A Brief Cognitive-Behavioral Intervention for Maladaptive Perfectionism in Students: A Pilot Study

The construct of perfectionism has captured the attention of several researchers, and its understanding has continuously advanced in the last decades (Lo & Abott, 2013). There is empirical and theoretical support for differentiating two higher-order factors of perfectionism: a tendency to strive for excellence and an excessive self-evaluation of these strivings (Stoeber & Otto, 2006). There is also a consensus in considering perfectionism as negative when the self-evaluation of the standards is particularly overcritical. If self-concept is almost exclusively grounded on attaining high standards, this may affect both quality of life and interpersonal adjustment (Shafran, Egan, & Wade, 2010).

Perfectionism has been linked to the onset and maintenance of several mental disorders, so its clinical relevance has been highlighted by many authors (see Egan, Wade, & Shafran, 2011, for a review). In particular, the academic realm has been the focus of fruitful research, given that college students may be a population at risk (Arpin-Cribbie, Irvine, & Ritvo, 2012; Grzegorek, Slaney, Franze, & Rice, 2004). Perfectionistic traits have been found in 25 % (e.g., Radhu et al., 2012) to 70% (Rice & Slaney, 2002; Suddarth & Slaney, 2001) of the screened student populations. Perfectionistic students often display high thoroughness, excessive worry about achieving standards, high levels of general anxiety (Gnilka, Ashby, & Noble, 2011) and test-anxiety (Arana & Furlan, 2016), and a tendency to postpone exams (Blankstein, Dunkley, & Wilson, 2008), with the consequent impact on academic self-efficacy (Yao, 2009). Hence, it has been argued that perfectionism might not only have an adverse impact on academic performance, it might also be associated with psychological distress and even the relinquishing of academic goals (Egan et al., 2014; Grzegorek et al., 2004; Schruder, Sharpe, & Curwen, 2014; Wang, Slaney, & Rice, 2007).

Given its negative consequences, it is not surprising that many authors have developed different treatments for perfectionism. Recent meta-analytical work supports the notion that cognitive-behavioral (CB) interventions are one of the primary treatments for perfectionism (Lloyd, Schmidt, Khondoker, & Tchanturia, 2015). CB strategies often include perfectionistic thought records, identifying triggers of perfectionism, detecting and challenging rigid perfectionistic beliefs, and strategies for behavior change (see Antony & Swinson, 1998, for a worked example). In this line, Shafran and colleagues (2010) suggest four main steps for a CB-based treatment: (1) helping the client to understand that negative perfectionism is a problem; (2) widening the client’s framework for self-evaluation and reducing his or her dependence on perfectionism as a means of self-evaluation; (3) behavioral experiments; and (4) using cognitive-behavioral interventions to challenge cognitive distortions. Several CB-oriented trials aimed at maladaptive (i.e., self-critical) perfectionism showed a decrease in the level of this trait in clinical samples (Egan & Hine, 2008; Glover, Brown, Fairburn, & Shafran, 2007; Goldstein, Peters, Thornton, & Touyz, 2014; Lloyd, Fleming, Schmidt, & Tchanturia, 2014; Steele & Wade, 2008). Additionally, a series of studies attest to the efficacy of CB interventions in reducing perfectionism in non-clinical populations (Egan et al., 2014, Handley, Egan, Kane, & Rees, 2015; Pleva & Wade, 2007; Wimberly, Mintz, & Suh, 2016), particularly in university and post-secondary students (Arpin-Cribbie et al., 2012; Kearns, Forbes, & Gardiner, 2007; Kutlesa & Arthur, 2008; Radhu et al., 2012).

Hence, given that CB interventions have proved their effectiveness across a variety of populations, the next step for researchers was to develop more cost-effective, easily disseminable treatment protocols--moving from group-based to virtual and bibliotherapy-based interventions (e.g., Wimberley et al., 2016). For instance, Pleva and Wade (2007) compared the effects of a self-administered handout to those obtained by a psychoeducational intervention in a non-clinical sample of 49 participants. The latter involved a series of group meetings with participants in which a clinician followed Anthony and Swinson’s (1998) CB protocol. This intervention proved more efficacious than the self-administered form in reducing the maintaining mechanisms of perfectionism. Another study (Radhu et al., 2012) indicated that a Web-based CB intervention for maladaptive perfectionists led to a significant reduction in anxiety and automatic negative thoughts compared to the control group. Furthermore, Aldea, Rice, Gormley, and Rojas (2010) performed a randomized controlled trial in which they showed that providing feedback about their perfectionism to a group of students with a maladaptive profile reduced their levels of distress and emotional reactivity. The authors underscored that this kind of intervention might be a useful precursor to individual therapy. When analyzing the issue of treatment efficiency, a review of studies shows that research has almost exclusively relied on testing CB interventions with different formats. However, efficiency is also defined as the average amount of time required to treat each patient (Alonso, Alonso, & Piper, 2003). To our knowledge, there is no study that specifically addresses this topic. A review of the existing literature indicates that interventions for perfectionism generally involve eight to ten weekly sessions, six weeks being the duration of the shortest intervention (e.g., Lloyd et al., 2014; Steele & Wade, 2008), and 12 weeks that of the longest (Glover et al., 2007). In this regard, the present study aimed to explore the feasibility of a brief (five sessions) CB group intervention in reducing maladaptive perfectionism as well as psychological distress (operationalized as depressive and anxious symptomatology) in students. We understood that a short format would be more appealing to perfectionist students, who often engage in procrastination or complaints about lacking sufficient time to complete academic work (Chabau, Ferrand, & Maury, 2010; Neumeister, 2004; Shafran et al., 2010). In particular, we tested if five sessions would be sufficient to include all the necessary elements of an intervention focused on perfectionism. The contents of the present five-week intervention are based on Antony and Swinson’s classical self-help book (1998), Shafran and colleagues’ model of clinical perfectionism (Shafran et al., 2010) and the empirical findings of the adaptive/maladaptive nature of perfectionism in students (see a description of this programmatic approach in Slaney, Rice, and Ashby, 2002). A detailed description is provided in the intervention subsection. A second and related goal of this study was to explore for differences between the potential improvers and non-improvers, with the aim of identifying individuals more likely to benefit from the intervention.

In addition, as proposed by Bowen and colleagues (2009), feasibility studies are not only indicated when studies testing an intervention are scarce, but also when this intervention has not been put to the test in different socio-cultural samples. Even though perfectionism is related to distress generally (e.g., trait anxiety or depressive symptomatology), and student specific (e.g., test anxiety) across different cultures such as Argentina, further work needs to be done.To our knowledge, this is the first attempt to test an intervention to reduce maladaptive perfectionism in Argentina, or in any other Spanish-speaking country. Consequently, the present work has also focused on the areas of adaptation (e.g., changing a program or procedure appropriately to a new situation; Resnicow, Baranowski, Ahluwalia, & Braithwaire, 1999) and expansion (examining the potential success of a useful intervention with a different population; Bowen et al., 2009) of pilot interventions studies. Given that the planned intervention included several components of contemporary evidence-supported treatments for perfectionism, and considering this to be the first pilot study applying an English-spoken protocol in Spanish to a Latin American population, the third aim of this study was to explore the potential merits of the CB intervention in Argentine students. Demonstrating the efficacy of a brief CB intervention in a sample of Argentine students could be a first step in the direction of filling this gap in perfectionism research.

**Method**

**Design**

The design of this study was quasi-experimental, with pre-test and post-test measures. All participants completed measures of perfectionism, anxiety and depression at each time point. Within-subject and between-subject comparisons were made on participants who met eligibility criteria. The main hypothesis was that a brief cognitive-behavioral intervention would reduce maladaptive perfectionism. It was also expected that the intervention could reduce general distress operationalized as anxious and depressive symptomatology. The Almost Perfect Scale-Revised (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001) was selected as a measure of perfectionism, and the subscale of Discrepancy (e.g. the gap between actual an ideal standards; Slaney et al., 2001) as an indicator of maladaptive perfectionism. The APS-R was chosen in place of other popular measures of perfectionism because of its unique design that is focused on student population (Enns & Cox, 2002).

**Participants**

Perfectionism profiles were defined through cutoff points established in previous studies measuring perfectionism in Argentina (Arana et al., 2010; Arana & Furlan, 2016). Following these cutoff points, participants who scored 36 or above on the APS-R´s High Standards subscale were classified as perfectionists. Adaptive perfectionists were classified when participants scored 40 or below on the APS-R´s Discrepancy subscale, while maladaptive perfectionists were classified as such when participants scored 41 or above. Thus, the criterion for eligibility was to select participants classified as maladaptive perfectionists. Only 48 (57%) out of the 84 initial screened participants were classed as perfectionists, with half of this subsample meeting the criterion for maladaptive perfectionism in this study. The final sample was formed by 24 participants who were studying Psychology at a national university in Buenos Aires (Argentina) at the time of the call. Descriptive characteristics (gender, age, marital status, employment) of the sample are showed in Table 1.

**Intervention**

The following is a summary of the intervention, involving five two-hour long sessions held weekly. Session 1 was dedicated to the understanding of causes of perfectionism and its adaptive/maladaptive nature. Sessions 2 and 3 were dedicated to working with perfectionistic beliefs as biased information. The main goal of session 4 was explaining the role of and changing perfectionistic behaviors to prevent the maintaining effect of these behaviors in perfectionistic thinking. Session 5 was dedicated to understanding the impact of perfectionism in social life, as well as to rehearse self-compassion exercises. Overall, the main purpose of the intervention was to help participants to understand their perfectionism as a dynamic process which can shift from dysfunctional to functional or adaptive. Instead of working with the idea of lowering their high standards of performance, the intervention encouraged participants to revise the way in which they attempted to reach their standards.

As the intervention was based upon on previous work in English for a culturally different sample (Antony & Swinson, 1998; Slaney et al., 2003; Shafran et al., 2010), all the contents were discussed by our research team in terms of conceptual issues, their appropriateness to a Latin American population and, specifically, to a population of students. Following this, our team generated four Spanish translations with the aid of bilingual psychologists. These versions were merged into a definite handout which served as a guide for the coordinators and participants of the intervention. The Spanish translation was adapted to the parlance of the average Argentine student. The examples provided in the handout are also adapted to situations common in academic life.

**Instruments**

*Socio-demographic questionnaire*. It was developed specifically to characterize the sample in terms of age, gender, marital status, the level of education and employment. It contains a subsection of questions regarding different academic outcomes, such as pending exams, withdrawn courses, and desired GPA.

*Almost Perfect Scale-Revised* (APS-R; Slaney et al., 2001; Argentine version: Arana, Keegan, & Rutsztein, 2009). It assesses perfectionism and comprises 23 items that are distributed on a scale, with a 7-format response option, indicating the degree of agreement with statements. The instrument is composed of three subscales: high standards, order, and discrepancy. The first subscale (7 items) evaluates the presence of high standards for performance. This subscale allows classifying perfectionists and non-perfectionists according to cutoff provided by past research. The second subscale (4 items) measures the preference for order and cleanliness. The Discrepancy subscale (12 items) evaluates the degree in which those interviewed perceive themselves as incapable of reaching their standards of performance. This subscale, combined with high scores in the High Standards subscale, discriminates between adaptive and maladaptive perfectionists. The Argentine adaptation showed good internal consistency for the three subscales: High standards (α= .75), order (α=.74) and discrepancy (α=.91) (Arana et al., 2009).

*Beck Depression Inventory* (BDI-II; Beck, Steer, & Brown, 2006; Argentine version: Brenlla & Rodríguez, 2006). The BDI-II is a 21-item self-administered inventory that assesses depressive symptoms in adults and adolescents over 13 years of age. The Argentine adaptation showed good internal consistency (α=.88) for subjects from clinical and non-clinical populations (α=.86) (Brenlla & Rodríguez, 2006).

*State-Trait Anxiety Inventory* (STAI; Spielberger et. al., 1983; Argentine version: Leibovich de Figueroa, 1991). The STAI is a self-administered inventory that assesses state and trait anxiety through 40 items with a 4-format response options. This instrument has showed local good internal consistency for both scales, state (α=90) and trait (α=.84) (Leibovich de Figueroa, 1991).

**Procedure**

Approval for conducting the study was obtained from authorities of the academic institution where the intervention took place. The call for participants was launched through different channels (the institution’s house organ and website, and social networks). Students who showed interest were invited to a general meeting in which the principal goals of the intervention were outlined. Those willing to enroll were fully informed about the study and confidentiality issues and were asked to sign an informed consent document. Twenty-four maladaptive perfectionists were assigned to three subgroups. Eight participants in each subgroup met for two hours for five consecutive weeks. Each subgroup was coordinated by two clinicians trained in the implementation of the CB intervention designed by our team. All of the group coordinators were certified cognitive-behavioral therapists. Outcome measures were taken at the first and five meeting, respectively. The socio-demographic questionnaire was administered along with the APS-R (to classify perfectionists) at the general meeting before initiating the intervention.

The participants also received handouts designed by the research team. Each chapter of these handouts referred to the topics discussed at each meeting and included exercises to be used as homework in-between meetings.

**Statistical analyses**

Given that complete datasets were gathered from all participants, there was no need to replace missing data. Data from all outcome variables were normally distributed, so a paired samples *t*-tests were used to ascertain changes in the outcome measures between pre-intervention and post-intervention. Effect sizes were calculated using Cohen´s *d* statistic (Cohen, 1988). A series of independent t-tests were used to assess potential differences between intervention completers and intervention non-completers. Individual clinical change in each participant was also assessed through the computation of two versions of the Reliable Change Index (RCI, Jacobson & Truax, 1991; RCI-corrected, Speer, 1992).

**Results**

**Baseline descriptive data**

Regarding perfectionism measures, participants scored higher in the Standards and Discrepancy subscales compared to previous reference work with students in Argentina (Arana & Furlan, 2016). Indeed, Standards scores were almost two standard deviations points higher than in previous studies, and Discrepancy scores were one and a half standard deviation point higher too, meaning that participants in this study had greater perfectionistic strivings and perfectionistic concerns than Argentine students from earlier studies (see also Arana et al., 2010, 2009). There were no differences in the means of perfectionism measures among the three groups, thus all data from each intervention group were analyzed together.

[INSERT TABLE 1 HERE]

Baseline means of depression and anxiety symptoms of the participants were also consistent with those of clinical populations. The mean of depression was in the range of mild depressive symptoms (range of 14-19, Brenlla & Rodriguez, 2006) for Argentine young adults. Similarly, state-anxiety mean scores corresponded to the 85th percentile, and trait-anxiety mean scores corresponded to the 94th percentile, being both consistently higher than the 75th percentile of reference according to Argentine scale norms (Leibovich de Figueroa, 1991). All mean scores of participants assessed at pre-intervention and their corresponding standard deviations are presented in Table 2.

**Intervention outcomes**

The proportion of participants who completed the intervention was high: 20 out of 24 (83%) students completed the five weekly sessions. The median number of attended sessions was 5; one non-completer left the assigned group at session 1, two at session 3, and one at session 4. Given that only a small proportion of participants did not complete the intervention, a descriptive analysis of the potential differences between completers and non-completers was done. As reflected in Table 1, there was a slightly difference regarding academic variables, with non-completers being less dysfunctional (e.g., they spent more hours studying, had less pending and/or failed exams, had desired a more realistic GPA) than their completers counterparts.

[INSERT TABLE 2 HERE]

Regarding pre-test to post-tests mean differences on outcome measures, significant changes were observed in all variables studied (*p*s < .026) (see Table 2). Effect sizes in dimensions of perfectionism at post-intervention were small for the Order subscale (*d* = 0.35) and high for the Discrepancy (*d* = 1.34) and Standards subscales (*d* = 0.90). A high effect size was also encountered in psychological distress measures associated with maladaptive perfectionism (*d*s > 0.72), implying that there were significant decreases in levels of depressive and anxious symptomatology.

From a within-subject point of view, post-hoc analyses exploring each intervention completer revealed that 15 out of 20 (75 %) of the participants clinically improved their levels of maladaptive perfectionism, decreasing levels of discrepancy or perfectionistic concerns. Table 3 shows the reliable change index (RCI) for each participant.

[INSERT TABLE 3 HERE]

Furthermore, selected demographics variables and outcome measures were explored for differences between the improvers and non-improvers to investigate characteristics of participants more likely to benefit from our brief CB intervention. Observing the outcomes in Table 4, the differences between both kinds of participants are only noticeable in terms of a more pronounced dysfunctionality in negative variables (discrepancy, state-anxiety and trait-anxiety, and depression) and slightly older age in the participants who benefited from the intervention.

[INSERT TABLE 4 HERE]

**Discussion**

This pilot study aimed to explore whether a brief cognitive behavioral group intervention is feasible in reducing maladaptive perfectionism and psychological distress in Argentine students. Our findings support the feasibility and efficacy of this intervention, and its improved length also showed that it is possible to run more efficient interventions without sacrificing their efficacy. These results were in line with those obtained by other researchers regarding the efficacy of the intervention (Egan et al., 2014; Lloyd et al., 2014; Pleva & Wade, 2007; Radhu et al., 2012). Discrepancy, the main component of maladaptive perfectionism, was significantly reduced in those students that completed the intervention, in line with previous research employing the APS-R (Aldea et al., 2010; Radhu et al., 2012), providing evidence for this scale as a sensible measure to capture perfectionism change (Rice, Sauer, Richardson, Roberts, & Garrison, 2015). Overall, 75% of participants statistically and clinically changed their levels of maladaptive perfectionism and also improved their general distress (operationalized as anxious and depressive symptoms). These changes at post-treatment, which were high in terms of effect size, are in line with meta-analytic findings in perfectionism research (Lloyd et al., 2015). However, since only a few studies have used the APS-R as a measure of perfectionism, outcomes must be interpreted with caution. Arpin-Cribbie and colleagues (2012) also reported a medium effect size for the discrepancy subscale, but this finding could not be replicated in another study (Radhu et al., 2012). Despite these mixed antecedents, this pilot study was in line with Lloyd and colleagues' (2015) call for identifying the most effective format of interventions, this being a first attempt to reduce the amount of sessions in an intervention of perfectionism and gain efficiency. Seemingly, an intervention involving the topics of understanding perfectionism in an adaptive/maladaptive continuum, challenging perfectionistic beliefs and behaviors, understand the impact of perfectionism in social life and rehearse self-compassion exercises, would work at least as minimum requirements to ensure a reliable change in maladaptive perfectionists.

Another interesting finding is that besides the expected changes in the discrepancy subscale, the levels of the standards subscale also decreased. This can be explained by the fact that positive strivings only became dysfunctional when discrepancy (or perfectionist concerns) is high (Shafran, Cooper, & Fairburn, 2002). Indeed, the combination of the dimensions of perfectionism rather than their individual levels is what determines its potential negative or positive correlates (Gaudreau & Thompson, 2010). Surprisingly, the fact that participants who improved lowered their standards appeared to be a paradoxical effect of the intervention. As Lloyd and colleagues (2014) have argued “the aim ... was not to encourage participants to completely abandon their standards but rather facilitate a shift from the pursuit of perfection to the pursuit of achievable excellence (p. 370)”. Thus, it seems that when this shift is produced, people naturally tend to reduce their standards to a more realistic self-view. Slaney and colleagues noted in an early work (2001) the importance of focusing on perfectionist self-evaluation rather than in perfectionistic strivings.

As for the second goal of this study, differences were found between completers and non-completers, as well as between improvers and non-improvers. These findings have to be interpreted with caution due to the small sample size and its descriptive nature. Non-completers tended to be less dysfunctional in academic life (e.g., more hours dedicated to study, less failed exams) and non-improvers also tended to be less dysfunctional, but with regard to psychological measures (less perfectionistic concerns, less anxiety, less depression). In line with this, the common element of those who really benefited from the intervention was their global level of dysfunctionality. This finding would undermines the idea of implementing a preventive intervention for college students with maladaptive perfectionism because according to clinically-reached scores at baseline, there is nothing to prevent but to clinically treat. Nevertheless, Nehmy and Wade (2015) provided a recent exception, obtaining a reduction of unhelpful perfectionism in adolescents only after six months of follow up. Future research will need to consider if only mild (i.e., non-clinical) levels of maladaptive perfectionism can also be treated in college students as well.

With respect to our third goal, the fact that an English-language cognitive intervention protocol remains efficacious in Latin American students suggests firstly that the translation and adaptation of the protocol were accurate and correct. Secondly, findings suggest structured interventions of this kind might not be affected by cross-cultural differences. However, the validity of this claim has to be tested in further research with proper statistics methods such as measurement invariance (e.g., Burgess, DiBartolo, & Rendón, 2016), non-Western clinical samples, and other non-student population. Although there is a growing interest in how Latinos deal with perfectionism, most research relied in Latinos living in the USA (Burgess et al., 2016; Chang, Hirsch, Sanna, Jeglic, & Fabian, 2011; Ortega, Wang, Hayes, Slaney, & Morales, 2014) and cross-cultural research is still needed (Mobley et al., 2005).

Although this is a pilot study with no control group, there are other limitations that need to be highlighted. First, the lack of follow-up precludes conclusions as to the maintenance of the changes in perfectionism and associated distress. Maintaining improvements long-term is of particular concern within perfectionism interventions (e.g., Nehmy & Wade, 2015) Second, limitations related to the implementation of the intervention have to be noticed. Since we did not specifically evaluate the use of the handouts provided, its contribution to results is unknown. This has been highlighted by other researchers (Pleva & Wade, 2007). Indeed, the use of these handouts might operate as a mediator or moderator of outcomes (Egan et al., 2014). Similarly, the fidelity of therapists to protocol was not specifically evaluated. Although therapists applying the intervention had similar levels of competence and experience, differences in delivering the intervention, personal characteristics or specific skills might have influenced the results (Egan et al., 2014). Finally, we did not evaluate the potential impact of other concomitant treatments (e.g., individual psychotherapy) on the results of the intervention. Future studies should also look at objective measurements (e.g., performance / checking measurements related to perfectionism).

Despite all the limitations mentioned above, results regarding the efficacy and efficiency of the intervention are promising. Group interventions are cost and time-effective and provide feedback and support from peers and clinicians (Steele et al., 2013). Detecting maladaptive perfectionism in the academic realm implies reducing many costs, both in the health and academic performance of students. Overall, our pilot study could serve as a start to clinically treat and investigate perfectionism in Spanish-speaking samples.

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**Compliance with Ethical Standards**

*Ethical approval*

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

*Conflict of interests*

Fernán Arana, Mariana Miracco, Marina Galarregui and Eduardo Keegan have no conflict of interest with respect to this publication.

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*Informed consent*

Informed consent was obtained from all individual participants included in the study.

# Table 1

*Means, Frequencies and Percentages for the Whole Sample, Intervention Completers and Non-completers*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Descriptives | | Whole sample  (N = 24) | Intervention completers  (N = 20) | Intervention non-completers (N = 4) |
| *Demographics*  Gender  Male  Female | | 2 (8%)  22 (92%) | 2 (10%)  18 (90%) | 0  4 (100%) |
| Mean age | | 27.75 (8.3) | 28.25 (8.83) | 25.25 (4.92) |
| Marital status  Single  Married  Divorced | | 20 (83%)  3 (13%)  1 (4%) | 17 (85%)  2 (10%)  1 (5%) | 3 (75%)  1 (25%) |
| Work  Full time job  Partial time job  Occasional job  Not work | | 2 (8%)  9 (37.5%)  4 (17%)  9 (37.5%) | 1 (5%)  7 (35%)  4 (20%)  8 (40%) | 1 (25%)  2 (50%)  0  1 (25%) |
| *University-related*  Withdrawn other careers  Yes  No (1 missing)  Career dropped/withdrawn | 6 (26%)  17 (74%)  .56 (.81) | | 5 (26%)  14 (74%)  .67 (.88) | 1 (25%)  3 (75%)  .25 (.50) |
| Career stage  Beginning  Middle  End | | 6 (25%)  6 (25%)  12 (50%) | 5 (25%)  5 (25%)  10 (50%) | 1 (25%)  1 (25%)  2 (50%) |
| Mean passed courses  Mean pending exam  Mean failed exam  Mean courses taken by quarter  Mean desired GPA (1-10)  Mean hours of study  Mean hours of recreation | | 20 (7.99)  2 (2.64)  1.79 (2.78)  3 (1.28)  7.25 (.94)  4.08 (2.26)  2.63 (1.53) | 20 (7.75)  2 (2.81)  1.95 (3.01)  3.05 (1.35)  7.35 (.98)  3.75 (1.52)  2.70 (1.52) | 19 (10.33)  .75 (.96)  1.00 (.82)  2.75 (.96)  6.75 (.50)  5.75 (4.50)  2.25 (1.70) |
| Courses withdrawn/dropped  Yes  No (1 missing)  Mean withdrawn/dropped courses | | 12 (52%)  11 (48%)  1.72 (2.61) | 10 (53%)  9 (47%)  1.57 (2.03) | 1 (25%)  3 (75%)  2.25 (4.50) |
| Preference for group-study  Yes  No | | 13 (54%)  11 (46%) | 9 (45%)  11 (55%) | 2 (50%)  2 (50%) |
| Can delegate tasks in a study group  Yes  No | | 7 (29%)  17 (71%) | 5 (25%)  15 (75%) | 2 (50%)  2 (50%) |
| Psychological treatment  Yes  No | | 12 (50%)  12 (50%) | 12 (60%)  8 (40%) | 0  4 (100%) |
| Migrate by study | |  |  |  |
| Yes  No (1 missing) | | 7 (30%)  16 (70%) | 5 (26%)  14 (74%) | 2 (50%)  2 (50%) |

Table 2

*Mean and Standard Deviation Differences and Effect Sizes for the Outcome Variables at Pre-intervention and Post-intervention*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Pre | Post | *t* | *p* value | Cohen´s *d* |  | α |  |
|  | Mean *(SD)* | Mean *(SD)* |  |  |  |  |  |  |
| *Perfectionism* |  |  |  |  |  |  |  |  |
| Standards | 41.82 *(2.79)* | 36.68 *(7.03)* | 3.57 | .002 | 0.90 |  | .70 |  |
| Order | 20.73 *(4.95)* | 18.95 *(5.22)* | 2.40 | .026 | 0.35 |  | .74 |  |
| Discrepancy | 62.14 *(12.82)* | 46.41 *(10.24)* | 6.50 | <.001 | 1.34 |  | .93 |  |
| *Psychological distress* |  |  |  |  |  |  |  |  |
| Depressive symptoms | 17.36 *(9.34)* | 7.95 *(6.32)* | 5.43 | <.001 | 1.13 |  | .88 |  |
| State-anxiety | 47.86 *(12.57)* | 36.77 *(9.04)* | 3.72 | <.001 | 1.01 |  | .94 |  |
| Trait-anxiety | 54.18 *(11.17)* | 46.45 *(10.09)* | 3.69 | <.001 | 0.72 |  | .93 |  |

*Reliable Change Index for Each Participant of the Intervention*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Case Id | Pre-Discrepancy | Post-Discrepancy | RCI | RCI Corrected | Achieved change |
| 1 | 58 | . | . | . | N/A |
| 2 | 78 | . | . | . | N/A |
| 3 | 71 | . | . | . | N/A |
| 4 | 80 | . | . | . | N/A |
| 5 | 53 | 42 | -2.10 | -2.23 | Yes |
| 6 | 54 | 36 | -3.44 | -3.55 | Yes |
| 7 | 49 | 42 | -1.34 | -1.52 | No |
| 8 | 63 | 33 | -5.73 | -5.73 | Yes |
| 9 | 60 | 47 | -2.49 | -2.52 | Yes |
| 10 | 70 | 53 | -3.25 | -3.15 | Yes |
| 11 | 81 | 68 | -2.49 | -2.24 | Yes |
| 12 | 69 | 41 | -5.35 | -5.26 | Yes |
| 13 | 55 | 46 | -1.72 | -1.82 | No |
| 14 | 70 | 31 | -7.46 | -7.35 | Yes |
| 15 | 73 | 42 | -5.93 | -5.78 | Yes |
| 16 | 58 | 44 | -2.68 | -2.74 | Yes |
| 17 | 61 | 41 | -3.82 | -3.84 | Yes |
| 18 | 83 | 53 | -5.73 | -5.46 | Yes |
| 19 | 82 | 56 | -4.97 | -4.71 | Yes |
| 20 | 67 | 50 | -3.25 | -3.19 | Yes |
| 21 | 74 | 62 | -2.29 | -2.14 | Yes |
| 22 | 64 | 68 | 0.76 | 0.79 | No |
| 23 | 54 | 45 | -1.72 | -1.83 | No |
| 24 | 53 | 46 | -1.34 | -1.46 | No |

Table 4

*Mean Differences between Participants who Improved and Not Improved by the Intervention*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Not improved | Improved | *t* | *p* value | Cohen´s *d* |
|  | (n = 5) | (n = 15) | (df = 20) |  |  |
|  | M (*sd*) | M (*sd*) |  |  |  |
| *Age & University-related variables* |  |  |  |  |  |
| Age | 26.57 *(3.64)* | 28.66 *(9.99)* | -.532 | .042 | -0.28 |
| Withdrawn careers | 0.5 *(0.83)* | 0.87 *(0.99)* | -.747 | .499 | -0.40 |
| Withdrawn courses | 1.67 *(2.33)* | 1.5 *(1.72)* | .165 | .374 | 0.08 |
| Passed courses | 20.4 *(10.11)* | 20.67 *(7.60)* | -.063 | .224 | -0.03 |
| Pending exams | 3.14 *(3.89)* | 1.6 *(1.96)* | 1.254 | .075 | 0.49 |
| Failed exams | 3.43 *(4.54)* | 1.07 *(1.39)* | 1.347 | 1.000 | 0.70 |
| *Perfectionism* |  |  |  |  |  |
| Standards | 41.86 *(3.53)* | 41.8 *(2.51)* | .044 | .994 | 0.02 |
| Order | 20.71 *(5.68)* | 20.73 *(4.78)* | -.008 | .991 | -0.03 |
| Discrepancy | 49.86 *(9.87)* | 67.87 *(9.71)* | 4.030 | .001 | -1.84 |
| *Psychological distress* |  |  |  |  |  |
| Depressive symptoms | 11.29 *(8.12)* | 20.20 *(8.73)* | -2.28 | .034 | -1.06 |
| State-anxiety | 39.14 *(13.85)* | 51.93 *(13.23)* | -2.46 | .022 | -0.94 |
| Trait-anxiety | 46.71 *(12.13)* | 57.67 *(9.12)* | -2.36 | .028 | -1.02 |