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STUDENTS WITH ACADEMIC DIFFICULTIES: BENEFITS OF A STUDY SKILLS GROUP COMPARED TO AN EMOTIONAL SKILLS GROUP

*Chiara Meneghetti[1,2], Nicole Casali[*1], Mara Fabris[2], Debora Palamà[2], Roberta Rizzato[2], Claudia Zamperlin[2], Michela Zavagnin[2], Rossana De Beni[2]*

[1] Department of General Psychology, University of Padova, Padova, Italy
[2] Psychological Assistance Service, University of Padova, Padova, Italy

Abstract
Students can encounter difficulties in their academic careers, regarding their studying skills, for instance, or experiencing negative emotions. Both are amenable to training and related to one another. This study aimed to examine the efficacy of two interventions focusing on studying skills or emotional skills. Two groups of students with academic difficulties participated: 30 worked on study-related aspects (Study skills group); and the other 30 attended lessons on emotions in everyday life (Emotional skills group). They were tested before and after the training on measures of their motivation to learn, self–regulated learning strategies, and emotions (positive and negative emotions). The results showed that both groups benefited from the training. The Study skills group improved specifically in incremental theory of intelligence ($d=0.94$, $p<0.001$), self–regulated learning strategies (organization: $d=0.74$, $p<0.001$; elaboration: $d=0.58$, $p<0.001$; preparing for exams: $d=0.78$, $p<0.001$, specific effects), and more positive emotions about their academic performance ($d=0.64$, $p<0.001$, transfer effect). The Emotional skills group showed smaller effects on study-related aspects ($0.10\leq d\leq 0.49$), with a large effect on negative emotions about the self ($d=$–.87). These results offer insight on how to approach students' academic difficulties.

Keywords: academic difficulties, intervention; self-regulated learning; emotions.

Learning at university can pose various types of challenge, and universities generally offer psychological support services for students in difficulty (Auerbach et al., 2018). Given the increasing number of students specifically requesting help for

[*] Correspondence concerning this article should be addressed to Nicole Casali, Department of General Psychology, University of Padova, Via Venezia 8, 35131 Padova, Italy.
Email: nicole.casali@phd.unipd.it

both study-related and mental health issues (Auerbach et al., 2018; Sneyers & De Witte, 2018), these services need to rely on effective assessment methods and support interventions.

Among the models for framing the factors involved in academic learning success, the one proposed by Ben-Eliyahu (2019; Ben-Eliyahu & Bernacki, 2015) identifies several internalized factors that include learning-specific characteristics such as motivation to thrive and succeed, and self-regulated learning, as well as more general personal skills and abilities. This model offers insight on how to implement the interventions of psychological support services by focusing on one of these aspects linked to academic success. This could involve working on self-regulated strategies and motivational beliefs, for instance, or learning how to handle emotions in one's everyday life.

The present study aims to newly examine the efficacy, in terms of specific and extended benefits of two interventions focusing either on study-related aspects or on emotions, addressed to university students experiencing difficulties in their academic careers. A brief outline of these aspects and their malleability is provided in the following paragraphs.

Literature review

Motivation to learn, studying strategies, emotions, and their training

Dweck (1999) suggests that the motivation to learn depends on learners' growth mindset convictions (Dweck & Leggett 1988). Students with an incremental theory of intelligence believe they can improve their knowledge. They are oriented towards learning goals that demand a high level of competence. They focus their efforts, and are more likely to adopt appropriate behavior when studying (e.g. Blackwell et al., 2007; De Castella & Byrne, 2015). Related to this mindset is self-efficacy, or individuals' convictions about their ability to complete a given task (Bandura, 1997), which involves learning in the case in point. The perception of having a strong capacity to learn positively influences a student's academic behavior and performance (Høigaard et al., 2015; Komarraju & Nadler, 2013). It has been demonstrated that working on the belief that intelligence is malleable (Blackwell et al., 2007), and on self-efficacy regarding the ability to study (Betz & Schifano, 2000) both have a positive impact on learners' academic grades.

Self-regulated learning (SRL) is a broad construct defining the active process in which students responsibly build and control their knowledge while learning by setting themselves goals (goal setting), selecting and deploying strategies (goal operating), and monitoring their effectiveness (goal monitoring) (Zimmerman, 2008). In particular, the actions students take to achieve their goals – such as using strategies (goal operating), and tracking their progress (goal monitoring) – have emerged as significant predictors of academic achievement (see meta-analysis by

Burnette et al., 2013). These actions may include applying numerous strategies to various aspects of their studies, from organizing their time to reading comprehension, to memorizing and reviewing their study material. Although the efficacy of such strategies depends partly on the learner's age and level of knowledge, the educational setting and the subject matter, Dunlosky et al. (2013) found that some are more effective than others. One strategy with a very high impact on learning performance concerns the use of distributed practice (i.e., scheduling study activities spread over a period of time) and practice testing (i.e., self-testing on material to be learned by solving practice problems or answering questions) (Adesope et al., 2017; Rowland, 2014, for a review). Other strategies have proved effective in certain settings and domains, such as interleaved practice (adopting a study schedule that alternates between different types of problem or material), elaborative interrogation (thinking of an explanation for why a given fact or concept is true), and self-explanation (considering how new information relates to known information) (Kang & Pashler, 2012; Taylor & Rohrer, 2010; Smith et al., 2010). Studying also needs to be monitored (goal monitoring). Self-regulated learners plan and constantly adjust their studying behavior, monitor their progress towards their goals, and consequently adapt their strategies to achieve them (Zimmerman, 2008).

The use of SRL strategies can be ameliorated. In some studies, students were trained to use particular strategies (Dunlosky et al., 2013), such as practice testing (Roediger & Butler, 2011), or to consider particular subject matter (Kang & Pashler, 2012), to be content-independent (Dörrenbächer & Perels, 2016), or to involve peers as instructors (Bergey et al., 2019). Other studies focused on 'learning to learn' courses to improve participants' study methods as a whole, and on SRL (Weinstein et al., 2000). It is worth noting that teaching study strategies to university students has a medium effect on emotional and motivational aspects, and a small effect on performance (Hattie et al., 1996; see also Bisra et al., 2018). This would confirm that SRL strategies and motivation to learn are distinct but related aspects, and both can contribute to some extent to academic performance (Burnette et al., 2013; Pintrich, 2004).

The emotional component is also related to academic achievement. The model of academic learning proposed by Ben-Eliyahu (2019) includes "emotional learning", i.e., acquiring emotions within cognitive learning as a crucial component of the learning cycle, that should be an explicit target of learning itself. The author then defines "academic emotions" as all those emotions we experience in relation to learning, including Pekrun's (2006) achievement emotions, i.e., the positive and negative emotions related to our academic success. Among the various treatment programs for addressing students' academic emotions such as anxiety, the most effective combine both emotion regulation and cognitive change (Pekrun & Linnebrink-Garcia, 2014). With this respect, a meta-analysis on programs to support mental health for university students (Conley et al., 2015) found skill-training programs with supervised practice significantly more effective than unsupervised or psychoeducational programs alone in improving various outcomes, such as anxiety

and academic adjustment. Relaxation training also achieved good results, better than cognitive-behavioral or mindfulness interventions (see also Conley et al., 2017). Despite the evidence of motivation to learn, SRL strategies and academic emotions being related (Pekrun et al., 2002; Mega et al., 2014), and forming part of the same intraindividual system (Ben-Eliyahu, 2019), the effects of working on reducing negative emotions on motivational beliefs and strategic aspects have yet to be examined.

To approach academic difficulties by intervening on both motivation to learn (in terms of beliefs and self-efficacy) and on SRL strategies, as well as working on emotions, may help students to continue their course of studies. To our knowledge, however, no researchers have directly examined the impact of multicomponent training on various learning outcomes (i.e., SRL, motivation and emotions).

Aims and expectations

Starting from previous evidence, our aim is to examine the benefits of intervention focusing on motivational beliefs and SRL for university students who report experiencing academic difficulties. One way to examine the efficacy of a training program is to consider its specific effects on the aspects trained, and on transfer effects to other aspects not directly trained. In our case, the training's efficacy can be measured by examining whether working on motivational beliefs and SRL strategies more easily produces transfer effects on emotional aspects.

Our sample consists of students seeking the help of a university psychological support service to cope with their academic difficulties. We developed one specific program focused on learning beliefs about learning and SRL (goal operating and goal monitoring) strategies (called "Study group"). Another group of students attended lessons regarding emotional aspects of students' life (Emotional skills group). The benefits of the program were ascertained by assessing the students' motivation (incremental theory, self-efficacy), SRL strategies, and emotions (positive and negative emotions relating to performance and the self).

Specific benefits on the aspects trained could be expected in both groups. For the Study skills group, this means benefits on learning beliefs and SRL, as seen previously with motivation training (Blackwell et al., 2007), and with SRL (Dörrenbächer & Perels, 2016), though they were not examined together. Further benefits in the Study group could also be found in emotions, increasing positive emotions, and reducing negative emotions relating to an individual's academic performance and self as suggested by previous studies showing a relation between academic emotions and university achievement (Pekrun et al., 2002; Mega et al., 2014). For the Emotional skills group, benefits should be found in terms of fewer negative emotions and more positive ones (Conley et al., 2015). By the same principle of relatedness, transfer effects to SRL strategies and motivation beliefs might also emerge, as they are part of the same intraindividual system (Ben-Eliyahu, 2019).

Method

Participants and study design

The study involved undergraduate students seeking help from a psychological support service at their university. To access this service, they completed assessment measures and had an interview with a psychotherapist. A total of 60 students (22 males and 38 females) participated to the study, 30 in each group. Students in the training group opted to participate to the study skills training program. They were allocated in this group given they reported to have specific study difficulties in agreement with the psychotherapist after the welcome interview. The other students opted to attend lessons on emotional aspects (Emotional skills group). All participants signed a consent form concerning the confidential nature of their personal data and were informed about the aim of the study (which was approved by the ethical committee for psychological research at the University of Padova).

The two groups were comparable in terms of their demographic and academic features. Approximately half of the students were taking courses in the humanities, while the other half were on STEM courses. The two groups were balanced ($t_s < 1$ to 1.12, $p_s \geq 0.28$) in terms of: age (Study skills group: M=22.33, SD=2.96; Emotional skills group: M=23.42, SD=2.57); students' course year (Study skills group: M=3.11, SD=3.01; Emotional skills group: M=3.83, SD=2.69); credits, with study plans at BLENDED universities usually worth 60 credits a year (Study skills group: M=56.12, SD=28.3; Emotional skills group: M=69.14, SD=12.01); and average exam results, which range from 18 to 30 in the BLENDED system (Study skills group: M=24.13, SD=1.88; Emotional skills group: M=25.10, SD=1.79). Students involved in the present study had taken a mean 3 years to earn their credits, and their average exam results show that they were being too slow to complete their course of studies, and their performance was mid-level. The pre-test assessments showed that our participants were weak on motivation to learn, SRL strategies, academic emotions (see "Baseline (pre-test) assessment").

Materials and procedure

Pre- and post-test measures

All the measures showed a good internal consistency (from α=0.60 to α=0.88 calculated on the present sample, in line with the normative samples (De Beni et al., 2014). All measures originally include a 5-point Likert scale.

Measures of self-regulated learning and motivation

Self-Regulated Strategy Questionnaire (SRSQ, adapted from De Beni et al., 2014). This consists of 50 items assessing five facets of SRL (goal operating and goal monitoring): organization (e.g., "In the early afternoon I plan all the things I

have to do"), elaboration (e.g., "I make connections while the teacher is explaining"), preparing for exams (e.g., "While I'm studying, I allocate some time to checking what I know"), self-evaluation (e.g., "I know when I haven't studied enough"), and metacognition (e.g., "I like to think about how my mind works"). There are 10 questions (5 positive and 5 negative) for each facet.

Motivation Questionnaire (MQ, adapted from De Beni et al., 2014). There are 13 items in all, 8 that assess theories of intelligence (Dweck, 1999), e.g., "I can always change my level of intelligence"), and 5 that measure self-efficacy (Bandura, 1997), e.g., "How do you rate your study skills?").

Emotions Questionnaire (EQ; De Beni et al., 2014). There are two subscales, and respondents are asked to express how strongly they feel emotions relating to themselves and their current academic performance. Each subscale covers 20 emotions, 10 positive (e.g. satisfaction, enjoyment), and 10 negative (e.g. resignation, sadness).

Training sessions

Pre- and post-test assessment phase. The measures used before and after the training were administered individually in the following order: SRSQ, MQ and EQ. All participants completed the assessment 1-2 weeks before starting the training, and then again immediately after completing the training.

Study skills and Emotional skills groups

Participants attended in presence 6 weekly meetings (lasting 90 minutes each) and seated around a table in one room of psychological support services. They were organized in small groups (6-8 participants each group; four groups in total). The groups were conducted by one psychotherapist expert in study-related aspects (with cognitive-behavioral formation with specialization on metacognitive aspects). One psychotherapist conducted all meetings of the two groups over the fall semester (two parallel sessions in the same week) and another one all sessions of the two groups in the spring semester (two parallel sessions in the same week), coordinating between each other.

Study skills group. The sessions had the same general structure, based on practice and active participation (De Beni et al., 2014): i) introduction of the topic; ii) exercise(s) on the issues presented (individual and/or group activities); and iii) invitation to apply what had been learnt during the week that followed, before the next session. The topics were:

i) Motivation to learn. The focus was on how beliefs about one's intelligence can become malleable, and how students' convictions about their current operative capabilities can affect their performance in a given study task. ii) Organization. The focus was on how students could organize their work and plan for their commitments (scheduled lessons, course activities to attend), and distribute their studies and other activities to promote a workable daily routine (distributed practice and interleaved practice; Dunlosky et al., 2013). iii) Reading and text comprehension strategies. The

focus was on using different reading strategies depending on the objectives and type of text. Participants were prompted to ask themselves what they already knew about the topic and how any new information was related to it (self-explanation; Dunlosky et al., 2013). iv) Elaboration. The focus was on the personal elaboration of the material to study, using strategies that involved asking questions, identifying core issues in a text, trying to answer, and to explain the answers (elaborative interrogation; Dunlosky et al., 2013). v) Memory strategies. The focus was on presenting and practicing with various memory strategies involving different degrees of learner activation (from repetition to forming mental images, diagrams, sketches) as a function of the material and the knowledge required. vi) Revision and preparing for exams. The focus was on the flexible revision of study material and self-testing on the material, depending on the type of examination (elaborative interrogation and practice testing; Dunlosky et al., 2013).

Emotional skills group. The topics concerned psychoeducation on emotions in daily life in a lesson modality, i.e., based on presentation of contents and final questions, to answer individually or in group. The topics were: i) Emotion definition. Definition of emotions and main theories conceptualizing them; ii) Everyday emotions. Different types of emotions and their recognition in everyday life; iii) Emotions and their complexity. Physiology, thoughts, and behaviors associated with emotion expression and how to detect them; iv) Emotions and behaviors. Emotion-related behaviors in daily life activities; v) Emotion-related beliefs. Beliefs and interpretations of emotions in daily life activities; vi) Emotion changes. The changes of emotions in daily life activities. Other than theoretical explanations, there are some exemplifications of techniques such as slow breathing (Andrews et al., 2003), the ABC (Activating event – Beliefs about event – Consequences model (Beck, 1975), and Jacobson's (1938) progressive muscle relaxation were presented during the lessons.

Results

Analyses

First, t-tests were run on participants' pre-test performance on all the measures of interest to see if there were any baseline differences between the two groups.

Then repeated mixed-design ANOVAs were run on all measures to identify any training benefits in terms of gains and transfer effects, with Group (Study vs. Emotional) as the between–participants factor, and Session (pre–test vs. post–test) as the within-participants factor. For each means comparison, we recorded the mean differences (*MDiff*.). Interactions were broken down using post hoc pairwise comparisons with Bonferroni's correction at $p<0.05$, adjusted for multiple comparisons (the critical p value was set at 0.013).

To gain a better understanding of the extent of the training benefits (the difference between pre- and post-test), Cohen's (1988) d – which expresses the effect size of the comparisons – was calculated separately by group for each measure of interest, considering an effect size d=0.20 as small, d=0.50 as medium, and d=0.80 large. Values were corrected using the Hedges and Olkin (1985) correction factor to avoid the small sample bias.

Finally, to compare the two groups' performance in terms of the specific aspects on which they were trained, normative data were used as a control measure, and z–scores were computed on the pre- and post-test scores.

Baseline (pre-test) assessment

The results of the t-tests indicated that the two groups did not differ at pre-test ($t<1$ to 1.78, $p>0.08$) on any of the outcome measures except for negative emotions about the self, where the Emotional skills group scored significantly higher than the Study skills group ($t = –2.47$, $p=0.016$). Table 1 (columns 1 and 4) shows the descriptive statistics for the two groups (Study vs Emotional) at pre–test.

Mean z–scores (see Table 2) indicated that, on average, both groups showed weaknesses – compared with the normative sample – in terms of their SRL strategies, with z–scores <1 for Organization and Self–evaluation in both groups (–1.53 to –1.05). For the other SRL strategy scores, the z was –0.03 to –0.85.

Pre- and post-test measures

Self-Regulated Strategy Questionnaire

The Metacognition and Self-evaluation scales showed no significant main effect of Group (Metacognition: $F_{(1,58)}=3.08$, $p=0.08$, $\eta_p^2=0.05$, Self–evaluation: $F<1$), while the effect of Session was significant (Metacognition: $F_{(1,58)}=18.01$, $p<0.001$, $\eta_p^2=0.24$; Selfevaluation: $F_{(1,58)}=5.04$, $p=0.001$, $\eta_p^2=0.14$), indicating an increase in the score from pre– to post–test (Metacognition: MDiff.=–0.25, $p<0.001$; Self–evaluation: MDiff.=–0.12, $p=0.003$). The Group x Session interactions were not significant ($F_s<1$ for both).

As for Organization, Elaboration and Preparing for exams, the main effect of Group was not significant ($F_s<1$), while the effect of Session was (Organization: $F_{(1,58)}=34.41$, $p<0.001$, $\eta_p^2=0.37$; Elaboration: $F_{(1,58)}=18.69$, $p<0.001$, $\eta_p^2=0.25$; Preparing for exams: $F_{(1,58)}=17.72$, $p<0.001$, $\eta_p^2=0.23$), with an increase in the score from pre– to post–test (Organization: MDiff.=–0.37, $p<0.001$; Elaboration: MDiff.=–0.25, $p<0.001$; Preparing for exams: MDiff.=–0.29, $p<0.001$). The Group x Session interaction was significant too (Organization: $F_{(1,58)}=5.49$, $p<0.02$, $\eta_p^2=0.09$; Elaboration: $F_{(1,58)}=4.05$, $p=0.05$, $\eta_p^2=0.07$; Preparing for exams: $F_{(1,58)}=11.85$, $p=0.003$, $\eta_p^2=0.15$). Post hoc comparisons indicated that the Study skills group's scores improved from pre– to post–test (Organization: MDiff.=–0.51, $p<0.001$; Elaboration: MDiff.=–0.37, $p<0.001$; Preparing for exams: MDiff.=–0.49,

p<0.001), whereas the Emotional skills group's performance did not change. The differences between the two groups' scores were not significant, neither pre– nor post–test.

Motivation Questionnaire

For the Theory of Intelligence scale, the main effect of Group was not significant, $F_{(1,58)}$=1.61, p=0.21, η_p^2=0.03, while the main effect of Session was, $F_{(1,58)}$=11.18, p<0.001, η_p^2=0.16 showing an increase in the score from pre– to post–test (MDiff.=–0.50, p=0.001). The Group x Session interaction was significant, $F_{(1,58)}$=8.38, p=0.005, η_p^2=0.13. Post hoc comparisons indicated that only the Study skills group had higher incremental theory of intelligence scores after the training (MDiff.=–0.93, p<0.001), whereas the Emotional skills group's scores did not change from pre–test to post–test. The Study skills group tended to outperform the Emotional skills group (with p=0.025 and not 0.013), but only at post–test. For the Self-efficacy subscale, the main effect of Group was not significant, F<1, while the effect of Session, $F_{(1,58)}$=25.98, p<0.001, η_p^2=0.31, indicated an increase in the score from pre– to post–test (MDiff.=–0.30, p<0.001). The interaction was not significant, $F_{(1,58)}$=1.63, p=0.21, η_p^2=0.03.

Emotions Questionnaire

Self. As regards positive emotions, the main effect of Group was not significant, $F_{(1,58)}$=1.52, p=0.22, η_p^2=0.03, while the main effect of Session was, $F_{(1,58)}$=11.05, p=0.002, η_p^2=0.16, showing an increase in the score from pre– to post–test (MDiff.=–0.20, p<0.01). The interaction was not significant, F<1. For negative emotions, the main effect of Group, $F_{(1,58)}$=3.97, p=0.05, η_p^2=0.07, showed that the Study skills group scored lower on this aspect than the Emotional skills group (MDiff.=–0.31, p=0.05); and the main effect of Session, $F_{(1,58)}$=16.70, p<0.001, η_p^2=0.23, showed a drop in the score from pre– to post–test (MDiff.=0.37, p<0.001). The interaction was not significant, $F_{(1,58)}$=1.52, p=0.22, η_p^2=0.03.

Academic performance. Concerning positive emotions, the main effect of Group was not significant, F<1, while the main effect of Session was, $F_{(1,58)}$=9.57, p=0.003, η_p^2=0.14, showing an increase in the score from pre– to post–test (MDiff.=–0.21, p<0.01). The Group x Session interaction was significant, $F_{(1,58)}$=4.99, p=0.03, η_p^2=0.08. Post hoc comparisons indicated that positive emotions only rose from pre– to post–test in the Study skills group (MDiff.=–0.36, p<0.001), whereas the Emotional skills group's scores did not change. The differences between the two groups' scores were not significant, at either pre– or post–test. As for negative emotions, the main effect of Group was not significant, F<1, while the main effect of Session, $F_{(1,58)}$=8.86, p=0.004, η_p^2=0.13, showed a significant drop in the score from pre– to post–test (MDiff.=0.25, p<0.01). The Group x Session interaction was not significant (F<1).

Table 1. Pre– and post–test means and standard deviations, and associated effect sizes.

	Study skills group				*d*	Emotional skills group				*d*
	Pre–test		Post–test			Pre–test		Post–test		
	M	SD	M	SD		M	SD	M	SD	
SRSQ – Organization	2.99	0.73	3.50	0.63	0.74	3.17	0.58	3.39	0.44	0.42
SRSQ – Elaboration	3.13	0.58	3.50	0.68	0.58	3.13	0.55	3.26	0.46	0.25
SRSQ – Preparing for exams	3.23	0.63	3.72	0.61	0.78	3.48	0.59	3.56	0.46	0.15
SRSQ – Metacognition	3.31	0.55	3.58	0.52	0.50	3.12	0.50	3.36	0.47	0.49
SRSQ – Self-evaluation	3.39	0.46	3.53	0.55	0.27	3.39	0.51	3.49	0.40	0.22
MQ –Theory of intelligence subscale	3.72	0.96	4.65	1.00	0.94	3.95	0.57	4.02	0.75	0.10
MQ – Self-efficacy subscale	3.11	0.45	3.48	0.63	0.67	3.30	0.69	3.52	0.52	0.36
EQ Self, Positive	3.34	0.59	3.50	0.57	0.27	3.14	0.53	3.38	0.54	0.44
EQ Self, Negative	2.86	0.75	2.60	0.87	–0.29	3.29	0.65	2.80	0.45	–0.87
EQ Academic performance, Positive	2.96	0.58	3.32	0.53	0.64	3.22	0.57	3.28	0.56	0.10
EQ Academic performance, Negative	3.06	0.78	2.84	0.93	–0.25	3.12	0.72	2.84	0.50	–0.45

Note: SRSQ = Self-Regulated Strategies Questionnaire; MQ = Motivation Questionnaire; EQ = Emotions Questionnaire.

The gains (Cohen's d) from pre– to post–test by group (see Table 1; columns 3 and 6) show large effect sizes in the Study skills group on Organization, Preparing for exams (for SRSQ), and Theory of intelligence (0.74–0.94). Medium–to–large effect sizes were found for Elaboration, Metacognition (for SRSQ), and Self–efficacy (0.50–0.67). The Study skills group also obtained medium effect size for positive emotions (relating to academic performance; 0.64), while the other effect sizes were medium–to–small (|0.25|–|0.29|). The effect sizes for the Emotional skills group were large as regards negative emotions relating to the self (–0.87), while all other effect sizes were medium–to–small (0.49 to 0.10).

To establish whether the trained students changed by comparison with a normative sample, we calculated the two groups' scores obtained with the outcome measures considered in terms of z–scores computed on the normative data (see Table 2). The z scores for both training groups showed an improvement, aligning them with the normative sample. When the same set of analyses (2 × 3 repeated measures ANOVA) was run using the z–scores, the results overlapped with those reported above.

Table 2. Performance expressed in z-scores computed on normative data for the two groups

	Study skills group				Emotional skills group			
	Pre–test		Post–test		Pre–test		Post–test	
	M	SD	M	SD	M	SD	M	SD
SRSQ – Organization	–1.53	1.38	–0.57	1.19	–1.19	1.09	–0.78	0.83
SRSQ – Elaboration	–0.44	1.29	0.38	1.50	–0.45	1.22	–0.15	1.03
SRSQ – Preparing for exams	–0.85	1.25	0.15	1.21	–0.33	1.18	–0.19	0.92
SRSQ – Self–evaluation	–1.05	1.07	–0.73	1.28	–1.05	1.19	–0.80	0.93
SRSQ – Metacognition	–0.03	1.12	0.50	1.06	–0.43	1.02	0.05	0.95
MQ –Theory of intelligence subscale	–0.48	1.20	0.69	1.25	–0.19	0.71	–0.10	0.94
MQ – Self–efficacy subscale	–1.48	1.01	–0.65	1.40	–1.06	1.52	–0.56	1.15
EQ Self, Positive	–0.40	0.74	–0.21	0.81	–0.61	1.09	–0.16	0.99
EQ Self, Negative	0.35	1.00	–0.14	1.07	0.68	0.98	0.19	0.73
EQ Academic performance, Positive	–0.37	0.77	–0.06	0.73	–0.35	0.79	–0.11	0.72
EQ Academic performance, Negative	0.60	0.87	0.35	1.00	0.75	0.78	0.43	0.63

Note: SRSQ = Self-Regulated Strategies Questionnaire; MQ = Motivation Questionnaire; EQ = Emotions Questionnaire.

Discussion and conclusions

The present study concerns students who turned to a psychological support service, reporting academic difficulties, which were confirmed with assessment measures. Among several options, one way to address the needs of such students is to work directly either on their learning beliefs and study-related behavior given their impact on in academic learning success (Mega et al., 2014), and that they have proved to be trainable (at least separately; Betz & Schifano, 2000; Blackwell et al., 2007; Dörrenbächer & Perels, 2016). Our aim was therefore to examine whether an intervention focusing on study-related aspects could produce benefits on aspects directly trained and any transfer effects on other aspects.

First of all, it is important to mention that all students accessing the psychological service presented a similarly weak SRL profile, with z scores <1 compared with a normative sample (especially for Organization and Self-Evaluation). They also fared poorly on motivation to learn (especially for self-efficacy). Other objective indicators confirmed that these students were falling behind in terms of their scheduled exams and achieved only mid-level grades.

Our results show that in both groups there was an increase in scores from pre– to post– test for motivational beliefs, SRL strategies and positive emotions, and a decrease in negative emotions. Analyzing the interactions further clarified the benefits in the Study skills group.

For SRL, the Group x Session interaction showed that the Study skills group (but not the Emotional skills group) experienced a specific benefit, with higher

scores after the training for organization (planning work and distributing it over time), elaboration (asking themselves questions on study material), and preparing for exams (self–testing on the study material). Consistently, for the Study skills group there were medium–to–large effect sizes for organization, elaboration, and preparing for exams – while the Emotional skills group showed only small effect sizes for all these aspects. It should be noted that, with the SRSQ, both groups showed a medium effect size for metacognition and a small effect size for self-evaluation. Adopting the SRL model (Zimmerman, 2008), we can say that the Study skills group had more readily–detectable specific benefits on actions to take (goal operating) to study more effectively. These actions include more effective learning strategies (Dunlosky et al., 2013). As for goal monitoring (with the self–evaluation and metacognition scales), the Study skills group did not benefit specifically from their training. This might be because it is easier to adopt specific types of behavior and actions relating to study than it is to monitor them during the learning process. Monitoring may therefore require a longer training intervention or a follow-up in order to emerge. It should also be noted that the medium effect size found in both groups for metacognition (SRSQ) may reflect the approach of both proposals based on self–reflection with individual and group activities regarding the ability considered.

As concerns motivational beliefs, only the Study skills group showed a specific improvement in the students' perception of their own intelligence as being malleable, with an increase in their scores from pre– to post–test (not seen in the Emotional skills group). This is consistent with the effect size, which was large in the Study skills group and small in the Emotional skills group. These results confirm that the students' mindset was malleable and responded to the training (Blackwell et al., 2007). Self–efficacy did not improve specifically in the Study skills group, and the effect size was medium in both groups. Since self-efficacy is related to performance it may be that any benefits of training on self–efficacy might become more noticeable when the students take exams, and their perception of their study skills improves through concrete studying actions. This hypothesis will need to be confirmed in further studies considering students' actual performance after the training intervention.

As regards positive and negative emotions about the self and academic performance, the Group x Session interaction intriguingly showed that positive emotions about academic performance increased specifically in the Study skills group after the training, with an effect size that was medium–to–large, while it was small in the Emotional skills group.

These results allow us to reach a first conclusion. For university students presenting with difficulties in their academic careers, working on multicomponential aspects of learning produces specific benefits in terms of their motivational beliefs (their mindset regarding their potential for growth) and SRL strategies (in terms of organization, elaboration, and preparing for exams). A transfer effect on positive emotions relating to academic performance was also found.

According to the reference models used in this study, although SRL, motivation to learn and emotions are all part of a student's intraindividual system

(Ben-Eliyahu, 2019), they take effect at different levels (Mega et al., 2014). Emotions are a core component capable of pervasively influencing learning before, during, and after performing a task (Ben-Eliyahu, 2019). Their transversal influence during learning may be representative of more general individual features.

Our results contribute to enlarging the frame of reference by clarifying the relations between motivation to learn, SRL strategies, and emotions, and offer indications on how psychological support services can assess and help students in difficulty. Working on cognitive and behavioral strategies that facilitate learning, and sustaining the motivation to learn are clear, concrete actions that students can put into practice to change their learning procedures. Starting to do so in their daily studying activities produced effects on the positive emotions related to their performance.

Our study has some limitations, however, that will need to be better approached in further studies. One such limitation lies in that, for reasons relating to the type of service, no follow-up or actual assessment of performance in exams taken after the training were available. Follow-up measures would give us an indication of an intervention's efficacy (Winzer et al., 2018) and not having any makes it difficult to generalize from our results.

To conclude, despite its limitations, the present study suggests that training on study–related aspects seems to be an effective way to support students with academic difficulties. It can produce both specific benefits and transfer effects on a student's positive emotions about their academic performance.

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Conflict of Interest

Authors have no conflict of interest to declare.

Ethics

The study was approved by the ethical committee for psychological research at the University of Padova (N. 3761).

References

Adesope, O. O., Trevisan, D. A., & Sundararajan, N. (2017). Rethinking the use of tests: A meta-analysis of practice testing. *Review of Educational Research, 87*, 659–701. doi:10.3102/0034654316689306.

Andrews, G., Creamer, M., Crino, R., Page, A., Hunt, C., & Lampe, L. (2003). *The treatment of anxiety disorders: Clinician guides and patient manuals.* Cambridge University Press.

Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D. D., Green, J. G., Hasking, P., Murray, E., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Stein, D. J., Vilagut, G., Zaslavsky, A. M., & Kessler, R. C. (2018). WHO world mental health surveys international college student project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology, 127*, 623–638. https://doi.org/10.1037/abn0000362.

Bandura, A. (1997). *Self-efficacy: The Exercise of Control*. New York: Freeman.

Beck, A. T. (1975). *Cognitive Therapy and the Emotional Disorders.* Intl Universities Press.

Ben-Eliyahu, A. (2019). Academic emotional learning: A critical component of self-regulated learning in the emotional learning cycle. *Educational Psychologist, 54*, 84–105. doi:10.1080/00461520.2019.1582345.

Ben-Eliyahu, A., & Bernacki, M. L. (2015). Addressing complexities in self-regulated learning: A focus on contextual factors, contingencies, and dynamic relations. *Metacognition and Learning, 10*, 1–13. doi:10.1007/s11409-015-9134-6.

Bergey, B. W., Parrila, R. K., Laroche, A., & Deacon, S. H. (2019). Effects of peer-led training on academic self-efficacy, study strategies, and academic performance for first-year university students with and without reading difficulties. *Contemporary Educational Psychology, 56*, 25–39. doi:10.1016/j.cedpsych.2018.11.001.

Betz, N. E., & Schifano, R. S. (2000). Evaluation of an intervention to increase realistic self-efficacy and interests in college women. *Journal of Vocational Behavior*, *56*, 35-52. doi:10.1006/jvbe.1999.1690.

Bisra, K., Liu, Q., Nesbit, J. C., Salimi, F., & Winne, P. H. (2018). Inducing self-explanation: A meta-analysis. *Educational Psychology Review, 30*, 703–725. doi:10.1007/s10648-018-9434-x.

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Children Development*, *78*, 246-263. doi:10.1111/j.1467-8624.2007.00995.x.

Burnette, J. L., O'Boyle, E. H., VanEpps, E. M., Pollack, J. M., & Finkel, E. J. (2013). Mind-sets matter: A meta-analytic review of implicit theories and self-regulation. *Psychological Bulletin, 139*, 655–701. doi:10.1037/a0029531.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Conley, C. S., Durlak, J. A., & Kirsch, A. C. (2015). A meta-analysis of universal mental health prevention programs for higher education students. *Prevention Science, 16*, 487–507. doi:10.1007/s11121-015-0543-1

De Beni, R., Moè, A., Cornoldi, C., Meneghetti, C., Fabris, M., Zamperlin, C., e De Min Tona, G. (2014). *AMOS NUOVA EDIZIONE: Abilità e motivazione allo studio. Prove di valutazione e orientamento per la scuola secondaria di secondo grado e l'università* [AMOS NEW EDITION: Study skills and motivation. Assessment for secondary school and university]. Trento, Erickson.

De Castella, K., & Byrne, D. (2015). My intelligence may be more malleable than yours: The revised implicit theories of intelligence (self-theory) scale is a better predictor of achievement, motivation, and student disengagement. *European Journal of Psychology of Education*, *30*, 245-267. doi:10.1007/s10212-015-0244-y.

Dörrenbächer, L., & Perels, F. (2016). Self-regulated learning profiles in college students: Their relationship to achievement, personality, and the effectiveness of an intervention to foster self-regulated learning. *Learning and Individual Differences, 51*, 229–241. doi:10.1016/j.lindif.2016.09.015.

Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest, 14*, 4-58. doi:10.1177/1529100612453266.

Dweck, C. S. (1999). *Self-Theories: Their Role in Motivation, Personality, and Development*. Philadelphia: Psychology Press.

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256–273. doi:10.1037/0033-295X.95.2.256.

Freedland, K. E., Mohr, D. C., Davidson, K. W., & Schwartz, J. E. (2011). Usual and unusual care: existing practice Emotional skills groups in randomized controlled trials of behavioral interventions. *Psychosomatic medicine*, *73*, 323. doi: 10.1097/PSY.0b013e318218e1fb.

Hattie, J., Biggs, J., & Purdie, N. (1996). Effects of learning skills interventions on student learning: A meta-analysis. *Review of Educational Research, 66*, 99–136. doi:10.3102/00346543066002099.

Hedges, L. V., & Olkin, I. (1985). *Statistical Methods for Meta-analysis*. Orlando, FL: Academic Press.

Høigaard, R., Kovač, V. B., Øverby, N. C., & Haugen, T. (2015). Academic self-efficacy mediates the effects of school psychological climate on academic achievement. *School Psychology Quarterly*, *30*, 64. doi:10.1037/spq0000056.

Jacobson, E. (1938). *Progressive Relaxation*. University of Chicago Press. Chicago.

Kang, S. H., & Pashler, H. (2012). Learning painting styles: Spacing is advantageous when it promotes discriminative contrast. *Applied Cognitive Psychology*, *26*, 97-103. doi:10.1002/acp.1801.

Komarraju, M., & Nadler, D. (2013). Self-efficacy and academic achievement: Why do implicit beliefs, goals, and effort regulation matter? *Learning and Individual Differences, 25*, 67–72. doi:10.1016/j.lindif.2013.01.005.

Mega, C., Ronconi, L., & De Beni, R. (2014). What makes a good student? How emotion, self-regulated learning, and motivation contribute to academic achievement. *Journal of Educational Psychology, 106,* 121-131. doi:10.1037/a0033546.

Mohr, D. C., Spring, B., Freedland, K. E., Beckner, V., Arean, P., Hollon, S. D., Ockene, J., & Kaplan, R. (2009). The selection and design of control conditions for randomized controlled trials of psychological interventions. *Psychotherapy and psychosomatics*, *78*, 275-284. doi: 10.1159/000228248.

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review, 18*, 315–341. doi:10.1007/s10648-006-9029-9.

Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational psychologist, 37*, 91-105. doi:10.1207/s15326985ep3702_4.

Pekrun, R., & Linnenbrink-Garcia, L. (Eds.). (2014). *International Handbook of Emotions in Education.* Routledge.

Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review*, *16*, 385-407. doi:10.1007/s10648-004-0006-x.

Roediger, H. L., & Butler, A. C. (2011). The critical role of retrieval practice in long-term retention. *Trends in Cognitive Sciences*, *15*, 20-27. doi:10.1016/j.tics.2010.09.003.

Rowland, C. A. (2014). The effect of testing versus restudy on retention: A meta-analytic review of the testing effect. *Psychological Bulletin*, *140*, 1432– 1463. doi:10.1037/a0037559.

Smith, B. L., Holliday, W. G., & Austin, H. W. (2010). Students' comprehension of science textbooks using a question-based reading strategy. *Journal of Research in Science Teaching*, *47*, 363-379. doi:10.1002/tea.20378.

Sneyers, E., & De Witte, K. (2018). Interventions in higher education and their effect on student success: A meta-analysis. *Educational Review, 70*, 208–228. doi: 10.1080/00131911.2017.1300874.

Taylor, K., & Rohrer, D. (2010). The effects of interleaved practice. *Applied Cognitive Psychology*, *24*, 837-848. doi:10.1002/acp.1598.

Weinstein, C. E., Husman, J., & Dierking, D. R. (2000). Self-regulation interventions with a focus on learning strategies. In Boekaerts, M. Pintrich, P. R., Zeidner, M (Eds). *Handbook of Self-Regulation* (pp. 727-747). San Diego, CA: Academic Press. doi:10.1016/B978-012109890-2/50051-2.

Winzer, R., Lindberg, L., Guldbrandsson, K., & Sidorchuk, A. (2018). Effects of mental health interventions for students in higher education are sustainable over time: A systematic review and meta-analysis of randomized controlled trials. *Peer J, 6*, e4598. doi:10.7717/peerj.4598.

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, *45*, 166-183. doi:10.3102/0002831207312909.