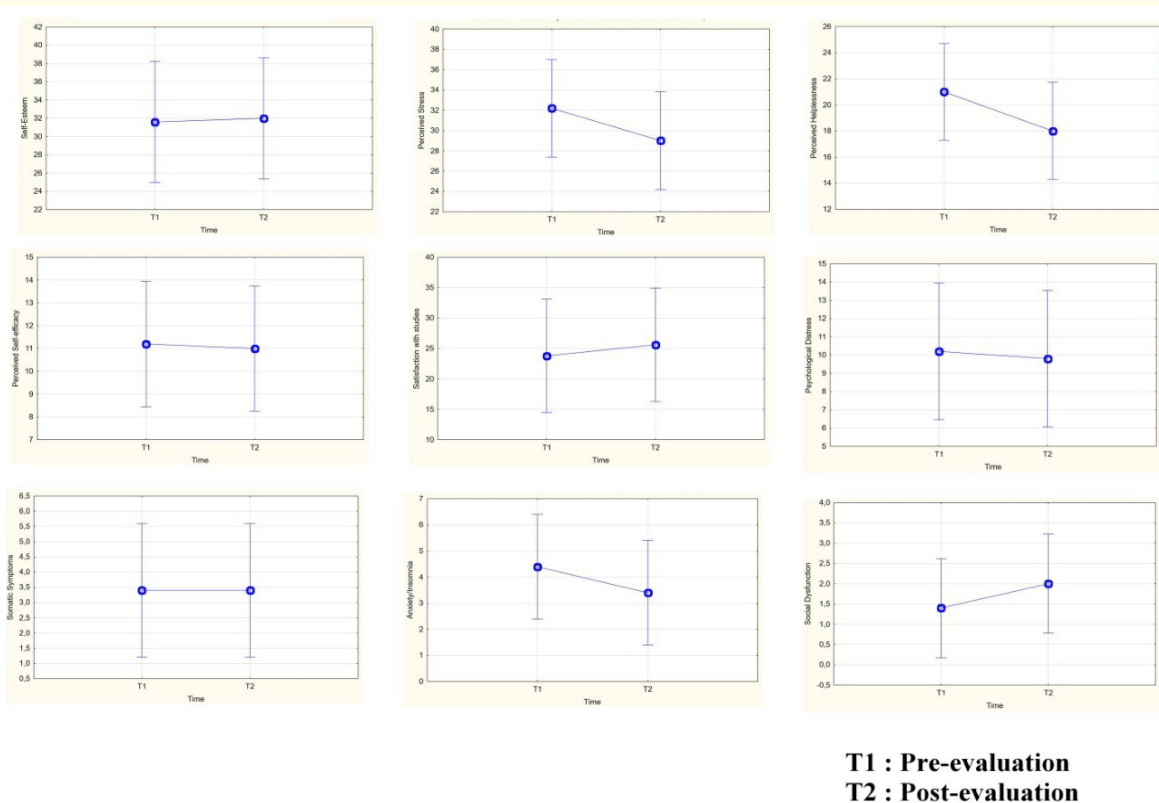


Table 2 shows the means, standard deviations and effect sizes (Cohen’s d) of the variables at baseline and one-month follow-ups in the intervention group.

| Variable | Mean (SD) | | Effective sizes |
|-------------------------|-------------|-------------|----------------------------|
| | Pre | Post | Pre to post |
| Group = 5 | | | |
| Self esteem | 31.6 (4.5) | 32 (7.9) | 0.062 (-1.691 to -1.816) |
| Perceived Stress Global | 32.2 (5.26) | 29 (4) | -0.685 (-2.489 to -1.119) |
| Perceived helplessness | 21 (3.46) | 18 (3.74) | -0.833 (-2.66 to -0.995) |
| Perceived self-efficacy | 11.2 (2.68) | 11 (2.64) | -0.75 (-1.829 to -1.679) |
| Satisfaction in studies | 23.8 (9.44) | 25.7 (1.81) | 0.28 (-1.482 to - 2.041) |
| General health Global | 10.2 (4.2) | 9.8 (2.94) | -0.11 (-1.865 to - 1.644) |
| Somatic symptoms | 3.4 (2.4) | 3.4 (1.88) | 0 (-1.753 to - 1.753) |
| Anxiety and insomnia | 4.4 (1.81) | 3.4 (2.07) | -0.514 (-2.296 to - 1.268) |
| Social dysfunction | 1.4 (0.48) | 2 (1.58) | 0.514 (-1.268 to - 2.296) |
| Severe depression | 1 (1) | 1 (2.23) | 0 (-1.753 to - 1.753) |

Table 2: Means, standard deviations and effect sizes (Cohen’s d) for the observed and estimated marginal means for the trial.

Discussion

During this study, we noted a high level of attrition, as in studies concerning this type of intervention [30,31]. Which is not satisfactory and we had to think about a method of student retention for program monitoring. In response to this problem, one study validated the utility of an incentive system to motivate the participants to complete the program [32].

The analysis of Wilcoxon test for matched samples showed no significant results. It can return to the sample size is very small.

However, there is an improvement in mental health variables (self-esteem, perceived stress and psychological distress), in accordance with literature, in agreement with scientific literature [29,33,34].

The effect sizes vary according to the variables: small effects for Self-esteem, Satisfaction in studies and Psychological distress; medium effects for two sub-factors of GHQ-28 Anxiety/insomnia and Social dysfunction; large effects for PSS-10 (Perceived Stress) and his sub-factors: Perceived helplessness and Perceived self-efficacy See Table 2.

The participants’ comments also allowed us to improve our program’s form. Some modifications were made to the form of the program through feedback from participants and some exercises were transformed to become optional (outside sitting time). The time for each session was reduced to 20 minutes each.

There are many limitations to our research such as an unrepresentative sample and with a majority of women. It would be advisable to apply a study experimental and to refine the results by studying the facets of the significant dimensions found in our results.

Conclusion

Despite of many advantages, this type of intervention on stress management has its limits and a major methodological problem, that of the high attrition rate. We have still needed more of studies in this domain.

Conflict of Interest

Authors declare of having no conflict of interest.

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