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Günter F. Müller & Daniela Lohaus

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Günter F. Müller[a] & Daniela Lohaus[b]

[a]University of Koblenz-Landau, Campus Landau;
[b]Darmstadt University of Applied Sciences

Korrespondenz:
Günter F. Müller: fmueller@uni-landau.de

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Abstract

Relationships between physical self-leadership by using strategies of tension release and evaluations of university education were analysed. 312 students participated in the study and completed a questionnaire measuring two types of self-lead physical relaxation, i.e. common and advanced strategies of tension release, felt stress, satisfaction with studies, and personal commitment. Results show that common strategies of tension release were more frequently used than advanced strategies. Students who made frequent use of common strategies experienced less stress, more satisfaction and a higher degree of personal commitment than students who made little use of common strategies. The students' satisfaction with studies and personal commitment did not differ depending on how frequently they used advanced strategies of tension release. However, students who frequently applied advanced strategies tended to feel more stress than students who made little use of advances strategies. Implications of these results are discussed.

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Self-lead tension release and university education

Self-leadership is "the process of influencing oneself" (Neck, Manz & Houghton, 2017, p. 7). More precisely, it can be defined as intentional enactment to pursue personal goals by using own mental, emotional, volitional, motivational, physical and behavioral potentials to perform and achieve desired outcomes (c.f. Lester & Lester, 2016; Müller, Sauerland & Raab, 2018). Consciously or unconsciously, individuals lead themselves whenever they accomplish tasks, solve problems, make decisions, acquire knowledge or address challenges at the work place. However, they may be differently skillful and effective in doing so. Self-leadership contributes to positive effects in many domains of one's personal life (Müller & Wiese, 2010; Seubert, Hornung & Glaser, 2017). It is related to individual initiative, self-efficacy, life satisfaction, and well-being. The focus of this study is on university education and students' self-lead tension release. The research question is: Does self-lead tension release contribute to a more satisfying and fulfilling knowledge acquisition and a more effective coping with stressful learning tasks and educational requirements?

Current research shows that self-leadership may be beneficial at the working place as well as in the classroom (Napiersky & Woods, 2018; Shinhong & Soonyoung, 2018). In work settings, releasing tension by self-lead strategies like mindful breathing, meditation or yoga seems to decrease employees' level of stress, improve their quality of recreation, and

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balance states of inner conflict (Wolever et al., 2012). A similar impact of self-lead tension release may be predicted for settings of university education. In particular, the hypothesis is tested that students' self-lead tension release will correspond with a satisfying, fulfilling und de-stressing accomplishment of learning requirements. In addition, the impact of different types of self-leadership strategies is examined. A distinction between common and advanced strategies of self-lead tension release can be made which refers to theoretical outlines assuming a hierarchical nature of self-leadership strategies (c.f. Müller & Braun, 2009; Müller et al., 2018). On a latent level of self-leadership, strategies are autonomously and unconsciously used to activate, regulate, and control physiological processes and psychological automatisms. On an intuitive level of self-leadership, strategies are intentionally used. However, their application is based on trial-and-error-experience, habit or unquestioned knowledge. In the current context, common strategies of tension release may be looked at as representing intuitive self-leadership. While common strategies were usually applied without sophisticated reasoning of how and why they function, advanced strategies will be chosen and applied on the basis of a more deliberate and insightful reasoning of how and why they work and which effect may be reached by using them. In the hierarchical framework, these strategies represent a way of self-leadership that is well considered and reflective in nature. In this study, the impact of both kinds of self-lead tension reduction was assessed separately.

Method

Participants and data collection: Three-hundred-twelve students participated in the study. One-hundred-sixty-eight (59.4%) were females, and one-hundred-twenty-six (40.6%) males. The average age was 22.95 years (*SD* = 3.39), the average term of studies was 3.95 (*SD* = 2.26). The majority of the sample (*n* = 220) was recruited via internet by using university mailing lists, social-media-networks, and news groups providing a link leading to an online questionnaire hosted by the University of Applied Sciences at Darmstadt, Germany. A smaller portion of the sample (*n* = 110) was recruited by personal contacts on the university campus of Darmstadt and completed a paper-pencil form of the questionnaire. From the total sample eighteen cases had to be removed due to substantial amounts of incompletely answered items in the paper-pencil-sample and double-answered questionnaires in the online sample.

Measures: Strategies of self-lead tension release were measured by two scales. The scales were developed based on studies conducted by Chahrrour et al. (2017) and Feix et al. (2019). Factor analytical computations revealed two separate dimensions from which eight items of common strategies and six items of advanced strategies were selected. Both scales provided reliable measures (common strategies: α = 0.74, $\chi_{(2)}$ = 0.74; advances strategies: α = 0.72, $\chi_{(2)}$ = 0.73). Examples of common strategies are "taking a time-out to relax when feeling stressed" or "even if overwhelmed with work I consequently pause to recover". Examples of advanced strategies are "I apply approved relaxation techniques whenever I feel highly strung or strained" or "to calm down I use exercises I've learned in courses of meditation, yoga or qigong". All items had to be rated between 1 ("does not describe me at all") and 4 ("describes me very much"). Three scales measured impact-variables of self-lead tension release. Satisfaction with university education was measured by five items that were taken and adapted from Jiménez' (2008) profile analysis of work satisfaction. Examples of items are "I am satisfied with results and grades which I attain by my studies" or "All in all, the contents of my studies are highly satisfying for me". Participants were asked to rate items between 1 ("does not apply") and 4 ("does fully apply"). The scale reliability was α = 0.67, and $\chi_{(2)}$ = 0.67. The personal commitment scale consisted of eight items

referring to the students' intrinsic interest in their studies and feeling of fulfillment with learning tasks and university requirements. Items were taken from two questionnaires measuring interest in one's field of study (Krapp et al., 1993) and states of flow while studying one's subject (Jackson & Marsh, 1996). Factor analyses of both questionnaires showed a common dimension that we interpreted as personal commitment to one's field of study. Examples of items are "There is a feeling of fulfilment when I do studies on my subject" or "The engagement in most study contents makes me feel good and excited". Items had to be rated between 1 ("does not apply") and 4 ("does fully apply"). The scale reliability was $\alpha = 0.83$, and $\chi_{(2)} = 0.83$. We took five items from the Perceived Stress Questionnaire by Levenstein et al. (1993) to measure felt stress. Items being selected had to be answered with reference to stressors of university education. Examples are "I often experience time pressure and strain to meet deadlines" or "I am frequently afraid missing goals I intend to reach". Answer options ranged from 1 ("describes me very imprecisely") to 4 ("describes me very precisely"). The reliability of the scale was $\alpha = 0.79$, and $\chi_{(2)} = 0.79$.

Data analysis: Since the study was run with single source self-report measures, all item responses were factor analysed to control for common method variance (Harman, 1976). The hypotheses were tested with mean values of scale measures. To examine hypothesized differences of self-lead tension release, students were grouped according to high, medium or low use of common and advanced strategies (quartiles of scale scores).

Results

One may suspect methodological artefacts due to similar questionnaire formats (i. e., 4-point rating-scales) if exploratory factor analysis of all items reveal a first factor that accounts for more than 50 % of common variance (Harman-test). In the current study, the first factor accounted for 16.9 % of common variance and, thus, revealed a negligible methodological threat to evidence provided by the appointed measurement approach. The results of the study are summarised in Table 1.

Table 1: Impact of self-lead tension release on the evaluation of university education.

	Low use of strategies	*Medium use strategies*	*High use of strategies*	$F_{(df)}$	$p <$
Common strategies of tension release					
Satisfaction	2.7_a	2.9_b	3.0_b	$F_{(2,306)} = 3.2$	.05
Involvement	2.9	3.1	3.1	$F_{(2,304)} = 1.7$	.19 (n.s.)
Felt stress	3.0_a	2.8_b	2.6_c	$F_{(2,305)} = 11.6$	.001
Advanced strategies of tension release					
Satisfaction	2.9	2.9	2.9	$F_{(2,278)} = .05$	.95 (n.s.)
Involvement	3.0	3.1	3.1	$F_{(2,276)} = 1.2$	.29 (n.s.)
Felt stress	2.7	2.8	2.9	$F_{(2,277)} = 1.4$	.24 (n.s.)

Note: The results of ANOVA post-hoc pairwise comparisons are indicated with a letter in subscripts (Duncan-Test p < .05); varying dfs of error-variance result from missing values in the data file.

As can be seen, the results provide partial support with regard to expected differences. A predicted impact could be established for using common strategies of tension release. Hypothesized differences occurred for satisfaction with studies and stress by university education. If the high use group is compared with the low use group the difference for personal involvement is also significant ($t_{(170)} = 1.96$; $p = .05$). Hypothesized

differences are limited to common strategies, while no effects were registered for advanced strategies of tension release.

Not surprisingly, the use of common strategies exceeded that of advanced strategies (2.6 vs. 1.8; $F_{(1,307)} = 471.2$; $p < .001$). Nevertheless, it is interesting and may be worthwhile for further research that the use of advanced strategies and felt stress seems to correspond reversely. If again the high use group of students is compared with the low use group the difference is marginally significant ($t_{(143)} = -1.7$; $p < .10$).

Discussion

In this study, we examined the impact of self-lead tension release for satisfaction with university education, personal involvement to one's own subject of study and felt stress with learning conditions and requirements. The results partly supported the hypotheses. Students who made great use of common strategies of tension release evaluated their subject of study more positively and were less stressed by university education than students with inferior relaxation activities. From a more general view on self-leadership these results are consistent with findings of favourable side-effects of other physical vitality strategies (i. e., physical exercise and healthy nutrition, c.f. Müller, 2018; Georgianna et al., 2019). The question may be raised if a wellbeing-related impact of tension release may counteract performance-related side-effects. According to Feix et al. (2019), tension release and reported academic achievement were uncorrelated ($r = -.09$). Therefore, even if more relaxation activities may not relate to better performance, they do not impair academic performance.

It is Interesting to note that using sophisticated strategies of tension release to a greater degree was not related to more satisfaction, stronger involvement and less stress. On the contrary, a more extensive use of advanced strategies even tended to correspond with a *higher* degree of felt stress. If further studies confirm this tendency, possible reasons might be revealing to explore. According to Wolever et al. (2012), employees reported a decrease of felt stress after having received training in approved relaxation techniques. Are students less inclined than employees to learn advanced strategies, do they tend to misapply these strategies or may a more frequent use of advanced strategies indicate that students simultaneously feel more stressed by requirements of university education? The correlation between using common and advanced strategies of tension release is low ($r = .27$). Therefore, further research could take a closer look at motives underlying the choice of students how to lead themselves when being uptight or under pressure.

To summarize, tension release proved to be a component of effectively coping with stress, being satisfied with own studies and feeling attached to university education. Leading oneself to relax may not necessarily require professional training or application of approved techniques. The practice of common strategies and intuitive self-leadership seemed be a sufficient device for students to attain positive outcomes. This implication is not trivial. Even everyday knowledge has to be appropriately processed and deliberately applied since it otherwise would remain inert or miss its actual end.

Conclusions have to consider some conceptual and methodological limitations of the study. Conceptually, the scope of variables being measured was narrow. Thus, the importance of self-lead tension reduction compared to other strategies of self-leadership has still to be examined. Although the measurement approach was not biased by common method variance, the validity of self-report-measures could be threatened by response-sets such as social desirability and positive self-presentation.

Future research may address the question when and why students learn advanced strategies of tensions release and under which conditions they take advantage by using them. An established answer may clarify ambiguous evidence that studies provide in which the effectivity of stress management training with students is examined (c.f. Lang et al., 2019).

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