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Individual Values, Learning Routines, and Academic Procrastination

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Background. Academic procrastination, the tendency to postpone learning activities, is regarded as a consequence of post-modern values that are prominent in post-industrialized societies. When students strive for leisure goals and have no structured routines for academic tasks, delaying strenuous learning activities becomes probable.

Aims. The model tested in this study posits that post-modern value orientations are positively related to procrastination and to a lack of daily routines concerning the performance of academic activities. In contrast, modern values are negatively related to procrastination and positively to learning routines. Academic procrastination, in turn, should be associated with the tendency to prefer leisure activities to schoolwork in case of conflicts between these two life domains.

Sample. 704 students from 6th and 8th grade with a mean age of 13.5 years participated in the study. The sample included students from all tracks of the German educational system.

Method. Students completed a questionnaire containing two value prototypes as well as scales on learning routines and procrastination. Decisions in motivational conflicts were measured using two vignettes.

Results and Conclusions. Results from structural equation modelling supported the proposed model for the whole sample as well as for each school track. A planned course of the day can prevent procrastination and foster decisions for academic tasks in case of conflicts. Students' learning takes place within a societal context and reflects the values held in the respective culture.

Keywords: Values, Procrastination, Learning routines, Homework, Learning motivation.

This paper focuses on correlates of academic procrastination. Individual values and a lack of daily routines for learning tasks are considered as related to procrastination. Procrastination, in turn, should be linked to the preference for choosing the leisure alternative when there is a motivational conflict between learning and leisure activities. So far, only few studies dealt with the interplay of activities occurring in students' different life domains to gain an understanding of academic procrastination. Likewise, procrastination as a culturally determined phenomenon has not been addressed in the literature.

In the following section, first the concept of academic procrastination is presented, a short overview of recent research is given, then the main concepts of individual values, daily structure, and motivational conflict are introduced and their relations to the construct of academic procrastination are described.

Academic procrastination

Academic procrastination is the tendency to delay an important and timely activity in the academic domain (e.g., Ferrari, 2001). Chronic procrastination is regarded as a personality trait connected to a host of other traits including low self-efficacy, depression, anxiety and low conscientiousness (e.g., Haycocke, McCarthy, & Skay, 1998; Schouwenburg & Lay, 1995; Wolters, 2003; for a meta-analysis, see van Eerde, 2003). With regard to motivational constructs, it has been shown that academic procrastination is associated with a lack of self-determined motivation, low incidence of flow state (Lee, 2005), low mastery orientation, high avoidant performance orientation, low persistence, a lack of effort (Sadler & Buley, 1999), and low use of cognitive and meta-cognitive learning strategies (Wolters, 2004). In sum, procrastination might be regarded as a failure in self-regulation.

Value orientations, academic procrastination, and decisions in motivational conflict

In this paper, academic procrastination in adolescent students is considered as depending on students' value orientations. Individual values are defined as "desirable, trans-situational goals, varying in importance, that serve as guiding principles in people's lives" (Schwartz et al., 2001, p. 521). They reflect cultural values that are predominant in the respective society. The distinction of two major value orientations, – modern and post-modern –, which is used in this paper, refers to Inglehart's theory of value change (1997). He could show that during the last 25 years most Western societies developed from a preponderance of modern values like hard work, security, and prosperity to so-called post-modern values like tolerance, appreciation of social contacts and self-actualisation. According to Inglehart and Baker (2000), post-modern values do not simply replace modern values but modern values still remain valid. There is empirical evidence for a high (and still growing) importance of both types of values for American students (Oviada, 2003). In this paper, modern and post-modern value orientations will be examined concerning their meaning in students' life, modern value orientation including the appreciation for school matters, future-related goals and hard work, whereas a post-modern value orientation is characterized by a preference for social activities and a time focus on the here and now.

There are a few empirical studies relating individual values to students' behaviour and learning habits. For instance Feather (1988) demonstrated that students appreciating values like order and control tend to get enrolled in science classes, whereas students putting emphasis on pro-social values prefer humanities and social sciences. There is also a systematic relation between the values students embrace and their choice preferences (Verplanken & Holland, 2002). Moreover, in the field of academics the appreciation of modern values goes together with a tendency to prefer a learning task in favour of a leisure activity if students are confronted with a motivational conflict (Fries, Schmid, Dietz, & Hofer, 2005; Hofer et al., in press). We suppose that the relation between value preferences and

choice of activities is at least partially transferred by the tendency to procrastinate. A lot of academic activities are performed for their positive future consequences rather than their immediate positive appeal (e. g. Husman & Lens, 1999). In contrast, leisure activities are dominantly characterised by their immediate positive rewards (Schmid et al., 2005). Therefore, students with pronounced modern values should display lower academic procrastination because they are focussed on future goals e.g., learning for a forthcoming exam. Since they are used to delayed reinforcement they do not care about missing instant incentives (Jackson, Fritch, Nagasaka, & Pope, 2003). Conversely, students appreciating post-modern values tend to focus on immediate rewards. Thus, they are expected to show a higher tendency to postpone learning activities in favour of leisure activities.

Since most students appreciate both value orientations, they try to achieve a multitude of goals in parallel. This fact seems to be important when dealing with academic procrastination. There is empirical evidence for a positive relation between the amount of role conflict students experience and academic procrastination. If students feel torn between academic tasks and interpersonal relationships they tend to procrastinate academic work (Senécal, Julien, & Guay, 2003). Besides, studies show negative correlations between the amount of time adolescents spent on leisure activities and the time they spent on learning for school. This can be interpreted as a competition between school and leisure goals (Alsaker & Flammer, 1999; Fuligni, Yip, & Tseng, 2002). Given that students strive for multiple goals and given the constraint of limited time resources it is of no surprise that motivational conflicts arise. Students are confronted with a bundle of attractive activities they might want to get engaged in. A study by Fries et al. (2005) showed that adolescents quite often reported conflicts between school and leisure activities, between different school tasks, and, even more frequently, between different leisure activities. If students are confronted with a motivational conflict between a learning task and a leisure activity they have two options. They can decide for the leisure alternative and postpone learning. In this case, learning time will probably be

reduced and the quality of academic outcomes will suffer. Or they stick to their learning goal and turn the leisure option down. In this case, there is evidence that students experience motivational interference during learning, hence displaying impaired learning regulation (Hofer et al., in press) and worse learning results (Fries & Dietz, 2006).

Students' decisions in motivational conflicts are determined by their value orientations. Students with a predominant modern value orientation tend to choose the academic task whereas students with high post-modern value orientation prefer the leisure alternative (Fries et al., 2005). However, the relation between students' values and choice should be mediated by procrastination. Modern values should be negatively connected with procrastination whereas post-modern values should be positively connected. To procrastinate can be regarded as a failure of shielding the focal goal effectively against temptations. Therefore, in case of motivational conflicts procrastinators will easily postpone learning and give in to the tempting leisure activity. Dewitte and Schouwenburg (2002) studied procrastinators when preparing for the final exam in an obligatory but unpleasant course (educational statistics). The authors showed that procrastinators in fact reported to postpone their learning intentions more often because of fun alternatives than punctual students did. Thus, there seems to be a relation between students' general tendency to procrastinate academic work and their decisions in motivational conflicts, which might account for the finding of procrastinators' little time investment in academic studying.

Learning routines, procrastination and decision in motivational conflict

In addition, the amount of time structure is considered as a relevant determinant of procrastination. In the literature the result is well established that procrastinators incorporate less structure in their time use and that they tend to shift between activities (Bond & Feather, 1988; Chu & Choi, 2005, Jackson et al., 2003, Vodanovich & Seib, 1997). Concerning academic tasks, procrastination will presumably be higher when students are allowed to

arrange the time slots for various activities by themselves. With regard to adolescents in the Dutch society, Boekaerts (2003) points to the fact that adolescents receive relative autonomy concerning the organization of their goal pursuit.

We assume that students who highly appreciate modern values prefer a rather fixed structure concerning their daily activities. Since they are geared to achieving their long-term goals, they need to plan their activities in advance. Planning includes having specific and often regular time slots for the activities. When students organize their daily academic routines (e. g. doing their homework) within a fixed schedule, their academic procrastination should be lower since planning renders the initialization of the intended activity more likely. Conversely, students appreciating post-modern values are expected to prefer spontaneous decisions about what to do next. They adapt their choice of activity to the situation and their momentary state of mood avoiding planning as much as possible. When they are given high degrees of freedom in arranging their timetable they should have a higher tendency to procrastinate academic activities, especially if the learning task is associated with little positive experience.

A daily routine for learning activities will lower the temptation of delaying unpleasant tasks by reducing motivational conflicts. Students who are used to run their day according to routines will experience fewer conflicts between opposing alternatives because the decisions are delegated to the routine (Wood, Quinn & Kashy, 2002). Fixed time slots for learning activities should function as implementation intentions making the initialization of the planned activity more probable (Gollwitzer, 1999). There is evidence for positive consequences of structured activities by studies examining the relation between adolescents' leisure activities and their academic and personal development. The authors found that participation in structured leisure activities is positively related to a variety of indices of personality development as well as academic achievement in school (Zaff, Moore, Papillo, & Williams, 2003; Barber & Eccles, 1999). One cause for the positive relation might be that a

structured daily routine offers less potential for motivational conflicts, and hence for deciding against learning tasks when leisure activities are alluring.

A model relating procrastination to students' values, learning routines and motivational conflict

According to the foregoing arguments, the following model will be tested. Individual values are related to academic procrastination and usage of time routines for academic learning. Students high in post-modern value orientations and students low in modern value orientations score higher in procrastination. This association between students' values and procrastination is transferred by the amount of routines students establish concerning their learning activities with high structure having a dampening effect on procrastination. Procrastination, in turn, predicts the alternative students choose in a scenario depicting a conflict between learning and leisure goals. Procrastinators tend to choose the leisure activity more often at the expense of the school related task. Therefore, procrastination is viewed as a construct that mediates between value orientations and choice. In addition to these indirect effects from values to decision, the model also includes direct effects. Value orientations are expected to have a direct effect on the decision in the motivational conflict since choice preferences depend on individuals' value preferences. Besides, the amount of routine for academic tasks is associated with a preference for the learning alternative.

Method

Sample

Participants were 704 students (48.4% male and 51.4 % female) from nine schools in Ludwigshafen (German city of middle size). The sample included 29.5% of students with immigrant background. Students attended the sixth (43.8%) and eighth (56.3%) grade (mean age: 13.5 years; $SD = 1.3$). They came from different tracks within the German school system: 38.2% attended the highest school track (Gymnasium), 21.7% a middle school track (Real-

schule), and 40.19% the lowest track (Hauptschule). All students participated in the study voluntarily.

Procedure

The students answered a questionnaire containing the relevant instruments as well as some other scales unrelated to the questions under study. The questionnaire was administered during two consecutive regular school lessons, with no teachers being present. Students were instructed by a trained investigator and worked on their own. They were told that the goal of the study was to learn about their attitudes and feelings toward school, leisure, and life in general. Anonymity of all data was ensured.

Variables

Value portraits. Modern and post-modern value orientations were measured by two descriptions of students representing prototypes with regard to their value orientations (cf. Fries et al., 2005). The instrument consisted of two comprehensive portraits of students with different value orientations. The portrait for the modern value prototype depicted a student who has clear goals, struggles through uncomfortable tasks and wants to achieve something in life. The portrait for the post-modern value prototype described a student who spends a lot of time with friends, loves diversion and spontaneous activities, and wants to have fun in life. Participants were asked to evaluate these fictitious characters concerning their similarity to themselves on a six-point rating scale. The prototypes were presented in gender congruent versions. The retest-reliabilities of the value portraits were analysed in an independent study ($n = 54$) with an interval of two weeks between both measurements. The reliabilities turned out to be $r_{tt} = .57$ and $r_{tt} = .71$, respectively. These retest-reliabilities might be considered as sufficient for a single-item measure.

Academic procrastination. To assess academic procrastination, a self-constructed scale was used, which measured avoidance of tasks in the field of academics (Ferrari, Johnson, &

McCown, 1995). It comprised five items (e.g., “Even when I planned to work for school I am not able to get started.”, “For exams I do not learn until the last moment.”). All items were rated on a four-point scale ranging from “completely right” to “completely wrong”. The internal consistency of this scale was $\alpha = .71$.

Learning routines. To measure the degree students rely on daily routines concerning their academic work, a scale containing four items (e.g., “I do my homework at times fixed in advance.”) was constructed. The internal consistency of the scale was $\alpha = .69$.

Decisions in motivational conflicts. Two scenarios describing concrete conflict situations were used (cf. Feather, 1995). These scenarios consisted of descriptions of conflict situations involving school- and leisure activities. The first scenario contrasted the activities “learning for an exam” and “meeting friends”:

“Imagine you are sitting at your desk and are about to start learning for an upcoming exam, as the telephone rings. One of your friends is calling to ask, whether you want to join him and others to do something. He’s about to drop by and pick you up.”

In the second scenario, the activities “doing homework” and “watching TV” were contrasted. The students had to indicate on a four-point rating-scale how they probably would decide (e.g., “definitely meet my friends”, “rather meet my friends”, “rather study”, “definitively study”). The retest-reliabilities for the decisions in the conflict situations were determined in the same independent study ($n = 54$) as the reliabilities for the value prototype measure. They turned out to be $r_{tt} = .64$ and $r_{tt} = .69$ respectively for the two scenarios.

Results

In Table 1 means and standard deviations of the variables are presented. Gender differences were negligible, whereas age differences show that 6-graders appreciate achievement values more than the 8-graders. The younger students also reported more procrastination as well as

stronger learning routines. In addition, there was a stronger tendency for older students to decide in favour of the leisure activity in case of a motivational conflict. Concerning students from different school tracks there was a difference in procrastination with students from the Gymnasium (highest track) reporting less procrastination than students from Realschule (middle track) and Hauptschule (lowest track). Table 2 shows the correlations between the manifest variables. As can be seen in Table 2 all postulated relations were significant and pointed into the expected direction.

Insert Tables 1 and 2 about here

The proposed relations were tested using structural equation modelling. Figure 1 shows the model with standardized path coefficients. It consists of two manifest exogenous variables representing the value portraits for modern and post-modern and three latent variables representing the constructs of procrastination, learning routines and decision in motivational conflict. The items of the scales procrastination and learning routines were aggregated to form two item parcels for each scale that served as indicators for the latent variables. Each item parcel consisted of two or three randomly combined items. The use of item parcels was chosen to allow for an additional multi-group model comparing students from different school tracks. Since the smallest sample (Realschule) consisted of $n = 151$ students the number of indicators had to be reduced to eight measured variables in order to ensure a reasonable indicator to participant ratio, which should result in more reliable and valid indicators (Bentler & Chou, 1987). In addition, parcelling decreases the effect of item's idiosyncrasies (cf. Little, Cunningham, Shahar & Widaman, 2002; Marsh, 1992). For the latent variable "decision in motivational conflict" two indicators were specified representing the decisions in the conflict scenarios.

The paths connecting the variables were established following the proposed relations between the theoretical constructs. Since value orientations are expected to influence the attitude towards procrastination and the amount of structuring time usage there were paths

drawn pointing from students' values to the latent constructs of procrastination and learning routines. Moreover, we expected the amount of learning routines to be negatively related with procrastination, with a highly structured day reducing the risk of delaying schoolwork. The decision in motivational conflicts should depend on student's tendency to procrastinate as well as on the learning routines. Besides, we postulate direct effects from value orientation to the decision of activities with post-modern value orientation being negatively related to the choice of a learning activity and modern value orientation being positively related to the initiation of learning in a conflict situation. The reported structural equation model was first tested with the whole sample of $n = 704$ students. As a second step a multi-group analysis was run which differentiated between the school tracks thus testing for the suitability of the model for the subgroups. All analysis were calculated with AMOS 5.0 (Arbuckle, 2003) on the basis of the covariance matrices of the manifest variables using maximum likelihood estimation. Missing values were handled by the FIML-procedure implemented in AMOS 5.0 (Arbuckle, 1996). The proportion of missing values was rather low, ranging from 0.3 to 2 % for the items included in the analysis.

Insert Figure 1 around here

The overall fit of the specified model was rather convincing ($\chi^2 = 27.03$, $df = 12$, $p = .008$). The fit values indicated a reasonable adaptation to the empirical data with TLI = .968, CFI = .989 (cut-off criteria $>.95$) and RMSEA = .042 (cut-off criteria $< .06$; cf. Hu & Bentler, 1999).

As the results in Figure 1 show, there was a differential link between the modern and post-modern value orientation concerning their relation to procrastination, learning routines and decision. Whereas modern value orientation went together with a preference for a highly structured day (.34; $p < .01$), the opposite was true for post-modern value orientation.

Students emphasizing post-modern values preferred less learning routines gaining opportunities for spontaneous activities ($-.20; p < .01$). As far as the relation between value orientation and procrastination is concerned, there was no substantial link between modern value orientation and procrastination ($.02; ns$), whereas the appreciation of post-modern values was significantly related to the tendency to delay academic work ($.24; p < .01$). As proposed, the association between value orientations and procrastination was mediated by the amount of structure for doing academic tasks with learning routines being negatively related to the tendency for procrastination ($-.54; p < .01$).

In addition, we found the expected significant relation between procrastination and students' choices in conflict situations. The higher the tendency to delay academic work the more probable a student would choose the leisure activity and turn the learning alternative down ($-.29; p < .01$). And there was also the expected relation between the amount of learning routines a student had established for his schoolwork and his decision in conflict situations: more structure was positively associated with the decision for academic tasks while missing the leisure activity ($.52; p < .01$). Thus, when experiencing a conflict between learning and leisure activities low procrastination and high structure made the initialisation of school-related tasks more probable. Moreover, we found the proposed direct links between modern and post-modern values and choice in conflict situations with modern value orientation being positively related to choosing the learning alternative ($.14; p < .05$) and post-modern value orientation being negatively related to a decision towards academics ($-.21; p < .05$).

As described above, there were significant differences between the amounts of procrastination reported from students of different school tracks. Whereas students from the lowest track (Hauptschule) and the middle track (Realschule) seem so suffer more from putting academic tasks off, students from the highest track (Gymnasium) reported the least problems with procrastination. These differences raise the question whether it is only the

means that differ between students from different tracks and whether the proposed model holds within the different groups. Therefore, a multi-group-analysis was run in addition to the general model. The multi-group model consisted of three groups representing the different school tracks: Hauptschule ($n = 277$), Realschule ($n = 151$) and Gymnasium ($n = 269$). Given our main research question regarding the general associations between value orientations, learning routines, procrastination and decisions in school-leisure conflicts we compared a first model with measurement weights (factor loadings) and structural weights (factor intercepts) set equal in all groups. The results clearly supported the hypothesis of comparable relations between the relevant constructs ($\chi^2 = 70.58$, $df = 60$, $p = .17$; CFI = .99; TLI = .98; RMSEA = .016). A second model was calculated with also the latent regression paths being set equal. Although compared to the first model the second model's fit decreased significantly ($\chi^2_{diff} = 48.42$, $df_{diff} = 6$, $p = .00$), the overall fit of the second model was still acceptable ($\chi^2 = 118.99$, $df = 66$, $p = .00$; CFI = .96; TLI = .94; RMSEA = .034). However, if the means of the latent variables of the school track groups were also set equal (model 3), the model's fit did not only decrease significantly but the third model's fit was not acceptable anymore ($\chi^2 = 171.9$, $df = 72$, $p = .00$; CFI = .93; TLI = .89; RMSEA = .045). These comparisons of the different multi-group models reflect the comparability of the overall structure of the relevant constructs whereas the value characteristics of the constructs differ considerably between students from different school tracks.

Taken together, the results support the idea that value orientations and decision in motivational conflicts are linked through the tendency to procrastinate and the amount of learning routines for academic tasks. The tolerance to put off academic tasks in favour of engaging in leisure activities seems to be effected via two tracks: First there is a direct link from modern and post-modern value orientation to the decision in a school-leisure conflict with students holding post-modern values being more prone to choose leisure activities and postpone school related tasks. And second, school-leisure decisions are indirectly connected

with student's values via the amount of learning routines and students' general tendency to procrastinate academic tasks. Interestingly, the same model holds across different school tracks, proposing a general pattern, which is independent of the educational level.

Discussion

In the study reported, the relations between individual values, academic procrastination, learning routines and motivational conflicts were explored. The idea underlying the research states that procrastination represents a link between the value orientations a student has and the decision he/she takes when a temptation like an attractive leisure activity appears while the student actually wanted to initiate learning for school. In the structural equation model the postulated relations were supported for the whole sample as well as for the subgroups representing the different school tracks of the German educational system. Post-modern value orientation (not, however, modern value orientation) was positively linked to academic procrastination, whereas procrastination was negatively related to the decision for learning in motivational conflicts. Furthermore, both value orientations were differentially related to structured learning routines and to decisions in motivational conflicts.

These results add knowledge to the theoretical network of procrastination in adolescence and they also shed a light on its possible cultural roots. In Western countries adolescents spend a lot of time on divergent leisure activities (cf. Larson & Verma, 1999). They develop hobbies and interests inside and outside school. In addition, economic prosperity, political stability, and consumer orientation foster the development of post-modern values (cf. Inglehart, 1997). A post-modern value orientation may in turn contribute to difficulties in shielding a focal long-term goal from a tempting alternative. Studies support the assumption that procrastinators are generally willing to learn but they seem to struggle with shielding the learning activity against more attractive alternatives and have problems in

concentrating during their study activities (Dewitte & Schouwenburg, 2002, Dewitte & Lens, 2000, Harriott & Ferrari, 1996). Generally speaking, procrastinators seem to have difficulties in balancing their time between different life areas (Boniwell & Zimbardo, 2004). If we agree to consider Western societies as leisure societies (Schulze, 2005) emphasizing spare time and enjoyment, and to view individual value orientations as rooted in culture, procrastination should be a phenomenon that is especially prevalent in the Western societies. It has been shown that chronic procrastination has a rather high prevalence in English speaking Western countries (Ferrari, O'Callaghan, & Newbegin, 2005), especially among young people. Unfortunately, there has not been any attempt for cross-cultural comparisons concerning the prevalence rates of procrastination yet.

Why are present impulses more attractive for procrastinators than learning? The concept of "framing" (Kahneman, 2003) points to the fact that people tend to overweigh outcomes that are certain over outcomes of high or intermediate probability. Thus, in a motivational conflict the attractiveness of the leisure activity overweighs the attractiveness of the learning activity since the enjoyment is considered certain whereas the attainment of the good grades is uncertain. Research also shows that in making distant-future plans, individuals seem to consider each activity in isolation and fail to take into account that each activity they plan comes at the expense of some other activities they may want to engage in at the same time (Lieberman & Trope, 1998). Thus, procrastinating behaviour might be connected with the false hope that in the distant future compared to the near future there will be no competition between different goals and, in consequence, no motivational conflict.

Of special interest is the result that the amount of learning routines did not only positively influence decisions in motivational conflicts via procrastination, but also had an additional direct effect on decisions favouring the learning alternative. The central role of structured learning routines points to a possible way of limiting the damaging effects of procrastination in situations of motivational conflict. Results show that students reporting

more structure in their usage of time have better study habits (Dipboye & Phillips, 1990). The results could have implications for schools, in particular for high-risk students. Limited self-control has been shown repeatedly to be a factor influencing academic achievement beyond cognitive abilities thus causing underachievement (Tangney, Baumeister, & Boone, 2004; Duckworth & Seligman, 2005). Although we did not include a measure of academic achievement in the reported study we may at least state that establishing learning routines seems to support the decision for engaging in an academic tasks when attractive alternatives are also present. The decision for the academic tasks might be regarded as a first essential step in the way to academic achievement. Thus, students with low self-regulation competencies could be trained for a better handling with immediate and concrete impulses by establishing fixed daily routines for their learning and leisure activities. A structured course of the day might facilitate to turn tempting alternatives down and avoid the postponement of academic tasks. Students high in procrastination should especially benefit from time management strategies (cf. Perels, Görtler, & Schmitz, 2005) concerning their academic goal striving.

Although the results of the study give way to the described implications it should be taken into account that all measures used in this study were based on self-reports. Their validity for real life behavior might be questioned in terms of social desirability. For instance, in the scenario representing a school-leisure conflict, students might misreport about what they would actually do. The cross-sectional character of this study is a further limitation, which is especially relevant for the role values play in the motivational process. Individual values can be also conceptualized as outcome variables. Following Bem's theory of self-perception (1972) one can argue that students observing themselves as avoiding planning, as delaying important but tedious work, and in case of school-leisure conflicts as deciding mostly for the leisure option, might come to the conclusion that they prefer post-modern values. Future research including longitudinal and experimental methods can bring clarity to this issue. Given that procrastination is regarded as a failure in learning regulation that

ultimately should result in impaired learning outcome, further studies should include also measures of academic achievement.

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Table 1. Descriptives for value preferences, procrastination, learning routines and decisions in conflicts by gender, grade of participants and school type

Measures	Mean (general)	Mean Boys (n=337)	Mean Girls (n=360)	<i>t</i>	<i>p</i>	Mean 6 th Grade (n=307)	Mean 8 th Grade (n=391)	<i>t</i>	<i>p</i>	Mean Haupt- schule (n=279)	Mean Real- schule (n=150)	Mean Gym- nasium (n=267)	<i>F</i>	<i>p</i>
1) Achievement value portrait	3.43 (1.22)	3.45 (1.28)	3.41 (1.15)	-.484	ns	3.56 (1.17)	3.33 (1.24)	2.45	.014	3.34 (1.39)	3.56 (1.17)	3.43 (1.01)	1.76	ns
2) Well-being value portrait	2.83 (1.43)	2.85 (1.49)	2.80 (1.38)	-.466	ns	2.78 (1.46)	2.86 (1.41)	-.739	ns	2.94 (1.54)	2.70 (1.48)	2.78 (1.28)	1.63	ns
3) Academic procrastination	1.67 (.64)	1.64 (.64)	1.70 (.65)	1.10	ns	1.79 (.65)	1.57 (.62)	4.56	.000	1.46 (0.64)	1.35 (0.69)	1.19 (0.59)	12.9	.000
4) Learning routines	1.62 (.48)	1.63 (.46)	1.61 (.49)	-.512	ns	1.75 (.45)	1.51 (.47)	6.55	.000	1.79 (0.75)	1.75 (0.77)	1.67 (1.71)	1.92	ns
5) Decision 1: Homework vs. Television	1.51 (.92)	1.50 (.95)	1.52 (.90)	.219	ns	1.25 (.86)	1.71 (.92)	-6.77	.000	1.12 (0.88)	1.18 (1.78)	1.17 (1.75)	0.30	ns
6) Decision 2: Learning for exam vs. Meeting friends	1.45 (.95)	1.55 (.96)	1.35 (.94)	-2.84	.005	1.26 (.89)	1.59 (.98)	-4.59	.000	1.65 (1.01)	1.38 (0.95)	1.29 (0.86)	10.4	.000

Note: Decisions were coded in the following way: High values indicated the choice of the learning activity whereas low values indicated the choice of the leisure alternative.

Table 2. Correlations between value preferences, procrastination, learning routines and decisions in motivational conflicts

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Achievement value	1	-.38**	-.31**	.35**	-.33**	-.38**
(2) Well-being value		1	.39**	-.29**	.32**	.42**
(3) Academic procrastination			(.71)	-.44**	.42**	.44**
(4) Learning routines				(.69)	-.44**	-.45**
(5) Decision 1: Homework vs. Television					1	.42**
(6) Decision 2: Learning for exam vs. Meeting friends						1

Note: In the diagonal the internal consistencies of the scales are presented (in brackets).

Caption Figure 1: Structural equation model relating procrastination to students' values, learning routines and motivational conflict

Figure 1

