

10th ICEEPSY2019
**International Conference on Education and Educational
Psychology**

**ACADEMIC FLOW AND BURNOUT IN COLLEGE STUDENTS:
AN EIGHT-MONTH LONGITUDINAL STUDY**

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Abstract

Academic burnout has serious negative consequences for both physical and mental health of college students. Therefore, studies trying to find the protective factors are beginning to emerge. The main research question was to assess whether flow experienced in different domains of students' life can be a protective factor of their academic burnout. Since longitudinal studies that would determine whether flow experienced in different activities prevents academic burnout are lacking, the aim of this study was to assess whether flow in academic and leisure activities predict longitudinal changes in students' academic burnout and to what extent. Using a two-wave cross-lagged panel design, the current study examined academic flow, flow in leisure activities and academic burnout in 160 first year students of University of Zagreb. Burnout and flow were assessed in two time waves: one month after beginning of the academic year, and then after 8 months, at the end of the academic year. Structural equation modeling was employed to test a series of competing models. Direct model with a path from flow in academic activities and leisure at the beginning of the academic year to burnout at the end of the academic year provided acceptable model fit. Academic flow was related to less, and flow in leisure activities to more subsequent academic burnout. The study suggests that enhancing flow experiences in academic activities may be relevant for reducing students' burnout. At the same time, results suggest that many leisure activities, although flow inducing, may be counterproductive for preventing students' burnout.

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Keywords: Burnout, college students, flow.



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1. Introduction

Studying for the university degree can generate considerable amount of stress in students (Rosales & Rosales, 2014; Lin & Huang, 2014). Academic demands are generally high and are usually accompanied with a variety of other life stressors (Lin & Huang, 2014). If they persist over time without sufficient resources and coping mechanisms to resolve them, they may result in the development of burnout syndrome (Cecil, McHale, Hart, & Laidlaw, 2014; Frajerman, Morvan, Krebs, Gorwood, & Chaumette, 2019; Leupold, Lopina, & Erickson, 2019; May, Seibert, Sanchez-Gonzalez, & Fincham, 2019; Schaufeli, Martínez, Pinto, Salanova, & Bakker, 2002; Skodova, Lajciakova, & Banovcina, 2016; Zabuska, Ginsborg, & Wasley, 2018).

1.1. Academic burnout

Burnout is a condition that has primarily been studied in a work setting, but there is increasing evidence that it can also affect students in school and college. Burnout among college students refers to tiredness resulting from academic demands (emotional exhaustion), having a pessimistic sense and lack of interest toward academic tasks (cynicism toward meaning of studying), and feeling of incompetency as a student (inefficacy) (Schaufeli et al., 2002; Salmela-Aro, Kiuru, Leskinen & Nurmi, 2009). Studies show that college students experience substantial levels of burnout (Frajerman et al., 2019; Jacobs & Dodd, 2003; Leupold et al., 2019; Pisarik, 2009). As it occurs with professionals, it is observed that students, who began their studies with enthusiasm, subsequently came to express a sense of disappointment, lack of energy, fatigue, feeling of emptiness or failure, low self-esteem, lack of concentration, and desire to leave their studies (Caballero-Domínguez, Gutiérrez, & Palacio Sañudo, 2015).

Student burnout is important for several reasons. First, academic burnout can have serious physical and psychological consequences for students' health (Caballero, Bresó, & Gutiérrez, 2015; May, Sanchez-Gonzalez, Brown, Koutnik, & Fincham, 2014). It is positively related to sleep deprivation (Mazurkiewicz et al., 2012), cardiovascular risk factors (May et al., 2014; May, Sanchez-Gonzalez, & Fincham, 2015), depression and Internet disorder (Peterka-Bonetta et al., 2019), and future work burnout (Robins et al., 2017). It is also associated with decreased academic achievement and diminished cognitive functioning (May, Bauer & Fincham, 2015), as well as with unprofessional students' conduct (Dyrbye et al., 2010). It is also a potential indicator of poor emotion regulation in students (Seibert, Bauer, May, & Fincham, 2017). Second, student burnout may also influence their relationships with peers, instructors, and institution. Third, the student burnout may negatively affect the general reputation of the institution for new students with potential consequences for enrolment of students (Neuman, Finaly-Neumann, & Reichel, 1990). Taken all together, academic burnout has serious negative consequences and therefore, studies which are trying to find the protective factors are beginning to emerge (May, Seibert, Sanchez-Gonzalez, & Fincham, 2019).

1.2. Flow

Flow has been defined as an optimal experience related to a specific activity when person is totally focused and absorbed in the activity at hand and enjoys it intensely (Csikszentmihalyi, 1975/2000). Nothing else seems to matter in these moments and he/she completely loses track of time. Necessary conditions for flow experience to occur include autonomy, clear rules, feedback on the progress being made and perceived high opportunities for action (challenges) balanced with high personal skills (Csikszentmihalyi, 1975/2000). Flow can emerge in any activity and so far has been researched mainly in leisure activities such as art (Butkovic, Ullén, & Mosing, 2015) or sport (Bakker, Oerlemans, Demerouti, Bruins Slot, & Karamat Ali, 2011) but also at work and educational settings. Although academic activities in school and college are usually obligatory and students have little freedom in regard to these activities, they nevertheless can experience flow while doing them (Rijavec, Ljubin-Golub, & Olčar, 2016; Shernoff & Csikszentmihaly, 2009). There is evidence that experiencing flow in general is related to wellbeing (Asakawa, 2010), and flow in educational settings is related to various positive outcomes such as higher engagement in learning, better academic achievement (Engeser, Rheinberg, Vollmeyer, & Bischoff, 2005; Ljubin-Golub, Rijavec, & Olčar, 2016), higher psychological and physical health (Steele & Fullagar, 2009) and higher well-being (Rijavec et al., 2016; Rijavec, & Ljubin Golub, 2019).

2. Problem Statement

Academic burnout has serious negative consequences for both college students and institutions, and thus also for education in general. Therefore, studies which are trying to find the protective factors are beginning to emerge. Experiencing flow is associated with increased students well-being (Asakawa, 2010; Rijavec, Ljubin-Golub, Jurčec, & Olčar, 2017), academic success (Engeser et al., 2005; Ljubin-Golub et al., 2016), and is negatively related to burnout (Rijavec et al., 2017), and thus may be a protective factor for burnout. However, the role of flow experienced in different domains, i.e., academic domain and leisure domain as protective factors of academic burnout is not yet researched in longitudinal design.

3. Research Questions

As stated above, academic burnout is a state of school-related strain and stress due to exhaustion from academic work, cynicisms toward the meaning of schooling, and a sense of inadequacy with academic work. On the contrary, flow experience is the state of optimal experience that is characterized by the synergy between the mind and body, effortless concentration, focused attention, complete control, loss of self-consciousness, distortion of time, and intrinsic enjoyment while grasping toward goal (Csikszentmihalyi, 1975/2000). Flow and burnout are negatively related and flow has been proposed as a protective factor for burnout (Rijavec et al., 2017).

However, students can experience flow not only in academic activities but in leisure activities as well. In fact, it has been documented that leisure activities are more flow inducing than academic activities (Rijavec et al., 2016; Rijavec et al., 2017). That poses a question whether both flow in academic activities and flow in leisure may be protective for students academic burnout.

The first research question is to assess the relationship between flow in academic domain experienced at the beginning of the academic year and academic burnout at the end of the academic year.

The second research question is to assess the relationship between flow in leisure domain experienced at the beginning of the academic year and academic burnout at the end of the academic year

4. Purpose of the Study

As stated above, longitudinal studies that would determine whether flow experienced in different activities may prevent academic burnout are lacking. Therefore, the aim of this study was to assess whether flow in academic activities and flow in leisure activities predict longitudinal changes in students' academic burnout and to what extent. We expected that both flow in academic activities and flow in leisure, experienced at the beginning of the academic year will be negatively related to academic burnout at the end of the academic year. However, we expected that the negative relationship between academic flow and academic burnout will be stronger than the relationship between flow in leisure and academic burnout.

5. Research Methods

The study was designed as a two-wave cross-lagged panel design. Academic burnout, flow in academic activities and flow in leisure activities were assessed in two-time waves: one month after beginning of the academic year (Time 1 - T1), and then after 8 months, at the end of the academic year (Time 2 - T2).

5.1. Participants and Procedure

A sample comprised 160 students from University of Zagreb (91.9% females). Participants' age ranged from 18-43 ($M = 19.6$, $SD = 2.2$). The students participated voluntarily and anonymously in the study during the regular psychology class.

5.2. Measures

We used an adapted version of the Swedish Flow Questionnaire (SFPQ; Ullen et al., 2012) for assessing flow in the academic and flow in the leisure domain. The Oldenburg Burnout Inventory-S, a version of the OLBI (OLBI-S; Demerouti et al., 2003) adapted to measure academic burnout was used for measuring academic burnout.

- *SFPQ*. The original SFPQ is a self-report measure of how frequently the respondent experiences flow in different domains (work, maintenance, leisure) using 7 identical items for each domain. In this study we used leisure domain and also added the academic domain, since study-related activities are the core activities in students' life. The SFPQ- academic domain was used also in previous study in Croatia (Ljubin-Golub, Rijavec, & Jurčec, 2018). Participants rated the 7 original items on a 5-point Likert scale ranging from 1 (*never*) to 5 (*every day, or almost every day*) in relation to the question "When you do something for your studies, how often does it

happen that.... e.g. you feel completely concentrated?”. Flow proneness in academic activities (academic flow) was calculated as the mean item score. They also rated the same 7 items in relation to the question “When you do something in your leisure time, how often does it happen that.... e.g. you feel completely concentrated?” Flow proneness in leisure activities (flow in leisure) was calculated as the mean item score.

- **OLBI-S.** The English version of the OLBI questionnaire was translated to Croatian and the items were modified in order to relate to study instead of work, followed by back translation procedure. OLBI is a self-report measure of burnout and has 16 items rated on a 4-point scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). It was designed to distinguish two dimensions, i.e., exhaustion and disengagement dimension, with each dimension having eight items, out of which four items are positively worded and four items are negatively worded. Pprevious studies demonstrated that the OLBI is a psychometrically sound instrument (Demerouti et al., 2003; Reis, Xanthopoulou, & Tsaousis, 2015). However, in study done in Croatia (Ljubin-Golub, Olčar, & Rijavec, 2014) CFA failed to confirm the original structure and EFA revealed two factors (one factor related to positive and the other related to negative item formulation), so we decided to use a total score as an indicator of students’ burnout level.

6. Findings

6.1. Descriptive statistics and correlations

For an initial overview of the data, descriptive statistics, internal consistencies (Cronbach’s alpha), and correlations among the study variables are presented in Table 1. Generally, students reported moderate levels of flow proneness in the academic domain, relatively high levels of flow proneness in leisure, and somewhat above average levels of burnout.

Bivariate correlations indicated positive correlations between academic flow at T1 and T2 ($r = .53$), as well as for flow in leisure ($r = .50$) and burnout ($r = .61$). Academic flow was significantly negatively correlated with academic burnout at T1 ($r = -.40$) and T2 ($r = -.33$), and flow in leisure was not correlated with academic burnout neither at T1 ($r = -.15$) nor T2 ($r = .00$) (Table 1).

Table 01. Descriptive statistics and correlations among the study variables

Study variable	1	2	3	4	5	6
Flow T1						
Academic flow	-	.37**	.53**	.17*	-.40**	-.33**
Flow in leisure		-	.29**	.50**	-.15	-.00
Flow T2						
Academic flow			-	.27**	-.28**	-.43**
Flow in leisure				-	-.02	-.05
Burnout T1					-	.61**
Burnout T2						-
Min-Max	1-5	1-5	1-5	1-5	1-4	1-4
Cronbach’s alpha	.64	.86	.77	.85	.81	.82
<i>M</i>	3.59	4.33	3.60	4.39	3.04	2.70
<i>SD</i>	0.54	0.59	0.58	0.59	0.98	2.77

* $p < .05$; ** $p < .01$

Values of dependent t tests used to examine differences between the mean values of academic flow, flow in leisure and burnout at Time 1 and Time 2 were not significant: academic flow ($t = 0.252$, ns), flow in leisure ($t = 1.274$, ns) and academic burnout ($t = -1.136$, ns). On average, academic flow, flow in leisure and academic burnout were not different at the beginning and the end of the academic year.

6.2. Structural Equation Modeling

Data were checked for multivariate normality and the joint multivariate kurtosis value equalled 10.12, indicating non-normality. Therefore, in the SEM analyses to follow, we adjusted the critical value of the chi-square test and standard errors using the Bollen and Stine (1993) bootstrapping method. To determine whether academic flow and flow in leisure predicted burnout and/or were predicted by burnout, structural equation modeling (SEM) with manifest variables and maximum likelihood estimation was employed using AMOS 24 to test four competitive statistical models (see Table 2). Model fit was assessed with a variety of absolute and incremental fit indices as recommended by Hu and Bentler (1999), including Tucker-Lewis index (TLI), the incremental fit index (IFI), the comparative fit index (CFI), the root mean square error of approximation (RMSEA), in addition to the Akaike information criterion (AIC). Lower values of AIC indicate better model fit while for TLI, IFI, and CFI cut-off values of .95 have been used as benchmark for acceptable model fit (see Hu & Bentler, 1999; Marsh, Hau, & Wen, 2004).

- **M1 - Stability model**

This model implied stable effects of the variables over time. It included autoregressive paths of the variables at Time 1 on themselves at Time 2 (academic flow T1 → academic flow T2, flow in leisure T1 → flow in leisure T2, burnout T1 → burnout T2) and served as a baseline model. All variables were allowed to correlate with each other within Time 1 and within Time 2.

- **M2 – Direct causal model**

Model 2 additionally included crosslagged paths from flow to burnout (academic flow T1 → academic burnout T2, flow in leisure T1 → academic burnout T2).

- **M3 – Reverse model**

This model included cross-lagged paths from burnout to flow (burnout T1 → academic flow T2, burnout T1 → flow in leisure T2) in order to test whether the relationships between the variables were stronger in a reverse matter.

- **M4 – Reciprocal model**

Model 4 included cross-lagged paths between flow and burnout. Thus, we tested whether prior flow predicted burnout and whether earlier burnout was related to later flow.

Table 02. Fit indices and model comparisons

Model	χ^2	df	RMSEA	CFI	IFI	TLI	AIC
M1: Stability model	15.045	6	.09	.96	.96	.91	57.045
M2: Flow T1-Burnout T2	4.311	4	.02	.99	.99	.99	50.311
M3: Burnout T1 –Flow T2	12.376	4	.11	.97	.97	.87	58.376
M4: Reciprocal effects	2.180	2	.02	.99	.99	.99	52.180

When compared to the stability baseline model, the direct causal model, with cross-lagged effects from flow measured at Time 1 to burnout measured at Time 2, provided better fit to the data ($\Delta\chi^2 = 10.73$, $\Delta df = 2$, $p < .01$). Contrary to that, reversed model M3 with cross-lagged effects from burnout measured at Time 1 to flow measured at Time 2 did not differ statistically from the stability model ($\Delta\chi^2 = 2.67$, $\Delta df = 2$, $p = n.s.$) and performed worse than the direct model.

Also, the reciprocal model provided a significant better fit to the data than the stability model ($\Delta\chi^2 = 12.86$, $\Delta df = 4$, $p < .05$) and the reversed model ($\Delta\chi^2 = 12.86$, $\Delta df = 4$, $p < .01$) but has a comparable fit to the direct model ($\Delta\chi^2 = 12.86$, $\Delta df = 2$, $p = n.s.$). The reciprocal causation model can only be justified when it has a better fit than all three other (Farrell, 1994). As this was not the case, the reciprocal causation model was rejected in favour of the direct causal model.

Standardized path coefficients for the cross-lagged model indicating significant path coefficients are presented in Figure 1.

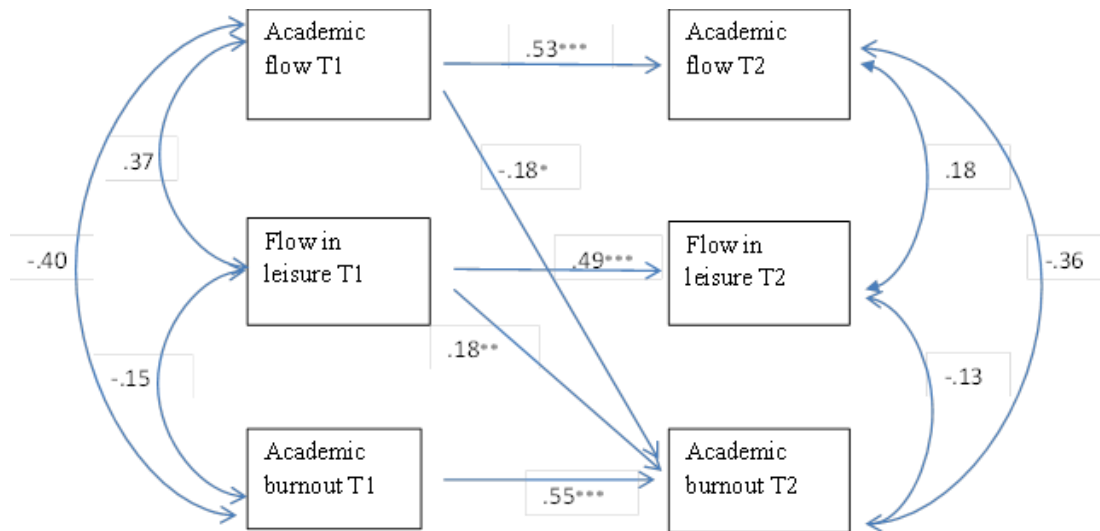


Figure 01. Standardized path coefficients in the cross-lagged direct causal model

As is evident from Figure 1, academic flow measured at Time 1 negatively predicted academic burnout measured at Time 2 ($b = -.18$, $p < .05$). Flow in leisure activities, on the other hand, positively predicted academic burnout ($b = .18$, $p < .01$) assessed at Time 2.

The present study extended past research using mainly correlational design (i.e., Rijavec et al., 2017) to investigate the flow–burnout relationship by using a full cross-lagged design with two measurement points examining college students over an eight-month period during their first year of studying. Four competing models were tested using structural equation modeling. It was found that flow predicted longitudinal changes in academic burnout with academic flow and flow in leisure having opposite effects. Whereas academic flow predicted longitudinal decreases in students’ academic burnout, flow in leisure predicted longitudinal increases in academic burnout. These findings suggest that academic flow and academic burnout are not merely correlates, but academic flow appears to be a protective factor against academic burnout. On the other hand, flow in leisure might be a factor contributing to the development of academic burnout.

The protective role of academic flow on academic burnout is in line with previous cross-sectional studies that associated academic flow with higher levels of well-being and lower levels of psychological distress and burnout (Rijavec et al., 2016; Rijavec et al., 2017; Steele & Fullagar, 2009; for review see Rijavec & Ljubin Golub, 2019).

However, negative influence of flow in leisure activities on students' academic wellbeing as indexed by increasing academic burnout is more difficult to explain. Previous cross-sectional research reported that flow in leisure activities had no significant relationship with academic burnout in college students (Rijavec et al., 2017), and had inconsistent relationship with well-being indexes, either positive (Rijavec et al., 2017) or no relationship (Rijavec et al., 2016). Leisure activities are for the majority of students the most flow inducing activities (Massimini & Carli, 1988; Rijavec et al., 2017; Rijavec, Ljubin-Golub, & Olčar, 2016). Students may experience flow in leisure time while reading, sport training, watching a movie, playing games, dancing, watching TV, playing an instrument, listening to music, etc. (Bakker, Ljubin Golub, & Rijavec, 2017). Since flow is very enjoyable state people may develop a tendency to repeat activities that are flow producing, thus interfering with academic duties. That may result in spending more and more time in these activities with less time left for obligatory and important academic activities. In other words, it may be that flow in leisure activities (for example in video games or social media) may cause procrastination in academic activities, thus leading to being overwhelmed by study finally due to extremely short deadlines, which in turn can contribute to increased academic burnout.

Besides leading to spend great amount of time in leisure activities and thus having less time for obligatory activities, experiencing flow in some of these activities is found to be associated with negative outcomes, such as developing problematic use or even addiction toward a flow inducing activity (e.g., Marino, Gini, Vieno, & Spada, 2018). Namely, some of these leisure activities may have been flow addictive (such as video games or social networks). For example, one study showed that the significant positive association found between Facebook flow and Facebook Addiction Disorder was positively moderated by the intensity of Facebook use, indicating that the link between Facebook flow and Facebook addiction may be the result of experiencing flow while using Facebook (Brailovskaia, Rohmann, Bierhoff, & Margraf, 2018). In addition, these types of activities consume time without resulting in increased feelings of achievement and self-worth as in other activities in free time.

On the other hand, involvement in other types of leisure activities has different effect on wellbeing and burnout. The involvement in extracurricular activities (extra academic activities such as volunteer/community services, research and teaching activities, reading activities, arts and cultural activities) either is not associated with the burnout level, or may even counteract burnout, especially in college men (Jacobs & Dodd, 2003) and in those leading and organizing extracurricular activities (Almalki, Almojali, Alothman, Masuadi, & Alaqeel, 2017). Extracurricular involvement promotes sense of accomplishment and thus does not lead to emotional exhaustion but play a protective role against low personal accomplishment, one aspect of burnout (Jacobs & Dodd, 2003). Similarly, involvement in healthy lifestyle and especially physical activity has been found to be an extremely strong factor to reduce burnout (Cecil, McHale, Hart, & Laidlaw, 2014). Thus, it seems that the type and quality of leisure

activity is of crucial value. However, in this study we had no information about the type of flow inducing leisure activities neither the amount of time students spend in these activities.

The other interesting finding was that there were no significant statistical differences between flow and burnout measures at the start and at the end of the academic year. This contradicts the usual belief that burnout is greatest at the end of the academic year. However, it may be that burnout increases along with the years of studying (Salmela-Aro & Read, 2017) and that the period of eight months was too short for burnout to increase significantly.

The current study has a number of limitations. First, the sample was relatively small, dominantly female and included students from one faculty. Thus, future studies should aim to recruit larger and more heterogeneous samples, since empirical studies have shown that the prevalence of academic burnout varies considerably depending on the university degree in question (Altannir et al., 2019; Barboza & Beresin, 2007; Boni et al., 2018; Caballero, Bresó, & Gutiérrez, 2015; Tomaszewski-Barlem et al., 2014). In addition, the types of leisure activities in which students experience flow should be examined. Also, future studies should longitudinally explore burnout along with years of studying, i.e. over a prolonged period of time. Since previous research proposed existence of burnout subtypes (Montero-Marín, Piva Demarzo, Stapinski, Gili, García-Campayo, 2014), it should be also interesting to investigate the role of academic flow in development of specific burnout components and burnout subtypes.

7. Conclusion

Overall, despite limitations, the current study makes an important contribution to the literature on preventing academic burnout. This is the first longitudinal study providing empirical support for the view that experiencing academic flow may be an effective mechanism for preventing academic burnout. At the same time, results suggest that many leisure activities, although entertaining and flow inducing, may be counterproductive for preventing students burnout. Thus, the study suggests different effects of flow experienced in academic activities and the one experienced in leisure for long-term effect on well-being.

Acknowledgments

The study was supported by grant of University of Zagreb.

References

- Almalki, S. A., Almojali, A. I., Allothman, A. S., Masuadi, E. M., & Alaqeel, M. K. (2017). Burnout and its association with extracurricular activities among medical students in Saudi Arabia. *International Journal of Medical Education*, 8(144-150). <https://doi.org/10.5116/ijme.58e3.ca8a>
- Altannir, Y., Alnajjar, W., Ahmad, S. O., Altannir, M., Yousuf, F., Obeidat, A., & Al-Tannir, M. (2019). Assessment of burnout in medical undergraduate students in Riyadh, Saudi Arabia. *BMC Medical Education*, 19(1), 34. <https://doi.org/10.1186/s12909-019-1468-3>.
- Asakawa, K. (2010). Flow experience, culture, and well-being: How do autotelic Japanese college students feel, behave, and think in their daily lives? *Journal of Happiness Studies*, 11(2), 205–223. <https://doi.org/10.1007/s10902-008-9132-3>
- Bakker, A. B., Ljubin Golub, T., & Rijavec, M. (2017). Validation of the Study-related Flow Inventory (WOLF-S). *Croatian Journal of Education*, 19, 147-173. <https://doi.org/10.15516/cje.v19i1.2194>

- Bakker, A. B., Oerlemans, W., Demerouti, E., Bruins Slot, B., & Karamat Ali, D. (2011). Flow and performance: A study among talented Dutch soccer players. *Psychology of Sport and Exercise*, *12*, 442-450. <https://doi.org/10.1016/j.psychsport.2011.02.003>
- Barboza, J. I. R. A., & Beresin, R. (2007). Burnout syndrome in nursing undergraduate students. *Einstein*, *5*(3), 225–230.
- Bollen, K. A., & Stine, R. A. (1993). Bootstrapping goodness-of-fit measures in structural equation models. In K. A. Bollen, & J. S. Long (Eds.), *Testing structural equation models* (pp. 111-135). Newbury Park, CA: Sage.
- Boni, R. A. D. S., Paiva, C. E., de Oliveira, M. A., Lucchetti, G., Fregnani, J. H. T. G., & Paiva, B. S. R. (2018). Burnout among medical students during the first years of undergraduate school: Prevalence and associated factors. *PloS One*, *13*(3), e0191746. <https://doi.org/10.1371/journal.pone.0191746>.
- Brailovskaia, J., Rohmann, E., Bierhoff, H-W., & Margraf, J. (2018). The brave blue world: Facebook flow and Facebook Addiction Disorder (FAD), *PloS ONE*, *13*(7), e0201484. <https://doi.org/10.1371/journal.pone.0201484>
- Butkovic, A., Ullén, F., & Mosing, M. A. (2015). Personality related traits as predictors of music practice: Underlying environmental and genetic influences. *Personality and Individual Differences*, *74*, 133-138. <https://doi.org/10.1016/j.paid.2014.10.006>
- Caballero, C. C., Bresó, E., & Gutiérrez, O. G. (2015). Burnout in university students. *Psicología desde el Caribe*, *32*(3), 424–441. <https://doi.org/10.14482/psdc.32.3.6217>
- Caballero-Domínguez, C. C., Gutiérrez, O. G., & Palacio Sañudo, J. P. (2015). Relación del burnout y el engagement con depresión, ansiedad y rendimiento académico en estudiantes universitarios. *Revista Científica Salud Uninorte*, *31*(1), 59–69. <http://dx.doi.org/10.14482/sun.31.1.5085>
- Cecil, J., McHale, C., Hart, J., & Laidlaw, A. (2014). Behaviour and burnout in medical students. *Medical Education Online*. *19*(1), 25209. <https://doi.org/10.3402/meo.v19.25209>
- Csikszentmihalyi, M. (1975/2000). *Beyond boredom and anxiety: Experiencing flow in work and play*, San Francisco, CA: Jossey-Bass.
- Demerouti, E., Bakker, A. B., Vardakou, I., & Kantas, A. (2003). The convergent validity of two burnout instruments: A multitrait-multimethod analysis. *European Journal of Psychological Assessment*, *19*(1), 12-23. <https://doi.org/10.1027//1015-5759.19.1.12>
- Dyrbye, L. N., Massie, F. S., Jr., Eacker, A., Harper, W., Power, D., Durning, S. J., ... Shanafelt, T. D. (2010). Relationship between burnout and professional conduct and attitudes among US medical students. *JAMA*, *304*(11), 1173-80. <https://doi.org/10.1001/jama.2010.1318>.
- Engeser, S., Rheinberg, F., Vollmeyer, R., & Bischoff, J. (2005). Motivation, Flow-Erleben und Lernleistung in universitären Lernsettings [Motivation, flow experience and performance in learning settings at university]. *Zeitschrift für Pädagogische Psychologie*, *19*, 159-172. <https://doi.org/10.1024/1010-0652.19.3.159>
- Farrell, A. D. (1994). Structural equation modeling with longitudinal data: Strategies for examining group differences and reciprocal relationships. *Journal of Consulting and Clinical Psychology*, *62*(3), 477-487. <https://doi.org/10.1037/0022-006X.62.3.477>
- Frajerman, A., Morvan, Y., Krebs, M-O., Gorwood, P., & Chaumette, B. (2019). Burnout in medical students before residency: A systematic review and meta-analysis. *European Psychiatry*, *55*, 36-42. <https://doi.org/10.1016/j.eurpsy.2018.08.006>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: A Multidisciplinary Journal*, *6*(1), 1-55. <https://doi.org/10.1080/10705519909540118>
- Jacobs, S. R., & Dodd, D. (2003). Student burnout as a function of personality, social support, and workload. *Journal of College Student Development* *44*(3), 291-303. Johns Hopkins University Press. Retrieved July 6, 2019, from Project MUSE database.
- Leupold, C. R., Lopina, E. C., & Erickson, J. (2019). Examining the effects of core self-evaluations and perceived organizational support on academic burnout among undergraduate students. *Psychological Reports*, First published online May 27. <https://doi.org/10.1177/0033294119852767>

- Lin, S.-H., & Huang, Y.-C. (2014). Life stress and academic burnout. *Active Learning in Higher Education*, 15(1), 77–90. <https://doi.org/10.1177/1469787413514651>
- Ljubin-Golub, T., Rijavec, M., & Jurčec, L. (2018). Flow in the academic domain: The role of perfectionism and engagement. *The Asia-Pacific Education Researcher*, 27(2), 99-107. First Online: 2 February 2018. <https://doi.org/10.1007/s40299-018-0369-2>
- Ljubin-Golub, T., Olčar, D., & Rijavec, M. (2014). The role of motivation and academic social context in study-related flow and burn-out, 7th European Conference on Positive Psychology, Amsterdam, 1-4 July.
- Ljubin-Golub, T., Rijavec, M., & Olčar, D. (2016). The relationship between executive functions and flow in learning. *Studia Psychologica*, 58(1), 47-58. <https://doi.org/10.21909/sp.2016.01.706>
- Marino, C., Gini, G., Vieno, A., & Spada, M. M. (2018). The associations between problematic Facebook use, psychological distress and well-being among adolescents and young adults: A systematic review and meta-analysis. *Journal of Affective Disorders*, 15, 274-281. <https://doi.org/10.1016/j.jad.2017.10.007>
- Marsh, H. W., Hau, K.-T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in over generalizing Hu and Bentler's (1999) findings. *Structural Equation Modeling: A Multidisciplinary Journal*, 11, 320-341. https://doi.org/10.1207/s15328007sem1103_2
- Massimini, F., & Carli, M. (1988). The systematic assessment of flow in daily experience. In M. Csikszentmihalyi & I. S. Csikszentmihalyi (Eds.), *Optimal experience: Psychological studies of flow in consciousness* (pp. 266-287). New York, NY: Cambridge University Press.
- May, R. W., Bauer, K. N., & Fincham, F. D. (2015). School burnout: Diminished academic and cognitive performance. *Learning and Individual Differences*, 42, 126–131. <https://doi.org/10.1016/j.lindif.2015.07.015>
- May, R. W., Sanchez-Gonzalez, M. A., Brown, P. C., Koutnik, A. P., & Fincham, F. D. (2014). School burnout and cardiovascular functioning in young adult males: A hemodynamic perspective. *Stress*, 17(1), 79–87. <https://doi.org/10.3109/10253890.2013.872618>
- May, R. W., Sanchez-Gonzalez, M. A., & Fincham, F. D. (2015). School burnout: Increased sympathetic vasomotor tone and attenuated ambulatory diurnal blood pressure variability in young adult women. *Stress*, 18(1), 11–19. <https://doi.org/10.3109/10253890.2014.969703>
- May, R. W., Seibert, G. S., Sanchez-Gonzalez, M. A., & Fincham, F. D. (2019). Self-regulatory biofeedback training: An intervention to reduce school burnout and improve cardiac functioning in college students. *Stress*, 22(1), 1-8. <https://doi.org/10.1080/10253890.2018.1501021>
- Mazurkiewicz, R., Korenstein, D., Fallar, R., & Ripp, J. (2012). The prevalence and correlations of medical student burnout in the pre-clinical years: A cross-sectional study. *Psychology, Health & Medicine*, 17(2), 188-195. <https://doi.org/10.1080/13548506.2011.597770>
- Montero-Marin, J., Piva Demarzo, M. M., Stapinski, L., Gili, M., & García-Campayo, J. (2014). Perceived stress latent factors and the burnout subtypes: A structural model in dental students. *PLoS ONE*, 9(6), e99765. <https://doi.org/10.1371/journal.pone.0099765>
- Neuman, Y., Finaly-Neumann, E., & Reichel, A. (1990). Determinants and consequences of students' burnout in universities. *The Journal of Higher Education*, 61(1), 20-31. <https://doi.org/10.1080/00221546.1990.11775089>
- Peterka-Bonetta, J., Sindermann, C., Sha, P., Zhou, M., & Montag, C. (2019). The relationship between Internet Use Disorder, depression and burnout among Chinese and German college students. *Addictive Behaviors*, 89, 188-199. <https://doi.org/10.1016/j.addbeh.2018.08.011>
- Pisarik, C. T. (2009). Motivational orientation and burnout among undergraduate college students. *College Student Journal*, 43, 1238–1252.
- Reis, D., Xanthopoulou, D., & Tsaousis, I. (2015). Measuring job and academic burnout with the Oldenburg Burnout Inventory (OLBI): Factorial invariance across samples and countries. *Burnout Research*, 2(1), 8-18. <https://doi.org/10.1016/j.burn.2014.11.001>
- Rijavec, M., & Ljubin Golub, T. (2019). Zanesenost u akademskim aktivnostima i dobrobit studenata [Flow in academic activities and students' well-being]. *Psihologijske teme*, 27(3), 519-541. <https://doi.org/10.31820/pt.27.3.9>

- Rijavec, M., Ljubin-Golub, T., & Olčar, D. (2016). Can learning for exams make students happy? Faculty related and faculty unrelated flow experiences and well-being. *Croatian Journal of Education*, 18(1), 153-164. <https://doi.org/10.15516/cje.v18i0.2223>
- Rijavec, M., Ljubin-Golub, T., Jurčec, L., & Olčar, D. (2017). Working part-time during studies: The role of flow in students' well-being and academic achievement. *Croatian Journal of Education*, 19 [Spec. Issue 3], 157-175. <https://doi.org/10.15516/cje.v19i0.2724>
- Robins, T. G., Roberts, R. M., & Sarris, A. (2017). The role of student burnout in predicting future burnout: Exploring the transition from university to the workplace. *Higher Education Research & Development*, 37(1), 115-130. <https://doi.org/10.1080/07294360.2017.1344827>
- Rosales, Y., & Rosales, F. R. (2014). Towards a two-dimensional study of burnout syndrome in college students. *Ciência & Saúde Coletiva*, 19, 4767-4775.
- Salmela-Aro, K., & Read, S. (2017). Study engagement and burnout profiles among Finnish higher education students. *Burnout Research*, 7, 21-28. <https://doi.org/10.1016/j.burn.2017.11.001>
- Salmela-Aro, K., Kiuru, N., Leskinen, E., & Nurmi, J. E. (2009). School burnout inventory (SBI) reliability and validity. *European Journal of Psychological Assessment*, 25, 48-57. <https://doi.org/10.1027/1015-5759.25.1.48>
- Schaufeli, W. B., Martínez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002). Burnout and engagement in university students: A cross-national study. *Journal of Cross-Cultural Psychology*, 33(5), 464-481. <https://doi.org/10.1177/0022022102033005003>
- Seibert, G. S., Bauer, K. N., May, R. W., & Fincham, F. D. (2017). Emotion regulation and academic underperformance: The role of school burnout. *Learning and Individual Differences*, 60, 1-9. <https://doi.org/10.1016/j.lindif.2017.10.001>
- Skodova, Z., Lajciakova, P., & Banovcina, L. (2016). Burnout syndrome among health care students: The role of type D personality. *Western Journal of Nursing Research*, 39(3), 416-429.
- Shernoff, D. J., & Csikszentmihaly, M. (2009). Flow in schools: Cultivating engaged learners and optimal learning environments. In R. C. Gilman, E. S. Heubner, & M. J. Furlong (Eds.), *Handbook of positive psychology in schools* (pp. 131-145). New York, NY: Routledge
- Steele, J. P., & Fullagar, C. J. (2009). Facilitators and outcomes of student engagement in a college setting. *The Journal of Psychology*, 143, 5-27. <http://doi.org/10.3200/jrlp.143.1.5-27>
- Tomaschewski-Barlem, J. G., Lunardi, V. L., Lunardi, G. L., Barlem, E. L. D., da Silveira, R. S., & Vidal, D. A. S. (2014). Burnout syndrome among undergraduate nursing students at a public university. *Revista Latino-Americana de Enfermagem*, 22(6), 934-941. <https://doi.org/10.1590/0104-1169.3254.2498>
- Ullen, F., de Manzano, O., Almeida, R., Magnusson, P. K. E., Pedersen, N. L., Nakamura, J., ... Madison, G. (2012). Proneness for psychological flow in everyday life: Associations with personality and intelligence. *Personality and Individual Differences*, 52, 167-172. <https://doi.org/10.1016/j.paid.2011.10.003>
- Zabuska, A., Ginsborg, J., & Wasley, D. (2018). A preliminary comparison study of burnout and engagement in performance students in Australia, Poland and the UK. *International Journal of Music Education*, 36(3), 366-379. <https://doi.org/10.1177/0255761417751242>