

## **One-year Follow-up Data on the Face-to-face Autonomy-Supportive Intervention Program for Physical Education Teachers**

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In a recent manuscript published in *International Journal of Sport Psychology*, entitled “Effects of a brief one-day autonomy-supportive intervention on improving basic psychological needs, motivation, and behaviours of physical activity among middle-school students: A multidimensional approach”, we reported that a one-day eight-hour Autonomy-Supportive Intervention Program for Physical Education (ASIP-PE) with the aim to increase autonomy-supportive and decrease controlling behaviour of physical education (PE) teachers was effective (Tilga et al., in press) in changing students’ perceptions of their physical education teachers’ cognitive and procedural autonomy support at a one-month follow-up, compared to control group students. After the intervention, a significant increase was also found in the experimental group students’ need satisfaction for autonomy and competence. Also, a significant decrease was found in experimental group students’ perceptions of their PE teachers’ intimidation and negative conditional regard, and in students’ need frustration for autonomy. This letter is to briefly convey additional data regarding the long-term benefits of ASIP-PE now that we have been able to conduct one-year follow-up analyses.

A two (study group: experimental vs. control) x three (time: baseline vs. one-month vs. one-year follow-up) randomized controlled design was used. The final sample for the experimental group comprised of 15 (attrition rate =

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25%) PE teachers and their 116 (attrition rate = 39%) secondary school students (57 boys and 59 girls) ranging from 13 to 15 years old ( $M = 13.86$ ;  $SD = 0.81$ ). The final sample for the control group comprised of 16 (attrition rate = 27%) PE teachers and their 160 (attrition rate = 29%) secondary school students (85 boys and 75 girls) ranging from 13 to 15 years old ( $M = 14.26$ ;  $SD = 0.68$ ). See a study by Tilga and colleagues (in press) for details regarding approval from the university ethics committee, participants consent and the students' online questionnaire completions regarding perceptions of their PE teachers' cognitive, organizational and procedural autonomy support (Tilga et al., 2017), controlling use of grades, intimidation and negative conditional regard (Hein et al., 2015), students' psychological need frustration and satisfaction for autonomy, competence and relatedness (Haerens et al., 2015), students' identified regulation and intrinsic motivation (Goudas et al., 1994), and self-reported leisure-time physical activity (Godin & Shepard, 1985). At one-year follow-up, all measures had acceptable internal reliability ( $\alpha = .74-.87$ ). For more detailed information regarding psychometric properties for variables measured at one-year follow-up please see Appendix 1.

On a repeated measures ANOVA, contrasts were specified for the within-participant factor 'time', using the baseline as a reference for comparing student perceptions at the one-month and one-year follow-up periods. Analyses revealed that experimental group students experienced significantly higher perceptions of teachers' cognitive autonomy support compared to control group students at both one-month ( $F(1, 274) = 14.568, p < 0.0001, \eta_p^2 = 0.050$ ) and at one-year ( $F(1, 274) = 10.438, p < 0.001, \eta_p^2 = 0.037$ ) follow-up. Also, analyses revealed that experimental group students demonstrated significantly higher perceptions of teachers' procedural autonomy support compared to control group students at both one-month ( $F(1, 274) = 11.256, p < 0.001, \eta_p^2 = 0.039$ ) and at one-year ( $F(1, 274) = 7.767, p = 0.006, \eta_p^2 = 0.028$ ) follow-up. Results additionally indicated that experimental group students experienced significantly lower intimidation behaviour from their teacher compared to control group students at both one-month ( $F(1, 274) = 19.930, p < 0.0001, \eta_p^2 = 0.068$ ) and at one-year ( $F(1, 274) = 6.984, p = 0.009, \eta_p^2 = 0.025$ ) follow-up. Also, analyses indicated that experimental group students experienced significantly higher need satisfaction for autonomy compared to control group students at both one-month ( $F(1, 274) = 6.240, p = 0.013, \eta_p^2 = 0.022$ ) and at one-year ( $F(1, 274) = 4.070, p = 0.045, \eta_p^2 = 0.015$ ) follow-up.

In conclusion, these follow-up analyses demonstrated that ASIP-PE for PE teachers had enduring effects on students' perceptions of their PE teachers' intimidation behaviour, cognitive and procedural autonomy support and the students' experiences of autonomy need satisfaction. These results are similar to the previous intervention study of the Web-based Autonomy-supportive

Intervention Program (Tilga et al., 2019) for PE teachers in which enduring effects on students’ perceptions of autonomy need satisfaction was found at 15-month follow-up (Tilga et al., 2020). These findings indicate that PE teachers likely use their professional development experience to ensure long-lasting benefits in their knowledge about autonomy-supportive behaviour. Future studies are suggested to examine the effectiveness of a combined autonomy support intervention study of a face-to-face and web-based approach. Another avenue for future research is the use of qualitative methodology to examine the possible correlates of students’ psychological experiences.

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APPENDIX  
*Psychometric Properties for Variables Measured at One-year Follow-up*

Variables	Experimental group (n = 116)		Control group (n = 160)		Cronbach's	Skewness	Kurtosis
	M	SD	M	SD			
Cognitive autonomy support	5.41	1.139	5.01	1.129	.83	-.483	-.211
Organisational autonomy support	5.23	1.686	4.74	1.193	.87	-.193	-.996
Procedural autonomy support	5.76	1.123	5.09	1.453	.85	-.441	-1.121
Intimidation	2.50	1.725	2.48	1.809	.80	1.158	.302
Negative conditional regard	2.63	1.671	3.28	1.405	.86	.333	-.617
Controlling use of grades	2.76	1.636	3.53	1.830	.78	.485	-.691
Autonomy need satisfaction	4.78	1.323	4.44	1.483	.87	.154	-1.195
Competence need satisfaction	5.24	1.539	4.95	1.325	.81	-.547	-.549
Relatedness need satisfaction	5.56	1.406	5.02	1.388	.82	-.557	-.772
Autonomy need frustration	3.50	1.704	4.03	1.579	.76	.202	-.570
Competence need frustration	3.27	1.890	3.68	1.675	.82	.263	-.799
Relatedness need frustration	2.51	1.730	3.01	1.755	.81	.853	-.059
Identified regulation	5.28	1.426	5.29	1.099	.75	-.836	.479
Intrinsic motivation	5.18	1.573	5.01	1.337	.78	-.459	-.529
Physical activity	4.19	1.640	3.95	1.506	.74	-.312	-.946

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