

## The Relationship of Self-control, Procrastination, Motivational Interference and Regret with School Grades and Life Balance

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### Abstract

In this study, self-control, procrastination, motivational interference, and regret are regarded as determinants of school grades and of life balance (defined as the experience of a subjectively balanced life). Dealing with tasks in the academic field and in various other life arenas is typical for adolescents. The predictors are regarded as relevant for handling multiple alternative activities. Self-control is seen as a resource associated with positive outcomes in people's lives. The other variables are seen as tightly associated with handling multiple alternative activities in goal conflicts. The sample consisted of 348 tenth graders who completed a questionnaire during regular school lessons. Results of regression analyses showed that self-control was a significant predictor of school grades and life balance, while procrastination was only related to school grades, and that motivational interference as well as regret were associated with life balance. The significance of this differential pattern for adolescents' lives is discussed.

**Keywords:** School grades, life balance, self-control, procrastination, motivational interference

*Der Zusammenhang von Selbstkontrolle, Prokrastination, motivationalen Interferenz und Bedauern mit Schulnoten und Lebensbalance*

### Zusammenfassung

Eine typische Herausforderung für Jugendliche ist die Bewältigung von Aufgaben im akademischen Bereich und verschiedenen anderen Lebensbereichen. Die vorliegende Arbeit betrachtet Selbstkontrolle, Prokrastination, motivationale Interferenz und Bedauern nach einer getroffenen Entscheidung als Determinanten von Schulnoten und Lebensbalance. Diese Prädiktoren werden für die Bewältigung multipler Handlungsalternativen als relevant angesehen. Während Selbstkontrolle als generelle Ressource betrachtet wird, die mit verschiedensten positiven Ergebnisvariablen in Verbindung steht, werden die anderen drei Determinanten in Zusammenhang mit dem Umgang mit Konflikten bei multiplen Handlungsalternativen gesehen. An der Studie nahmen 348 Zehntklässler teil, die während der regulären Unterrichtszeit einen Fragebogen ausfüllten. Die Ergebnisse der Regressionsanalyse zeigten, dass Selbstkontrolle ein signifikanter Prädiktor für Schulnoten und Lebensbalance war, wohingegen Prokrastination nur mit Schulnoten zusammenhing und motivationale Interferenz sowie Bedauern mit Lebensbalance verknüpft waren. Die Bedeutung dieses differenziellen Musters wird im Hinblick auf die Lebensbewältigung von Jugendlichen diskutiert.

**Schlagworte:** Schulnoten, Lebensbalance, Selbstkontrolle, Prokrastination, motivationale Interferenz

## 1 Introduction

It is important to note that students sometimes feel torn between several alternatives which cause them to not be able to carry out the things they would like. One way of looking at this phenomenon is to assume that students operate within various life contexts that put different demands on them and in which they are under pressure to try to accomplish multiple goals (cf. *Hofer/Peetsma* 2005; *Luthar* 2003; *Senécal/Julien/Guay* 2003). The relevance of pursuing goals in various life arenas is well known in the field of developmental psychology (cf. *Havighurst* 1974), and is occasionally referred to in educational psychology (cf. *Lens et al.* 2005). Although school and academic achievement are highly important in the life of students, it might be helpful if research takes into account goals of other areas of a student's life, as well, because these goals can influence each other and may come into conflict (cf. *Boekaerts/Koning/Vedder* 2006; *Kuhnle/Hofer/Kilian* 2010a). We regard life balance as an important variable in youth research and educational psychology similarly. It can be regarded as an indicator of life satisfaction because it displays how well individuals perceive their performance in appropriately allocating time when attempting to achieve various goals among the different areas of their lives (cf. *Gröpel/Kuhl* 2006). Thus, in the current study, we searched for possible predictors of school grades and life balance.

Self-control is included as one predictor, and is assumed to be a resource relevant to synchronizing the demands of several life areas and pursuing a chosen goal successfully. Procrastination, motivational interference, and regret are included as further determinants because they indicate how students handle multiple alternative activities.

### 1.1 Academic achievement and life balance as educational goals

Academic achievement in terms of school grades or classroom achievement is one of the main variables investigated within psychological research. Indicators of academic achievement are of major importance as they are useful predictors of life success, e.g., university performance (cf. *McKenzie/Schweitzer* 2001) and later salary (cf. *Roth/Clarke* 1998). Particularly during the last decade, international comparisons such as the PISA-study further accentuated a one-sided view of these outcome variables (cf. *Baumert et al.* 2001). However, taking into consideration the concrete life circumstances in which students live, other aspects should also be taken into account as desirable outcome variables. Children and adolescents have to solve age specific tasks in several different contexts of life in order to successfully master their development (cf. *Dreher/Dreher* 1985; *Havighurst* 1974). Resources like time and energy are restricted (cf. *Goode* 1960; *Riedinger/Freund* 2004) and the integration of school-work and leisure is also a critical task during this period (cf. *Hofer et al.* 2007). Therefore, adolescents' success in different areas of life seems to be an outcome variable worth investigating. The construct of life balance is seen as an indicator of this, as it reflects students' perception of an appropriate allocation of time across various life arenas. Imbalance occurs whenever there is an over- or under-devotion of time to a particular area. Different activities can be distinguished in subjective importance and can require different amounts of time; therefore, within the definition of life balance, an unequal distribution of time may occur. Role conflicts, for example, between work and family, can create inter-role conflicts and cause work-family

balance to be at risk (cf. *Gröpel/Kuhl* 2006). Achieving life balance seems to be important for a person's well-being. For instance, work-family balance is shown to be associated with general life satisfaction and quality of life (cf. *Greenhaus/Collins/Shaw* 2003; *Gröpel* 2005; *Senécal/Vallerand/ Guay* 2001). In contrast, the construct of life balance is just beginning to come under investigation in youth research.

Under the perspective of students having to handle tasks in different areas of life, we are interested in variables that possibly could act as determinants of academic success and life balance. Four variables related to the management of multiple alternative activities are incorporated. Self-control is considered as a capacity that generally supports setting appropriate goals and attaining them successfully. In addition to this resource, we take a look at variables related to maladaptive handling of options at various action phases. Procrastination describes the postponement of an academic activity before it is carried out, motivational interference describes the experienced disturbance during the activity, and regret denotes the negative cognitive emotion afterwards. Historically, students have been faced with an increasing number of options where the coordination of these options seems to be at stake (cf. *Gergen* 1991; *Schwartz* 2004). The theory of motivational action conflicts (cf. *Schmid et al.* 2005) builds a framework for the maladaptive handling of several alternatives, postulating that when an adolescent decides for one option in a school-leisure conflict, the incentives of the non-chosen alternative can interfere with the actual performed activity. Such experiences are expected to impair life balance and school grades.

## 1.2 Self-control capacity as a resource in handling multiple alternatives

The strength model of self-control states that several different processes (e.g. emotional regulation, thought or impulse control) which lead to positive, desirable outcomes, rely on one restricted resource (cf. *Baumeister et al.* 2006; *Schmeichel/Baumeister* 2004). Baumeister and colleagues (cf. *Baumeister* 2002; *Baumeister et al.* 1998) define self-control as an individual's ability to alter states and responses including thoughts, feelings, and actions. Self-control capacity as a personality variable is seen as relevant for goal selection, goal pursuit, and goal disengagement (cf. *Wrosch/Freund* 2001). It has been shown that individuals with a strong capacity to control themselves are better at task performance and also have higher interpersonal success (cf. *Tangney/Baumeister/Boone* 2004). The authors additionally indicate that "a high personal capacity for self-control should be powerfully adaptive and should enable individuals to live happier, healthier lives" (p. 272).

Self-control has been associated with successfully managing developmental demands during the course of life (cf. *Wrosch/Freund* 2001). There is also evidence that adolescents high in self-control report fewer school-leisure conflicts and higher lifebalance, suggesting that they are better able to coordinate their goals (cf. *Kuhnle et al.* 2010a; *Kuhnle/Hofer/Kilian* 2010b). Finally, self-control capacity is considered as a predictor of students' academic achievement (cf. *Duckworth/Seligman* 2006; *Shoda/Mischel/Peak* 1990; *Wolfe/Johnson* 1995). As such, it resembles self-regulated learning (cf. *Zimmerman* 2008). But whereas the concepts developed within the self-regulated learning research describe strategies ideally associated with competent learning processes (cf. *Zimmerman* 2008), self-control is seen as a generalized capacity relevant for success in several life arenas (cf. *Baumeister* 2002; *Baumeister et al.* 1998).

Hence, we regard self-control capacity as a critical factor in adolescents' handling of multiple goals, especially as temptations and obstacles increase (cf. *Mischel/Ayduk* 2002). As adolescents high in self-control are expected to better coordinate the demands of several life arenas in the face of limited resources, it is reasonable to assume that they display better academic achievement and also report a more balanced life. Thus, it is expected that self-control is positively associated with better school grades (H1a) and the experience of a balanced life (H1b).

### 1.3 Academic procrastination

Academic procrastination is usually defined as the tendency to delay the beginning and/or completion of an academic task (cf. *Ferrari* 1998; *Senécal et al.* 2003). *Lay* (1995) defines the characteristic as an extension of the temporal sequence between intentions and corresponding goal directed behavior. In accordance with this definition, it is conclusive that in numerous studies, procrastination is shown to be associated with poor academic performance (cf. *Akinsola/Tella/Tella* 2007; *Orpen* 1998; *Tice/Baumeister* 1997; *Wesley* 1994). It seems to be most likely that it is not intelligence differences, but rather procrastination behavior, that is responsible for this relationship with achievement (cf. *Ferrari* 1991; *Tice/Baumeister* 1997). Furthermore, procrastination is associated with depression and anxiety (cf. *Saddler/Sacks* 1993; *Solomon/Rothblum* 1984), dejection (cf. *Lay* 1995), and stress (cf. *Flett/Blankstein/Martin* 1995). Students suffer not only from the subjective discomfort of academic procrastination (cf. *Ferrari* 1998), but also from the negative consequences of procrastination such as higher stress and more illnesses toward the end of semester (cf. *Tice/Baumeister* 1997). A higher level of academic procrastination is likely to be associated with conflicts between academic and interpersonal roles (cf. *Senécal et al.* 2003). Based on these findings, we postulate that the delay behavior found in academic procrastination is connected with the subjective experience of a less balanced life. Thus we expect that higher academic procrastination is associated with worse grades (H2a) and with a diminished experience of life balance (H2b).

Self-control has been shown to be a good predictor of procrastination (cf. *Ferrari/Emmons* 1995; *Senécal/Koestner/Vallerand* 1995; *Steel* 2007). Individuals obviously procrastinate because they cannot control their behavior and prefer to follow short-term pleasurable activities rather than sticking to their overarching goals (cf. *Ferrari/Emmons* 1995; *Tice/Baumeister* 1997). Thus, we tested whether the relationship between self-control and school grades is partially mediated by students' tendency to procrastinate academic tasks (H3).

### 1.4 Motivational interference

On the assumption of restricted time resources and the possibility of two or more activities associated with negatively interdependent goals being possible at the same time, students are quite often in situations of motivational conflicts (cf. *Hofer* 2004; *Hofer et al.* 2007; *Reinders* 2007). The mere knowledge of an alternative action, such as the prospect of meeting friends, can interfere with a learning activity that is actually being performed (cf. *Fries/Dietz* 2007). This phenomenon of motivational interference represents a destabilization on the behavioral, cognitive, and affective level (cf. *Schmid et al.* 2005). Moti-

vational interference can be experienced during school and during leisure tasks (cf. *Hofer et al.* 2010). The temptation of an attractive or important activity can interfere with a performed task and, therefore, has adverse effects on the actual performance *and* the subjective experience of the performance (cf. *Fries/Dietz* 2007; *Fries/Schmid* 2007). Since students that feel torn between several alternative activities are less able to pursue one single activity properly, we postulate that motivational interference is negatively related to good school grades (H4a) and also to the diminished experience of life balance (H4b).

## 1.5 Regret

Post-decisional regret as a personality variable is often defined as a negative emotion that results when we realize that we should have decided differently (cf. *Van Dijk/Zeelenberg* 2005). It entails cognitive appraisals with strong emotional components (cf. *Gilovich/Medvec* 1995; *Landman* 1993). This aversive feeling is quite common (cf. *Landman* 1993) and influences the day-to-day behavior of individuals (cf. *Van Dijk/Zeelenberg* 2005; *Zeelenberg/Inman/Pieters* 2001). The attempt to avoid future regret can have positive effects, for example, when decision quality is improved by learning from former mistakes. Avoiding regret can also be counterproductive when decisions are delayed or prevented. If inaction is favored over action, omission bias may occur (cf. *Gilovich/Medvec* 1995; *Zeelenberg/Pieters* 2007). After the experience of regret following a learning activity, students may favor a concurrent leisure activity (cf. *Kuhnle/Sinclair* 2010). Therefore due to the anticipated detrimental effects of regret about studying, a negative relationship of regret and school grades is expected (H5a). Furthermore, regret is also assumed to be negatively related to life balance. This is because the experience of having allocated restricted time resources to an activity in which the decision is challenged afterwards should lead to the experience of a diminished life balance (H5b).

## 2 Method

### 2.1 Sample

The sample consisted of 348 students (45.2% male and 54.8% female) from the 10<sup>th</sup> grade. Their mean age was 15.24 (*SD*=0.66). The sample included participants from 16 classes from four German schools (Gymnasium). The questionnaire was administered during two regular school lessons with two trained instructors present, but no teachers. The participants were instructed to ask whenever they had a question. Anonymity of all data was ensured and the students participated voluntarily.

### 2.2 Variables

*School grades.* Students recorded their school grades from their last report card in five school subjects (English, German, Physics, Mathematics, and History). In order to gain a broad variable for school achievement, the mean of these five grades was calculated for

each student. School grades ranged from one to six. Grades are coded so that lower values indicate better results.

*Life balance.* Life balance was measured with 16 items from a student adapted version of the Life Balance Checklist (LBC; e.g. *Gröpel/Kuhl* 2006). These items measure the subjective appropriateness of time spent in different life areas. These areas include: work/achievement (e.g. “school”), social contact/relationships (e.g. “meeting friends”), health/body (e.g. “sports”), and the category of meaningfulness of life (e.g. “think about the future”). A total score was calculated. The original ten-point rating scale of the LBC was reduced after a pilot study with an adolescent sample. Students answered on a nine-point scale ranging from “too little time” to “too much time”, with one point being given for the maximum inappropriateness of time. The middle of this scale was explicitly labeled as “appropriate time”, and five points were assigned here. In sum, high values of the life balance scale indicate a subjectively appropriate use of time.

*Self-control.* Measuring dispositional self-control capacity, the translated and validated German brief version (cf. *Bertrams/Dickhäuser* 2009) of the original Self-Control Scale by *Tangney et al.* (2004) consisting of 13 items, was used (e.g. “I am able to work effectively toward long-term goals”). Items were rated on a five-point scale anchored from 1 (“not at all like me”) to 5 (“very much like me”).

*Procrastination.* A scale of five items was used to measure academic procrastination (e.g. “For exams I do not learn until the very last moment”). This scale has already been used in *Dietz/Hofer/Fries* (2007) and measures the avoidance of tasks in the field of academics. The students rated the statements on a five-point scale ranging from 1 (“completely wrong”) to 5 (“completely right”).

*Motivational interference.* Students described a recently experienced conflict between a school and a leisure activity. Students were then asked how they decided in this situation, and 16 items about cognitive, affective, and behavioral aspects of student’s behavior were employed to gauge the experience during this situation (e.g. “During the activity I was easily distracted”, “I had the feeling that because I have done this activity, I missed out on another important alternative”, “During the activity, I switched to another activity”) (e.g. *Hofer et al.* 2007). Answers were given on a four-point Likert-Scale ranging from 1 (“not true at all”) to 4 (“totally true”).

*Regret.* Regret was measured with the five items of the validated translated version (cf. *Greifeneder/Betsch* 2006) of the original regret scale of *Schwartz et al.* (2002) (e.g. “Whenever I make a choice, I’m curious about what would have happened if I had chosen differently.”). Students responded on a seven-point scale ranging from 1 (“completely disagree”) to 7 (“completely agree”).

High values on the scales life balance, self-control, procrastination, motivational interference, and regret indicate a high manifestation of the respective variable. Table 1 shows the internal consistencies (Cronbach’s  $\alpha$ ) of these instruments.

Table 1. Descriptive statistics

|                 | Number of items | Cronbach's $\alpha$ | Mean | SD   | ICC   | Design Effect |
|-----------------|-----------------|---------------------|------|------|-------|---------------|
| School grades   | 5               | .80                 | 2.76 | .73  | .14** | 4.01          |
| Life balance    | 16              | .83                 | 3.23 | .71  | .01   | 1.31          |
| Self-control    | 13              | .82                 | 2.92 | .67  | .04*  | 1.98          |
| Procrastination | 5               | .83                 | 3.27 | .92  | .02   | 1.45          |
| MI              | 16              | .89                 | 1.93 | .63  | .00   | 1.01          |
| Regret          | 5               | .74                 | 4.23 | 1.26 | .00   | 1.10          |

Note. MI = Experience of motivational interference during a chosen activity; ICC = Intra-class correlation (estimated in baseline models using HLM 6); Design Effect =  $1 + (\text{average cluster size} - 1) \times \text{ICC}$ .

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

### 3 Results

#### 3.1 Preliminary analyses

Table 1 shows the overall means and standard deviations of the variables. The intercorrelations between the relevant variables in Table 2 show that procrastination was highly correlated with both dependent variables life balance ( $r = -.24, p < .01$ ) and school grades ( $r = .35, p < .01$ ); the same pattern of relevance was shown for self-control (life balance,  $r = .26, p < .01$ ; school grades,  $r = -.35, p < .01$ ). Additionally, regret and motivational interference during a chosen activity seem to be more relevant for life balance (regret:  $r = -.17, p < .01$ ; motivational interference:  $r = -.11, p < .05$ ) than for school grades (regret:  $r = .09, n.s.$ ; motivational interference:  $r = .11, p < .10$ ).

Table 2. Intercorrelations

|                    | 1.               | 2.     | 3.     | 4.    | 5.    | 6. |
|--------------------|------------------|--------|--------|-------|-------|----|
| 1. School grades   | –                |        |        |       |       |    |
| 2. Life balance    | -.12**           | –      |        |       |       |    |
| 3. Self-control    | -.35**           | .26**  | –      |       |       |    |
| 4. Procrastination | .35**            | -.24** | -.67** | –     |       |    |
| 5. MI              | .11 <sup>+</sup> | -.11*  | -.02** | .01** | –     |    |
| 6. Regret          | .09**            | -.17** | -.14** | .16** | .19** | –  |

Note. MI = Experience of motivational interference during a chosen activity

<sup>+</sup> $p < .10$ ; \* $p < .05$ . \*\* $p < .01$ .

### 3.2 Regression analyses

A series of multiple regression analyses was conducted to test the postulated hypotheses. Hierarchical data analyses in a multilevel framework were necessary (e.g. *Raudenbush/Bryk* 2002). Because of the high intra-class correlations (ICCs) and the design effects (cf. *Muthén/Satorra* 1995) of school grades and self-control (see Table 1), the clustered structure of the data had to be taken into account. The ICCs indicate the proportion of total variance that is due to variance between classes. The design effect indicates how much standard errors are underestimated and should not exceed the critical value of 2 (cf. *Hox/Maas* 2001; *Muthén/Satorra* 1995). HLM 6 was used and intercepts were allowed to vary between classes. Table 3 and 4 show the results.

Table 3. Regression model predicting school grades

|                 | $\beta$ | $t$     | $R^2$ | $F$ for $R^2$ |
|-----------------|---------|---------|-------|---------------|
|                 |         |         | .21   | 21.67**       |
| Self-control    | -.14    | -2.01** |       |               |
| Procrastination | .24     | 3.40**  |       |               |
| MI              | .04     | 0.83**  |       |               |
| Regret          | .04     | 0.76**  |       |               |

Note. MI = Experience of motivational interference during a chosen activity

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

Table 4. Regression model predicting life balance

|                 | $\beta$ | $t$                | $R^2$ | $F$ for $R^2$ |
|-----------------|---------|--------------------|-------|---------------|
|                 |         |                    | .10   | 7.30**        |
| Self-control    | .22     | 2.70**             |       |               |
| Procrastination | -.03    | -0.38**            |       |               |
| MI              | -.15    | -2.51**            |       |               |
| Regret          | -.11    | -1.80 <sup>+</sup> |       |               |

Note. MI = Experience of motivational interference during a chosen activity

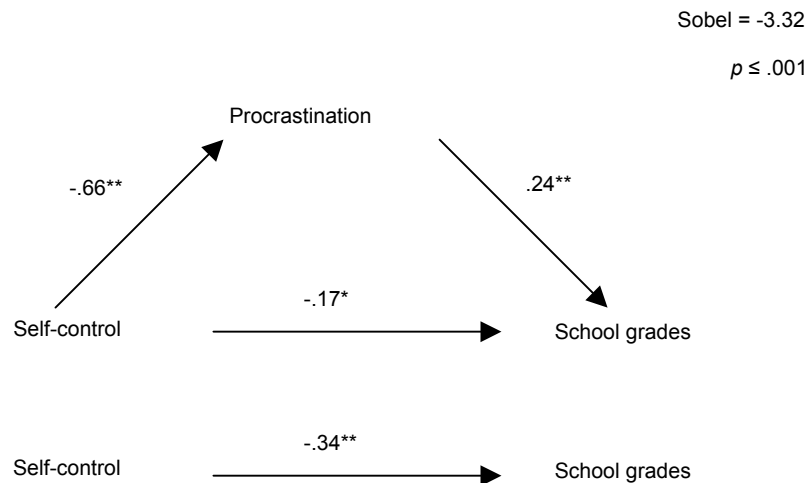
<sup>+</sup>  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ .

Table 3 shows that both self-control ( $\beta = -.14$ ,  $p < .05$ ) and procrastination ( $\beta = .24$ ,  $p < .01$ ) were significant predictors of school grades. Motivational interference and regret were not significant. As can be seen in Table 4, self-control was also a significant predictor of life balance ( $\beta = .22$ ,  $p < .01$ ), as well as motivational interference ( $\beta = -.15$ ,  $p < .05$ ). Regret was only associated with life balance by trend ( $\beta = -.11$ ,  $p < .10$ ), and procrastination was not a significant predictor of life balance ( $\beta = -.03$ , *n.s.*).

### 3.3 Mediation analyses

In order to test procrastination as a potential mediator between self-control and school grades, we calculated the steps recommended by *Baron/Kenny* (1986). Firstly, we tested whether self-control is correlated with school grades. In the next step we tested whether self-control is related to the mediator variable. As both requirements were met, within the third step it was shown that the mediator variable is related to the outcome variable by controlling for self-control. The significance of the postulated mediation effect was determined using the Sobeltest (*Sobel* 1982). Figure 1 shows the results of the mediation analysis.

Figure 1. Relationship between self-control and grades mediated by procrastination



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

As expected the relationship between self-control and school grades was partially mediated by procrastination.

## 4 Discussion

In this study, self-control capacity as a resource in daily life, and variables related to handling situations with multiple alternative activities, were analyzed as potential predictors for school grades as well as for life balance. In accordance with hypothesis 1, self-control was a significant predictor of school grades (H1a) and also of life balance (H1b). In line with hypothesis 2, procrastination was related to school grades (H2a), but contrary to our expectation, procrastination was not related to life balance (H2b). As the mediation of procrastination was significant for the relationship between self-control and school grades (H3) the mediation hypothesis was supported. Motivational interference during a chosen

activity was a significant predictor for life balance (H4b), but not for school grades (H4a). A less clear pattern applies to regret, which was associated only by trend with life balance (H5b), and not at all with school grades (H5a).

The results suggest that a high capacity of self-control is a favorable feature in two ways: As there is evidence for a direct relationship with school grades and life balance, self-control seems to be, generally, a relevant ability to manage life successfully. The pertinence of self-control in this study is in line with former research, indicating that self-control is not only relevant for school grades (cf. *Duckworth/Seligman* 2005), but also for variables associated with well-being, such as life balance or flow (cf., *Kuhnle et al.* 2010b; *Tangney et al.* 2004). Secondly, the findings contribute to past research about the nature of the relationship between self-control and school grades by showing the mediating effect of procrastination. Self-control may aid students in not postponing academic tasks. Beyond that, it is quite interesting that although self-control and procrastination are highly correlated with school grades and life balance, as well, procrastination seems to explain specific variance components in school grades but not in life balance. The delaying behavior of compulsory activities seems to not be relevant for life balance when self-control is included as an additional predictor. Furthermore, disturbances during a chosen alternative, in the form of motivational interference, were not related to school grades but to the subjective experience of a balanced life. The experienced quality during an activity seems to be relevant for the perception of appropriate time allocation. Due to restricted time resources, whenever the activity was not enjoyed, the spent time can be regarded as wasted, and this seems to be of relevance for the perception of balance.

The results of this study extend our knowledge about the relationship between self-control and some desirable outcome variables. It offers insight into the connection between maladaptive handling of multiple alternative activities and school grades, and with life balance. It seems worthwhile to include the construct of life balance in future youth research. Future studies should more closely examine the pattern of the relationships between self-control and the desirable outcome variables. In this study, a mediating role of procrastination between self-control and grades appeared. In another study, the relationship between self-control and life balance was mediated by the frequency of goal conflicts (cf. *Kuhnle et al.* 2010a). Possibly, the functioning of self-control in situations of multiple options is quite complex and needs further clarification so as to lead to concrete interventions for students.

A limitation of this study is that procrastination was specified on the aspects of academic procrastination only, which is adequate for the prediction of school grades; however, although we are not aware of empirical studies for the prediction of life balance, a more general measurement for the tendency to postpone behavior seems to be more appropriate. On the other hand, motivational interference and regret were measured more generally, thus failing to address the specific situation of school relevant behavior. The difference in specificity could explain why these two variables seemed to be less relevant for school grades. A further constraint of the study is that in the mediation analysis, we wanted to take into account the clustered structure of the data using the causal steps strategy (cf. *Baron/Kenny* 1986) with HLM and, therefore, had to accept the strict requirements of the Sobel test (cf. *Sobel* 1982).

Generally, although we found the theoretically expected relationships, the cross-sectional design of our study does not allow us to draw conclusion about causality between the variables. It might also be possible that self-control mediates the relationship

between procrastination and school grades because students with the tendency to postpone work may need to execute self-control to meet appointments and achieve good grades. This is the reason why we interpreted the results in terms of causality more cautiously. Furthermore, based on our age and school restrictions related to the sample and the region, we have to be additionally cautious to generalize these results to other student samples. Another point is that we had only a slightly modified adoption of the Life Balance Checklist (cf. *Gröpel/Kuhl* 2006), which was constructed for the use in adult samples. Therefore, an enhancement of this questionnaire seems advisable. Based on the specific importance of family and peer groups in this developmental period (cf. *Böhm-Kasper* 2006; *Steinberg* 2002), for example, the area contact/relationships could be further subdivided and therefore increased in relevance.

On the basis of the findings in this study, the reduction of the postponement of activities and also the training of self-control capacity seem to be promising for the goal of reaching better grades. Self-control exercises have been shown to be successful (cf. *Oaten/Cheng* 2007) and can also be an important supplementary component within other treatments. An additional training of this regulative ability has shown beneficial long-term results within a treatment of childhood obesity (cf. *Israel et al.* 1994). These results suggest that self-control can be efficiently trained and is a useful tool for increasing the duration and effectiveness of other trainings. Regarding the promotion of life balance, beyond the training of self-control, the reduction of regret and motivational interference also seem to be quite promising. As one pathway, “mindful thinking” may be helpful in preventing regret after a decision because here, people stay aware of the reasons they decided the way they did at a certain point in time (cf. *Langer* 2002). Furthermore, efficiently structuring a day is expected to reduce potential motivational conflicts and, consequently, motivational interference (cf. *Hofer et al.* 2007). Interventions should also center on the ability of adolescents to prioritize their goals in order to reduce conflicts between different activities or life roles, and to reduce interferences with studying for school.

*Seligman/Csikszentmihalyi* (2000) suggested that a challenge for the future of positive psychology is to clarify how much self-control is necessary to make sure that not just short-term activities leading to well-being, such as watching TV, are followed, but also that long-lasting well-being is being assured through longer-term activities. The findings from this study suggest that self-control is necessary in order to balance the different demands of several areas of life successfully, but as of yet, we cannot quantify how much. Possible curvilinear relationships between self-control and desirable outcome variables in terms of over-control (cf. *Kivetz/Keinan* 2006) need further clarification.

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