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Two ways teachers can develop greater harmonious passion

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ABSTRACT

Background: Passion is highly prized. The Dualistic Model of Passion provides a general roadmap for how people develop passion, at least under conditions in which they can freely schedule their daily activity, abandon activities they no longer value, and have flexible time to invest as they see fit. But teaching is a different, because many aspects of this activity are fixed and pre-set by circumstances. Recognizing this unique condition of classroom PE teaching, we designed the present investigation to test the merits of two antecedents teachers can utilize to develop greater (harmonious) passion—namely, participate in an autonomy-supportive teaching workshop (Study 1) and incorporate intrinsic instructional goals into their lesson plans (Study 2).

Purpose: The over-arching purpose was to investigate the potential of two malleable and personally controllable catalysts to greater harmonious teaching passion.

Method: Study 1 used a randomized control trial. We randomly assigned 104 Korean PE teachers to participate (or not) in an autonomy-supportive teaching (AST) workshop. PE teachers self-reported their harmonious and obsessive passion at the beginning, middle, and end of an academic year. Study 2 used a longitudinal research design and a sample that included both PE and non-PE teachers. These 134 secondary-grade level teachers self-reported their intrinsic instructional goals, autonomy-supportive teaching, and harmonious and obsessive passion across three waves.

Results: In Study 1, a repeated-measures ANCOVA showed that teachers in the experimental condition, compared to teachers in the control condition, showed a longitudinal increase in autonomy-supportive teaching and harmonious passion and a longitudinal decrease in obsessive passion. A mediation analysis confirmed that participants in the AST workshop experienced greater autonomy-supportive teaching that then explained their greater harmonious passion and lesser obsessive passion. In Study 2, a structural equation modeling analysis showed that adopting intrinsic instructional goals early in the year longitudinally increased harmonious passion (but did not decrease obsessive passion). A mediation analysis confirmed that teachers who more adopted intrinsic instructional goals experienced greater autonomy-supportive teaching that then explained their greater harmonious passion.

Conclusion: Teachers can gain personal control over their harmonious passion. They can do this through greater autonomy-supportive teaching.






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And teachers can become more autonomy supportive in two ways: Participate in an expert-provided professional development experience (Study 1) or incorporate intrinsic instructional goals into the delivery of their instruction (Study 2). Additional ways teachers can develop harmonious passion may be possible, so we encourage future research to continue this search with additional samples, such as sport coaches.

Students love a teacher infused with passion. Passionate teachers invest extraordinary time and energy into their instruction (Day 2004), and they attract students' attention (Moè et al. 2021) and inspire students' intrinsic motivation and vitality (Moè 2016a; Patrick, Hisley, and Kempler 2000). Students can easily recognize a passionate teacher, but the research literature provides sparse guidance as to how teachers might become passionate in the first place. What is known is how an activity-specific passion generally develops. It begins by selecting one particular activity to spend a great deal of time with, continues as the person selects that activity over other activities, grows as the person develops a sense of importance or value for the chosen activity, matures as the valued activity is internalized into and becomes a part of the person's identity, and comes to fruition with social contextual support for engaging in that activity (Vallerand 2015).

This general roadmap applies well to people who can freely schedule their daily activity, abandon activities they no longer value, and have flexible time to invest as they see fit. But what about teaching as an activity? Given that teaching features many more fixed circumstances than most passion-related activities (e.g. pre-set schedule and class time, imposed curriculum, state standards), we asked what a teacher can do to develop greater passion? We designed the present investigation to evaluate two possible answers to this question. In Study 1, we used a randomized control trial to test whether workshop-enabled greater autonomy-supportive teaching might increase year-end teaching passion. In Study 2, we used a correlational-longitudinal survey design to test whether incorporating intrinsic instructional goals into one's lesson plans might increase year-end teaching passion.

Dualistic model of passion

Passion refers to a strong inclination (or desire) toward an activity (e.g. teaching) that the person likes (even loves), finds important, and invests a substantial amount of time and energy (Carbonneau et al. 2008). This desire can be so strong that the person integrates the activity into their identity, as the beloved activity becomes a defining feature of who they are: 'I am a teacher.' The Dualistic Model of Passion (DMP) advances our understanding of passion by suggesting that one type of passion (harmonious) produces more positive functioning and wellbeing than does the other (obsessive) (Vallerand 2010, 2015; Vallerand et al. 2003). These two types of passion are differentiated based on how the person internalizes the activity into their identity (Vallerand 2010; Vallerand et al. 2003).

Harmonious passion refers to a strong desire to engage freely in the activity that one loves. This high-quality type of passion results from autonomous internalization of the activity into the self-system, as spending time with the activity feels volitional and fully concordant with the person's life goals, values, and personal identity. With harmonious passion for teaching, teaching provides a sense of satisfaction and personal ownership, as the harmoniously passionate teacher wholeheartedly accepts and volitionally transforms the societal value for teaching into their own value system (Vallerand et al. 2003; Carbonneau et al. 2008). This internalization takes place out of activity-valuing, personal choice, and activity-generated psychological need satisfaction (Vallerand 2015). Once embraced, harmonious passion is associated with teachers' adaptive functioning and well-being, including high levels of job satisfaction (Carbonneau et al. 2008; Horwood et al. 2021), enthusiasm

(Keller et al. 2016), flow (Carpentier, Mageau, and Vallerand 2012), persistence (Bonneville-Roussy, Vallerand, and Bouffard 2013), teaching efficacy (Moè 2016b), and high-quality relationships (Lafreniere et al. 2011).

Obsessive passion refers to a strong desire to engage compulsively in the activity. This low-quality type of passion results from controlled internalization (i.e. introjection), as time spent with the activity emanates out of introjected contingencies, such as feelings of social acceptance or self-esteem (Vallerand 2015). With controlled internalization for teaching, the effort to integrate one's teaching into the self-system remains incomplete and in a state of conflict. Although obsessive passion is sometimes associated with moderate need satisfaction (Curran et al. 2013; Lalande et al. 2017), it is more associated with a sense of obligatory pressure, overwork, and conflict with other aspects of one's life (Carbonneau et al. 2008; Vallerand et al. 2003). This sense of feeling compelled to teach emanates out of ego-involved self-structures, such as contingent self-esteem and conditional regard (Hodgins and Knee 2002; Mageau, Carpentier, and Vallerand 2011; Fernet et al. 2014). Relative to harmonious passion, obsessive passion is associated with teachers' maladaptive functioning and illbeing, such as anxiety and depression (Vallerand 2012), shame (Vallerand et al. 2003), rumination (Carpentier, Mageau, and Vallerand 2012; Donahue et al. 2012), an unbalanced life (Houlfort et al. 2014), and burnout (Fernet et al. 2014; Horwood et al. 2021; Lalande et al. 2017).

These insights about the development of passion suggest four conclusions that are relevant for the teaching context and for the present study. First, if teaching as an activity is to develop into a passion, it must first become a valued activity. Second, that valued activity needs to be internalized into the teacher's identity. Third, autonomous internalization yields harmonious passion, while controlled internalization (introjection) yields obsessive passion. Fourth, when teaching generates a steady stream of basic need satisfactions (autonomy, competence, and relatedness), autonomous internalization of teaching becomes likely.

Two ways to develop harmonious passion for teaching

Only some teachers develop passion. For those that do, the developmental tipping point between harmonious vs. obsessive passion is autonomous vs. controlled internalization of teaching into the self-system. What facilitates autonomous internalization is need satisfaction, while its absence disrupts the internalization process and leaves the person having to force the valued activity into their identity (i.e. controlled internalization) (Vansteenkiste, Ryan, and Soenens 2020). Therefore, we focused on those aspects of teaching that we knew could generate for teachers (1) a strong sense of valuing and (2) a steady stream of need satisfactions. We also focused on those aspects of teaching that were malleable and under the teacher's personal control. These priorities led us to investigate greater autonomy-supportive teaching as a candidate antecedent to greater harmonious teaching.

Autonomy-supportive teaching is the adoption of a student-focused attitude and an understanding tone that enables the skillful enactment of seven autonomy-supportive instructional behaviors, such as taking the students' perspective, encouraging students to pursue their personal interests, and providing explanatory rationales for teacher requests (Reeve and Cheon 2021). Autonomy-supportive teaching allows teaching to become a highly valued activity because it enables a multitude of educationally-important benefits for both students (e.g. greater classroom engagement, skill development, positive emotionality, positive self-concept, vitality and well-being, and academic achievement; Aelterman et al. 2019; Cheon, Reeve, and Song 2019, 2020; Ulstad et al. 2018), and teachers (e.g. greater teaching efficacy, job satisfaction, vitality while teaching, and improved teacher-student relationship satisfaction; Cheon et al. 2014, 2020). Because autonomy-supportive teachers produce such benefits, autonomy-supportive teachers report greater valuing of teaching, autonomous motivation to teach, and psychological need satisfaction (Aelterman et al. 2013, 2019; Cheon et al. 2014, 2018; Roth et al. 2007; Taylor, Ntoumanis, and Standage 2008). Interestingly, teachers who participate in workshops to learn how to become more autonomy supportive also report

declines in emotional-physical exhaustion from teaching (Cheon et al. 2014, 2020), which suggests a decline in obsessive passion.

A second possible way to become a more autonomy-supportive teacher is to set and pursue intrinsic instructional goals during one's teaching (Jang and Reeve 2021). An instructional goal refers to the teacher's learning objective that is embedded into the lesson plan to guide students' classroom activity during that lesson (Jang 2019). An *intrinsic instructional goal* is the teacher's goal for students to use class time to pursue a personal growth goal (e.g. learn a new skill) or a relationship growth goal (e.g. cooperate with a classmate; Jang 2019). When teachers adopt intrinsic instructional goals, they create opportunities for their students to experience need satisfactions (autonomy, competence, and relatedness) during classroom instruction (Niemic, Ryan, and Deci 2009). Importantly, teachers' adoption of intrinsic instructional goals creates opportunities for teachers themselves to experience need satisfactions—as well as autonomous teaching motivation, well-being, job satisfaction, and volitional internalization of teaching into one's identity (Bradshaw et al. 2019; Jang 2019; Kasser and Ryan 1996).

Study 1

We expected that teachers randomly assigned to participate in an autonomy-supportive professional development workshop at the beginning of the academic year, compared to teachers in a no-workshop control condition, would report longitudinal gains in autonomy-supportive teaching (*Hypothesis 1*) and harmonious passion (*Hypothesis 2*) but longitudinal declines in obsessive passion (*Hypothesis 3*). Hypotheses 4 and 5 were mediation predictions such that it would be the workshop-enabled gains in mid-year autonomy-supportive teaching that explained why teachers developed greater year-end harmonious passion (*Hypothesis 4*) and lesser year-end obsessive passion (*Hypothesis 5*).

Method

Participants

Participants were 104 full-time certified PE teachers (63 males, 41 females) who taught in one of 104 different schools (17 elementary, 60 middle, and 27 high schools) dispersed throughout South Korea. All teachers were ethnic Korean. On average, teachers were 36.3 years old ($SD = 4.4$; range = 28–45). At the beginning of the academic year (T1, March), 104 teachers completed the study questionnaire. By the end of the academic year (T3, December), 92 (88.5%) of the teachers completed the questionnaire across all three waves. The 12 teachers with incomplete data did not differ from the 92 teachers with complete data on any dependent measure or on gender, grade, or age, all t 's < 1.20, *ns*. To impute the data for these missing cases and rare missing survey responses (< 0.1%), we used the expectation maximization algorithm in SPSS26, which allowed us to analyze the full data set. To detect the minimal sample size needed to test our ANCOVA-based hypothesis tests, we used the G*Power 3 software program (Faul et al. 2007) with conventional statistics ($\alpha = .05$, two-tailed, power = .90) to detect a moderate effect size ($f^2 = .10$). The minimum recommended sample size was $N = 66$. Because our sample was $N = 104$, we judged our analyses to be sufficiently powered. At the end of the study, each teacher received (unexpectedly) the equivalent of \$100 in appreciation of their participation.

Procedure

The Korea University Institutional Review Board approved the present research protocol. In the month before the academic year began, we recruited PE teachers to participate in a year-long study on 'classroom dynamics.' For all teachers, we collected the T1 data just before the academic

year began, the T2 data at the end of first semester (July, mid-year, week 17), and the T3 data at the end of second semester (December, end-year, week 48). The study questionnaire was the same across all three time points. After the T1 data collection, we randomly assigned teachers into either the experimental (intervention $n = 53$) or control (no intervention $n = 51$) condition. Teachers in the experimental condition participated in Part 1 and Part 2 of the workshop at the beginning of first semester in March (Begin-year, week 1), and they completed Part 3 in the middle of first semester in May (Week 9). Teachers in the control condition taught class with their existing motivating style throughout the school year (i.e. 'practice as usual').

Autonomy-supportive teaching workshop

We delivered the autonomy-supportive teaching workshop in 3 parts over 8 h. The design and implementation of the workshop followed the same step-by-step procedure as employed in previous publications (see Reeve and Cheon 2021). We provide the workshop's timeline, events, and step-by-step procedures in the Supplemental Material.

Measures

All questionnaires were originally developed in English, but we had a previously-translated and successfully-used Korean version of each scale available from published work (Cheon, Reeve, and Vansteenkiste 2020).

Autonomy-supportive teaching

Teachers completed the Teaching Scenarios Measure (TSM; Reeve and Cheon 2016) to assess autonomy-supportive teaching. The TSM begins with a 263-word description of highly autonomy-supportive teaching and features four items that ask teachers about their personal endorsement of that approach to teaching (e.g. 'This approach to teaching describes how I teach my students on a daily basis.'). using 1–7 bipolar response scale (1 = *strongly disagree*; 7 = *strongly agree*). The TSM has been successfully used in previous research (Cheon et al. 2014; Jang 2019), and it correlates highly with other measures of autonomy-supportive teaching, such as the measure used in Study 2 (i.e. the Situations-in-Schools questionnaire; Alterman et al. 2019). Internal consistency of the 4-item scale was reasonably high across all three waves of data collection: $\alpha = .84$ (T1), $\alpha = .85$ (T2), and $\alpha = .83$ (T3).

Harmonious and obsessive passion

Teachers completed the 12-item Passion Scale adapted for teaching (Carbonneau et al. 2008). The Passion Scale is based on the dualistic model of passion, and it features 6-items to assess harmonious passion (e.g. 'My job as a teacher is in harmony with the other activities in my life') and 6-items to assess obsessive passion (e.g. 'I have almost an obsessive feeling for my job as a teacher'), using a 1–7 unipolar response scale (1 = *Do Not Agree at All*; 7 = *Very Strongly Agree*). The Passion Scale is the most widely-used instrument to assess passion, and it has been successfully used in previous research on teaching passion (Carbonneau et al. 2008; Cheon, Reeve, and Vansteenkiste 2020). The internal consistency of the 6-item harmonious passion scale was reasonably high, $\alpha = .84$ (T1), $\alpha = .87$ (T2), and $\alpha = .86$ (T3), while the internal consistency of the 6-item obsession passion scale was only moderate, $\alpha = .68$ (T1), $\alpha = .66$ (T2), and $\alpha = .67$ (T3).

Data analyses

To test H1, H2, and H3, we used a pair of 2 (experimental condition) \times 3 (time waves) repeated-measures ANCOVAs. Experimental condition (0 = control, 1 = experimental) served as the between-subject independent variable, and time (T1, T2, T3) served as the within-subject

repeated-measures independent variable. In each analysis, we included gender (0 = male, 1 = female) and grade level (1 = elementary, 2 = middle, 3 = high) as covariates, because these factors sometimes affect autonomy-supportive teaching scores (Cheon et al. 2014). In all three hypothesis tests, the critical test was for a condition \times time interaction, controlling for the covariates. To provide effect size information, we report partial eta square (η_p^2) that estimates the variance in the dependent measure accounted for by the independent variable (small = 0.01, medium = 0.06, large = 0.14; Cohen and Cohen 1983).

To test mediation-based H4 and H5, we utilized Preacher and Selig's (2012) Monte Carlo approach to resampling to construct the appropriate confidence intervals (CIs). In the H4 mediation test, the predictor variable was experimental condition, the hypothesized mediator was T2 autonomy-supportive teaching, and the outcome was T3 harmonious passion. The four covariates were gender, grade level, T1 harmonious passion, and T1 autonomy-supportive teaching. In the H5 mediation test, the predictor variable was experimental condition, the hypothesized mediator was T2 autonomy-supportive teaching, and the outcome was T3 obsessive passion. The four covariates were gender, grade level, T1 obsessive passion, and T1 autonomy-supportive teaching. To conduct these mediation tests, we used the web-based utility (<http://quantpsy.org>) to generate and run R code for simulating the sampling distribution of each indirect effect (20,000 values). If the 95% CI does not include zero, the indirect effect is significant ($p < .05$).

Results

Intervention effects

The descriptive statistics and intercorrelation matrix for all dependent measures and covariates appear in Table 1. Means and standard deviations for all three dependent measures appear in Figure 1 broken down by experimental condition and time of assessment.

Autonomy-supportive teaching (H1)

The critical condition \times time interaction was significant for autonomy-supportive teaching, $F(2, 200) = 17.08$, $p < .001$, $\eta_p^2 = .146$.¹ As shown in the left panel of Figure 1, autonomy-supportive teaching increased to a greater extent from T1 to T3 for teachers in the experimental condition ($\Delta = +0.84$, $t = 8.03$, $p < .001$) than for teachers in the control group ($\Delta = +0.27$, $t = 2.53$, $p = .013$).

Harmonious passion (H2)

The critical condition \times time interaction was significant for harmonious passion, $F(2, 200) = 11.60$, $p < .001$, $\eta_p^2 = .104$.² As shown in the center panel of Figure 1, harmonious passion increased significantly from T1 to T3 for teachers in the experimental group ($\Delta = +0.57$, $t = 6.50$, $p < .001$), while it remained unchanged for teachers in the control group ($\Delta = +0.04$, $t = 0.43$, $p = .665$). In the

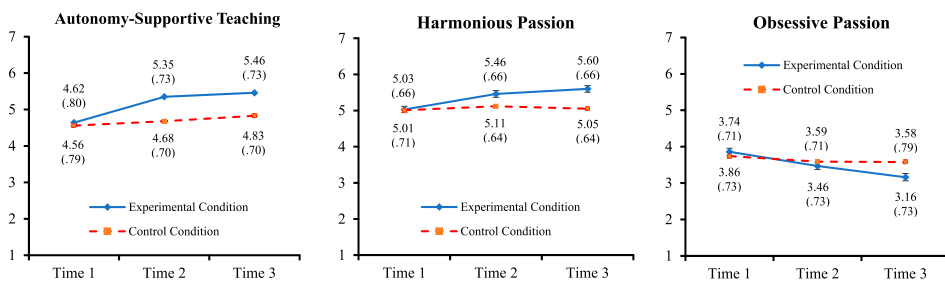


Figure 1. Autonomy-Supportive Teaching, Harmonious Passion, and Obsessive Passion Broken Down by Experimental Condition and Time of Assessment (Study 1). Note. Numbers represent means and, in parentheses, standard deviations.

Table 1. Descriptive Statistics and Intercorrelations Among All Study 1 Variables.

Dependent Measure	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Experimental Condition ^a	0.51	0.50	–											
Time 1														
2. Autonomy-Supportive Teaching	4.59	0.79	.03	–										
3. Harmonious Passion	5.02	0.62	–.01	.51	–									
4. Obsessive Passion	3.80	0.69	.08	.10	.08	–								
Time 2														
5. Autonomy-Supportive Teaching	5.02	0.80	.41	.58	.34	.15	–							
6. Harmonious Passion	5.29	0.66	.27	.40	.50	.00	.56	–						
7. Obsessive Passion	3.52	0.76	–.10	.12	.15	.67	–.10	–.10	–					
Time 3														
8. Autonomy-Supportive Teaching	5.15	0.77	.40	.60	.38	.13	.86	.56	–.04	–				
9. Harmonious Passion	5.33	0.71	.39	.38	.47	.08	.61	.77	–.07	.65	–			
10. Obsessive Passion	3.37	0.80	–.28	.13	.13	.51	–.18	–.12	.76	–.13	–.16	–		
Statistical Controls														
11. Gender ^b	0.39	0.49	–.07	.02	.13	.12	–.08	–.09	.26	–.09	–.09	.25	–	
12. Grade Level ^c	2.10	0.65	.12	–.05	–.11	–.01	–.02	.08	–.04	–.05	.00	–.10	–.09	–

N = 104 teachers. ^aFor experimental condition: 0 = no AST workshop, 1 = AST workshop; ^bFor gender: 0 = male, 1 = female. ^cFor grade level: 1 = elementary school, 2 = middle school, 3 = high school.

Any correlation of $r > .20$, $p < .05$; any correlation of $r > .26$, $p < .01$.

mediation test (H4), the bias-corrected 95% confidence interval did not include zero [0.08, 0.41], confirming mediation via T2 autonomy-supportive teaching.

Obsessive passion (H3)

The critical condition \times time interaction was significant for obsessive passion, $F(2, 200) = 10.23$, $p < .001$, $\eta_p^2 = .093$.³ As shown in the right panel of [Figure 1](#), obsessive passion decreased significantly from T1 to T3 for teachers in the experimental group ($\Delta = -0.70$, $t = 6.93$, $p < .001$), while it remained unchanged for teachers in the control group ($\Delta = -0.16$, $t = 1.53$, $p = .129$). In the mediation test (H5), the bias-corrected 95% confidence interval did not include zero [-0.37, -0.05], again confirming mediation via T2 autonomy-supportive teaching.

Discussion

The purpose of Study 1 was to test the capacity of teacher participation in an autonomy-supportive teaching workshop to increase harmonious passion and to decrease obsessive passion. Teachers who participated in the workshop, compared to teachers who did not, reported greater autonomy-supportive teaching, greater harmonious passion, and lesser obsessive passion. The mediation analyses showed that both passion effects occurred because the workshop enabled greater autonomy-supportive teaching.

Study 2

The purpose of Study 2 was to investigate the adoption of intrinsic instructional goals as a second antecedent to greater harmonious passion. Teachers typically begin their instruction by preparing a lesson plan that features malleable and personally controllable learning objectives (i.e. instructional goals) that are then put into classroom practice via the teacher's motivating style. According to Jang and Reeve (2021), teachers who incorporate intrinsic instructional goals (IIGs) into their lesson plans tend to teach in more autonomy-supportive ways. This is because IIGs orient teachers toward a student-focus, an interpersonal tone of understanding, and acts of instruction such as perspective taking and supporting students' interests and goals.

This line of reasoning led us to expect that teachers who begin the year by adopting IIGs would later engage in greater mid-year autonomy-supportive teaching (*Hypothesis 1*). This greater mid-year reliance on autonomy-supportive teaching was then expected to increase year-end harmonious passion (*Hypothesis 2*) and decrease year-end obsessive passion (*Hypothesis 3*). Hypotheses 2 and 3 were mediation predictions such that it would be the IIG-enabled gains in mid-year autonomy-supportive teaching that explained why teachers developed greater year-end harmonious passion (*Hypothesis 4*) and lesser year-end obsessive passion (*Hypothesis 5*).

Method

Participants

Participants were 134 full-time certified teachers (79 females, 55 males) who taught in 32 different secondary-grade level schools dispersed throughout South Korea (74 middle, 60 high school). None of these teachers participated in Study 1 (i.e. the two samples were independent from each other). All teachers were ethnic Korean. These teachers taught different subjects, including PE ($n = 46$, 34.3%), Korean, English, mathematics, social studies, history, geography, ethics, science, music, and art. In all analyses, we created the new statistical control variable of 'PE teacher' (PE teacher = 1; non-PE teacher = 0) to determine if the results for PE teachers were similar to (or different from) results for non-PE teachers. On average, teachers were 35.4 years old ($SD = 5.8$; $range = 26-48$). At the beginning of the first semester (T1, March), 134 teachers completed the study

questionnaire. By the end of the data collection (T3, September), 111 (82.8%) teachers completed the questionnaire across all three waves. The 111 teachers with complete data did not differ from the 23 teachers with incomplete data on any dependent measure or on gender, grade, or age, all t 's < 1.01, *ns*. To handle these missing cases and rare missing survey responses (< 0.1%), we applied Full Information Maximum Likelihood (FIML) within Mplus 8.3 (Muthén and Muthén 2019). Prior to participant recruitment, we considered the sample size needed to adequately power our statistical tests. To detect the minimal sample size needed to test our regression-based hypothesized structural model, we again used the G*Power 3 software program (Faul et al. 2007) with conventional statistics ($\alpha = .05$, two-tailed, power = .90) to detect a moderate effect size ($f^2 = .10$). The minimum recommended sample size was $N = 108$. Because our sample was $N = 134$, we judged our analyses to be sufficiently powered. At the end of the study, each teacher received (unexpectedly) the equivalent of \$50 in appreciation of their participation.

Procedure

We distributed the questionnaire packets in person or by postal mail. Teachers completed the same questionnaire across three waves. We collected Time 1 data at the beginning of the first semester (March), Time 2 data at the end of the first semester (July), and Time 3 data at the beginning of the second semester (September). We used these three time points to assess if what teachers did during the first semester (e.g. adopt different instructional goals) would change how they began the second semester (e.g. experience greater harmonious passion).

Measures

All questionnaires were originally developed in English, but we had a previously-translated and successfully-used Korean version of each scale available from published work (Cheon, Reeve, and Vansteenkiste 2020; Jang 2019).

Intrinsic instructional goals

We assessed teachers' adoption of intrinsic instructional goals with the Teacher Goal Questionnaire (TGQ; Jang 2019). The TGQ has been successfully used in previous teaching research (Jang and Reeve 2021). The 16-item TGQ uses the stem sentence, 'How important was this goal to you when providing instruction?'. Four items assess the intrinsic instructional goal of personal growth (e.g. 'Invite students to learn new things'), and four items assess the intrinsic instructional goal of relationship growth (e.g. 'Encourage close bonds between classmates'), using a unipolar response scale (1 = *not at all important*; 7 = *very important*). The internal consistency of the overall 8-item intrinsic instructional goals scale was reasonably high: $\alpha = .76$ (T1), $\alpha = .78$ (T2), and $\alpha = .76$ (T3).

Autonomy-supportive teaching

Teachers completed the Situations-in-School questionnaire (SIS; Aelterman et al. 2019) to assess autonomy-supportive teaching. The SIS has been successfully used in previous research (Vermote et al. 2020). We used a different measure of autonomy-supportive teaching in Study 2 to avoid the possible limitation of measurement-dependency, as we expected similar findings to emerge from the use of any valid assessment of autonomy-supportive teaching. The SIS features 12 common classroom situations followed 4 response options (autonomy support, controlling, structure, and chaos) to represent possible teacher responses to that particular teaching situation. In the present study, we used only teacher responses to the autonomy support scale items. An example situation is, 'At a difficult point in the lesson, students begin to complain. In response, you,' and the autonomy-supportive teaching response option is 'Accept their negative feelings as okay. Assure them that you are open to their input and suggestions.' The SIS uses a 7-point scale ranging from 1 (*does not*

describe me at all) to 7 (does describe me extremely well). The internal consistency of the 12-item autonomy-supportive teaching scale was reasonably high: $\alpha = .76$ (T1), $\alpha = .77$ (T2), and $\alpha = .82$ (T3).

Harmonious and obsessive passion

To assess harmonious and obsessive passion, teachers completed the same Passion Scale (adapted for teaching; Carbonneau et al. 2008) used in Study 1. In Study 2, the internal consistencies for the 6-item harmonious passion scale were $\alpha = .84$ (T1), $\alpha = .87$ (T2), and $\alpha = .86$ (T3); the internal consistencies for the 6-item obsessive passion scale were $\alpha = .68$ (T1), $\alpha = .66$ (T2), and $\alpha = .67$ (T3).

Data analyses

We used structural equation model to test the hypothesized model, using Mplus version 8.3 (Muthén and Muthén 2019). The hypothesized model featured four T1 predictors (intrinsic instructional goals, autonomy-supportive teaching, harmonious passion, obsessive passion, all assessed as manifest variables), three T1 statistical controls (gender: 0 = female, 1 = male; grade level: 0 = middle, 1 = high; PE teacher: 0 = no, 1 = yes), one T2 mediator (autonomy-supportive teaching), and two T3 outcomes (harmonious passion, obsessive passion). To evaluate goodness of model fit, we applied the chi-square test statistic and multiple indices of fit (Kline 2011). To test for mediational effects, we again utilized Preacher and Selig's (2012) Monte Carlo approach to resampling to construct the appropriate confidence intervals (CIs) to evaluate the significance of the indirect effect for autonomy-supportive teaching.

Results

Test of the hypothesized model

Table 2 shows the descriptive statistics and intercorrelations among the 10 variables included in the hypothesized model. The hypothesized model fit the data well, $\chi^2(14) = 22.42$, $p = .077$; $RMSEA = .067$, $SRMR = .047$, $CFI = .942$. Figure 2 shows the standardized parameter estimates (*beta* coefficients) for all predicted relations. In the figure, we do not show the results for the statistical controls (for purposes of clarity), but we do report all statistical control results below.

Table 2. Descriptive Statistics and Intercorrelations Among All Study 2 Variables.

Dependent Measure	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
Time 1												
1. Intrinsic Instructional Goals	6.04	0.77	–									
2. Autonomy-Supportive Teaching	4.68	0.72	.31	–								
3. Harmonious Passion	5.24	1.04	.42	.35	–							
4. Obsessive Passion	3.74	1.03	–.05	–.01	.03	–						
Time 2												
5. Autonomy-Supportive Teaching	4.80	0.68	.42	.63	.37	.10	–					
Time 3												
6. Harmonious Passion	5.14	0.98	.23	.32	.40	.21	.43	–				
7. Obsessive Passion	3.76	0.96	.08	.11	.30	.50	.24	.20	–			
Statistical Controls (Time 1)												
8. Gender ^a	0.41	0.49	–.16	.02	.07	.07	.05	.08	.19	–		
9. Grade Level ^b	0.45	0.50	.03	–.01	–.13	–.02	–.10	–.05	–.05	.24	–	
10. PE Teacher ^c	0.25	0.44	–.11	–.13	.10	–.08	.16	.11	.12	.30	–.11	–

N = 134 teachers.

^aFor gender: 0 = male, 1 = female. ^bFor grade level: 0 = middle school, 1 = high school. ^cFor PE teacher: non-PE teacher = 0; PE teacher = 1.

Any correlation of $r > .19$, $p < .05$; any correlation of $r > .25$, $p < .01$.

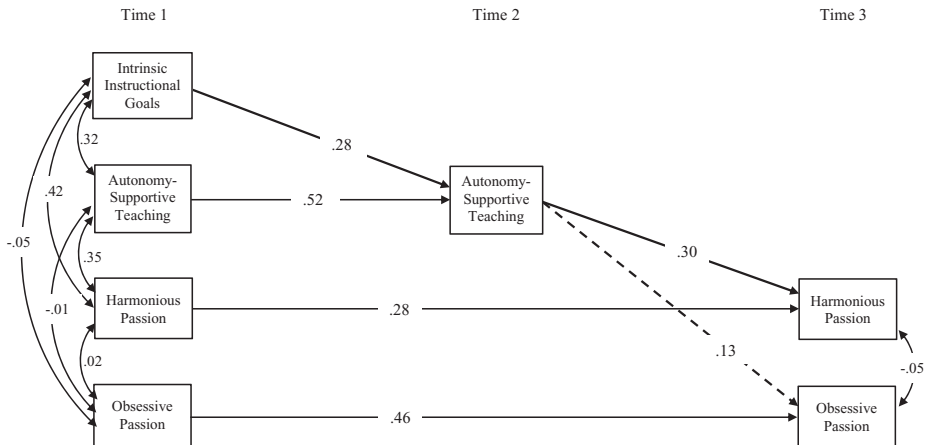


Figure 2. Standardized Parameter Estimates for the Test of the Hypothesized Model (Study 2). Note. Solid lines represent statistically significant paths ($p < .05$). Dashed lines represent statistically nonsignificant paths. Numbers are standardized beta coefficients.

Test of H1, H2, and H3

Autonomy-supportive teaching (H1)

As shown on the left side of Figure 2, T1 intrinsic instructional goals predicted a longitudinal increase in T2 autonomy-supportive teaching ($B = .25$, $SE B = .06$, $\beta = .28$, $t = 4.16$, $p < .001$), controlling for T1 autonomy-supportive teaching ($\beta = .52$, $p < .001$), gender ($\beta = .05$, $p = .453$), grade level ($\beta = -.10$, $p = .157$), and PE teacher ($\beta = .10$, $p = .199$).

Harmonious passion (H2)

As shown on the right side of Figure 2, the longitudinal gain in T2 autonomy-supportive teaching then predicted a longitudinal increase of T3 harmonious passion ($B = .43$, $SE B = .17$, $\beta = .30$, $t = 2.58$, $p = .010$), controlling for T1 harmonious passion ($\beta = .28$, $p = .019$), T1 intrinsic instructional goal ($\beta = -.04$, $p = .776$), T1 autonomy-supportive teaching ($\beta = .03$, $p = .800$), T1 obsessive passion ($\beta = .15$, $p = .007$), gender ($\beta = .02$, $p = .963$), grade level ($\beta = -.01$, $p = .916$), and PE teacher ($\beta = -.01$, $p = .969$). In the mediation test for the indirect effect of T1 intrinsic instructional goals on T3 harmonious passion through T2 autonomy-supportive teaching, the bias-corrected 95% confidence interval did not include zero [.002, .168], confirming mediation.

Obsessive passion (H2)

Also as shown on the right side of Figure 2, the longitudinal gain in T2 autonomy-supportive teaching did not predict a longitudinal decrease of T3 obsessive passion ($B = .18$, $SE B = .18$, $\beta = .13$, $t = 1.02$, $p = .309$), at least not after controlling for T1 obsessive passion ($\beta = .46$, $p < .001$), T1 intrinsic instructional goal ($\beta = -.05$, $p = .688$), T1 autonomy-supportive teaching ($\beta = -.07$, $p = .442$), T1 harmonious passion ($\beta = .26$, $p = .034$), gender ($\beta = .07$, $p = .442$), grade level ($\beta = .02$, $p = .797$), and PE teacher ($\beta = .11$, $p = .343$). In the mediation test for the indirect effect of T1 intrinsic instructional goals on T3 obsessive passion through T2 autonomy-supportive teaching, the bias-corrected 95% confidence interval did include zero [-.036, .110], disconfirming mediation.

Discussion

As in Study 1, a rise in autonomy-supportive teaching led to a corresponding rise in harmonious passion. While the antecedent in Study 1 was teacher participation in an autonomy-supportive teaching workshop, the antecedent in Study 2 was a reliance on intrinsic instructional goals.

This finding suggests that the adoption of IIGs is a second catalyst to the chain of events that explain greater harmonious passion.

General discussion

We sought to investigate two malleable and personally controllable antecedents that teachers might use as a catalyst to develop harmonious teaching passion. We found support for both antecedents. Further, both antecedents fueled harmonious passion through the same underlying processes—namely, greater autonomy-supportive teaching.

Antecedent 1: participation in an autonomy-supportive teaching workshop

When teachers participated in an autonomy-supportive teaching workshop, they experienced greater harmonious passion and lesser obsessive passion. This finding is important because it is the first experimental investigation to identify a causal, malleable antecedent in the development of (harmonious) passion. All previously-identified antecedents were limited to correlational findings (Carbonneau et al. 2008; Moè 2016b; Moè and Katz 2022; Vallerand et al. 2006).

Following Vallerand (2015), we propose two reasons to explain why teacher participation in an autonomy-supportive teaching workshop increased harmonious passion. First, because autonomy-supportive teaching produces a wide-range of student and teacher benefits (for a review, see Reeve and Cheon 2021), it becomes easy for teachers to perceive greater value from their teaching. Second, because autonomy-supportive teaching facilitates need satisfaction and autonomous motivation to teach (Aelterman et al. 2013; Cheon et al. 2018), teachers were more able to autonomously internalize that newly discovered value into their identity (Vallerand et al. 2003).

Antecedent 2: adoption of intrinsic instructional goals

Autonomy-supportive teaching needs a starting point, and the instructional decision to integrate intrinsic instructional goals into one's lesson plans and classroom instruction makes for an excellent catalyst to greater autonomy-supportive teaching (Jang and Reeve 2021). Teachers can learn how to integrate intrinsic instructional goals into their lesson plans and, once done, two benefits follow. First, teachers experience greater need satisfaction while teaching and, second, their students report greater classroom motivation and engagement (Jang 2019; Jang and Reeve 2021). Because of these benefits, it makes sense that teachers who adopt more intrinsic instructional goals would experience greater harmonious passion. Greater need satisfaction facilitates teachers' volitional internalization of teaching as an activity, while observations of student benefits facilitate greater valuing of teaching as an activity. Together, volitional internalization and greater valuing fuel gains in harmonious passion for teaching.

The sample in Study 2 included not only PE teachers but non-PE teachers as well. This sample diversity allowed us to investigate the robustness of autonomy-supportive teaching as a catalyst to greater harmonious passion and lesser obsessive passion. Results showed that the 'PE teacher' statistical control did not moderate any of the Study 2 findings, which tentatively suggests that our findings apply not only to PE teachers (as in Study 1) but to non-PE teachers as well. We suggest that these findings might encourage future research to study these antecedents to harmonious passion in additional samples, such as sport coaches.

Mixed findings regarding obsessive passion

In Study 1, teacher participation in an autonomy-supportive teaching workshop decreased obsessive passion. In Study 2, teacher adoption of intrinsic instructional goals did not decrease obsessive passion. Given these mixed findings, we conclude that what reduces obsessive passion is the specific experience of participating in an autonomy-supportive teaching workshop. During such a

workshop (and as explained in the Supplemental Material), teachers learn the two essential skills of using autonomy-supportive instructional behaviors more and replacing their existing controlling instructional behaviors with autonomy-supportive alternatives (e.g. instead of utter directives, provide an explanatory rationale for each teacher request). We believe that this first learning (i.e. how to be more autonomy supportive) best explains greater harmonious passion, while this second learning (i.e. how to be less controlling) best explains lesser obsessive passion (see also Vallerand et al. 2003, 2006). In other words, to reduce obsessive passion we suggest that teachers need to reduce their controlling teaching.

Directions for future research

We discovered that PE teachers have available two pathways to develop greater harmonious passion—participation in an AST workshop and greater adoption of intrinsic instructional goals. We suggest that future research might explore for additional pathways to greater harmonious passion.

We chose to focus on greater autonomy-supportive teaching as a pathway to greater harmonious passion, because research had already established that this way of teaching allowed teachers to experience (1) greater value from teaching (via student and teacher benefits) and (2) greater psychological need satisfaction (thus facilitating volitional internalization of teaching). But there may be additional antecedents that allow teachers to generate greater value, experience greater need satisfaction, and teach in a more autonomy-supportive way (beyond autonomy-supportive teaching workshops and adopting IIGs). For instance, all of the following antecedents have been linked to educational benefits (greater value), need satisfaction during teaching, and/or greater autonomy-supportive teaching: teacher enthusiasm (Keller et al. 2016; Moè and Katz 2022; Patrick, Hisley, and Kempler 2000); self-compassion (Moè and Katz 2020); integrated emotion regulation strategies (Benita et al. 2020; Moè and Katz 2021); and mindfulness (Hwang et al. 2019). In the conduct of such future research to validate these potential pathways to develop greater harmonious teaching passion, we encourage researchers to also specify and test for this same set of key mediating processes (i.e. value, need satisfaction, autonomy-supportive teaching).

Limitations

We note three concerns as potential limitations. First, we assessed all dependent measures via self-report. The investigation could be made methodologically stronger by including objectively-scored dependent measures (e.g. ask trained classroom observers to score objectively teachers' autonomy-supportive teaching and reliance on intrinsic instructional goals) and by collecting data from a second informant (e.g. ask students to report their teacher's passion). Second, only one of the two confirmed antecedents was causal (i.e. teacher participation in an autonomy-supportive workshop). The second antecedent (adoption of intrinsic instructional goals) was a naturally-occurring (i.e. correlational) antecedent, though we recognize that intervention studies have established the causal benefits of adopting intrinsic instructional goals (Jang and Reeve 2021). Third, our Study 1 research design cannot rule out a possible Hawthorne effect. The Hawthorne effect is the tendency for participants in an experiment to work harder and to perform better merely because of the extra attention paid to them by the researchers. It would be helpful for a future study to use a second experimental condition to offer teacher-participants a professional development opportunity or intervention experience that is unrelated to motivating style (for two examples, see Chatzisarantis and Hagger 2009; Patall et al. 2022).

Conclusion

The present findings reveal how teachers can gain personal control over their level of harmonious teaching passion. Teachers can do this through greater autonomy-supportive teaching. And

teachers can become more autonomy supportive in two ways: Participate in an expert-provided professional development experience (Study 1) or incorporate intrinsic instructional goals into the delivery of their instruction (Study 2).

Notes

1. For T3 autonomy-supportive teaching, the condition main effect was significant, $F(1, 100) = 11.61, p < .001, \eta_p^2 = .104$, the time main effect was significant, $F(2, 200) = 6.12, p = .003, \eta_p^2 = .058$, and, the Condition \times Time interaction was significant, $F(2, 200) = 17.08, p < .001, \eta_p^2 = .146$. Our interest was only in the interaction effect, however, as it represented the study hypothesis. Still, we report the condition and time main effects here for the interested reader.
2. For T3 harmonious passion, the condition main effect was significant, $F(1, 100) = 7.66, p = .007, \eta_p^2 = .071$, the time main effect was not significant, $F(2, 200) = 2.42, p = .091, \eta_p^2 = .024$, and, the Condition \times Time interaction was significant, $F(2, 200) = 11.60, p < .001, \eta_p^2 = .104$.
3. For T3 obsessive passion, the condition main effect was not significant, $F(1, 100) = 1.20, p = .277, \eta_p^2 = .012$, the time main effect was not significant, $F(2, 200) = 2.87, p = .059, \eta_p^2 = .028$, and the Condition \times Time interaction was significant, $F(2, 200) = 10.23, p < .001, \eta_p^2 = .093$.






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