Motivational interference in school-leisure conflict and learning outcomes: The differential effects of two value conceptions

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Abstract

It was hypothesized that students' value orientations are connected to their experience of motivational interference in a conflict between a school- and a leisure-related activity as well as to school marks as indicators of learning outcomes. In a self-report study with Italian adolescents ($N = 433$; $M = 14.5$ years) using a school-leisure conflict scenario, first, the relations between the 10 values introduced by Schwartz and the Inglehart-based Achievement and Well-being value orientations were investigated. Correlations and multidimensional scaling analysis showed overlaps as well as differences between the two sets of value variables. Regression analyses revealed that the Schwartz values were significantly related to the experience of motivational interference during studying and during leisure as well as to school marks. The inclusion of Achievement and Well-being value orientations explained additional variance of the three dependent variables. The relevance of individual values in explaining students' reactions to motivational conflicts is highlighted.
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1. Introduction

The present study compares two sets of value variables stemming from different theoretical conceptions and investigates their role in the experience of motivational interference in school-leisure conflict and learning outcomes. The first question was how the 10 values introduced by Shalom Schwartz (Schwartz et al., 2001) and the two-dimensional conception of Achievement and Well-being value orientation based on Ronald Inglehart's (1997) research and used in the studies by Hofer et al. (Hofer et al., 2010; Hofer, Möhle, Kuhnle, Kilian, & Schmid, 2008; Hofer et al., 2007) are interrelated. The second question was whether the Schwartz values would predict the experience of motivational interference during studying and leisure as well as learning outcomes of Italian adolescents. And the third question was whether Achievement and Well-being value orientations, as conceptualized by Hofer et al. (2007), would add in explaining the three variables beyond the contribution of the Schwartz values. In the following, research on individual values and their relevance for learning motivation are discussed.

1.1. Individual values and academic motivation

1.1.1. Values and goals

In contrast to cross-cultural, social, and personality psychology, in education only few conceptions and studies including values can be found. There is a broad literature discussing cultural values and their influence on teaching and learning in schools (Hofstede, 1986; Stevenson & Stigler, 1992; Tweed & Lehman, 2002). These studies focus, however, on cultural not on individual values. In one of the few studies on individual values so far, Feather (1988) has shown a relation of values (derived from the Rokeach Value

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Survey; Rokeach, 1973) and academic choices in a sample of university students. Recently, Boekaerts, de Koning, and Vedder (2006) made a plea to use the theory of basic human values from Schwartz (Schwartz et al., 2001) to better understand the content of the multiple goals that become salient in the classroom. Specifically, Boekaerts et al. (2006) conjectured that the Schwartz value circle is helpful in understanding the conflicts that may arise when students want to pursue multiple goals simultaneously. Hofer et al. (Fries, Schmid, Dietz, & Hofer, 2005; Hofer et al., 2007) dealt with the situation of students who need to study for school but at the same time are tempted to engage in specific leisure actions. Motivational conflict between school- and leisure-related actions seems to be widespread amongst young people in Western societies (Fries et al., 2005; Randel, Stevenson, & Witruk, 2000; Ratelle, Vallerand, Senécal, & Provencher, 2005). Hofer et al. (2007) analyzed how value orientations are connected to the way students deal with a situation in which two opposing goals come into conflict.

Individual values—also referred to as personal or human values (Schwartz et al., 2001) or value orientations (Fries, Schmid, & Hofer, 2007)—can be defined as generalized beliefs of a person about the desirability of behaviors and events. Values transcend specific actions and situations and provide general guidelines that influence choice and behavior (Fries et al., 2005; Verplanken & Holland, 2002). Self-direction, Power, and Security are typical examples of human values (Schwartz et al., 2001). Traditionally, values are defined as trans-situational goals (Feather, 1995; Rokeach, 1973; Schwartz, 2006; Schwartz & Bilsky, 1987). However, they differ from the goal concept used in action theoretic frameworks (Carver & Scheier, 1998). In this framework, a goal is defined as a representation of a specific desired state of affairs that is cognitively associated to its corresponding means of attainment and to alternative goals (Kruglanski et al., 2002). In contrast, values apply across situations and domains. Persons do not pursue a specific value and achieve or fail to attain it the same way they strive for a goal. Instead, people can act according or against specific values. Values allow people to decide what to prefer and what to avoid, because goals, behaviors, events, and objects can be judged on the basis of their match or mismatch to an individual's value system (Fries et al., 2007). From an individual differences perspective, value orientations seem to be related to behavior and to perceptions of behavior. For instance, Bardi and Schwartz (2003) identified close connections between value orientation and self-reported behavior.

1.1.2. Shalom Schwartz's value circle

The predominant value conception in psychology includes the ten values proposed by Schwartz and their two-dimensional representation system. Schwartz (Schwartz & Bilsky, 1987; Schwartz et al., 2001) assumes three universal prerequisites of human existence: (a) biological needs, (b) demands of group survival and functioning, and (c) requirement of coordinated social interaction. These prerequisites underlie 10 distinct and broad types of values, namely, Power,

Achievement, Hedonism, Stimulation, Self-direction, Universalism, Benevolence, Tradition, Conformity, and Security.

On the basis of empirical research, Schwartz (Schwartz et al., 2001) provided a theoretical model that describes the relations among the ten values in a circular structure. The model also posits two orthogonal dimensions the first of which captures values ranging from self-transcendence (Universalism, Benevolence) to self-enhancement (Power, Achievement). Benevolence and Universalism values highlight concern for others and are incompatible with Power and Achievement that are related to self-interest. The second dimension extends from openness to change (Self-direction, Stimulation) to conservation of the status quo (Tradition, Conformity, Security). Hedonism is located between self-enhancement and openness to change. The 10 values and the two-dimensional representation hold for samples from different ages (Bubeck & Bilsky, 2004) as well as from different countries (Schwartz & Bardi, 2001). Research results highlight that people in all countries studied so far organize these values in a similar way despite variations of the scales within and between countries (Schwartz et al., 2001).

With regard to questions of academic motivation and learning, up to now no studies have been carried out including the Schwartz values. Boekaerts et al. (2006) pointed out the relevance of this value conception. The authors searched the literature for studies that examined the relationship between contextual variables and aspects of students' motivation by applying the Schwartz value circle and categorized the dependent variables of the studies in terms of the 10 value types. Specifically, Boekaerts et al. (2006) concluded that the Schwartz system could be fruitful in educational research because it covers the relations between values, thus, allowing for an analysis of potential conflicts in a multiple value perspective.

1.1.3. Ronald Inglehart's distinction between modern and post-modern values

The political scientist Ronald Inglehart (1997) made a distinction between two orthogonal value dimensions, namely modern and post-modern values. Modern values emphasize achievement, determination, thrift, and responsibility, while persons with high post-modern values judge free choice, friends, satisfaction, and leisure as important. The value dimensions proposed by Inglehart (e.g., 1997) are used to describe cultural as well as individual values. Cultural values are used in order to explain value changes. Based on data from the world value surveys (containing large-scale studies in 43 countries), Inglehart (1997) showed that post-modern values gained importance after the second World War in Western countries. Values and value changes were associated with changes in income between and within given societies, with cultural zones, and with political history. People in high-income countries and in protestant Europe had higher modern and post-modern values than those in low income and catholic European countries. Generation differences point to the fact that — at least in Western Europe — younger aged persons are higher in both modern and post-modern values (Inglehart & Welzel, 2005). There is empirical evidence that post-modern values do not

simply replace modern ones, but both of them are highly approved (Inglehart & Baker, 2000).

Hofer et al. (2007) found the distinction between modern and post-modern values to be relevant for describing how students experience and deal with conflicts between school and leisure goals. Based on findings from an interview study that covered the topics of value orientations, school- and leisure-activities, as well as conflict between the two kinds of activities (Schmid, Hofer, Dietz, Reinders, & Fries, 2005), they defined a dimension of "Achievement value orientation" in which learning, effort, and success are seen as important, and a dimension of "Well-being value orientation" in which leisure time and well-being are seen as important. Thus, this conceptualization includes only those aspects of Inglehart's values that are important to student life. The two value orientations are conceptualized as being orthogonal. Higher Achievement value orientation does not automatically mean lower Well-being value orientation. Hofer et al. (2007) examined the phenomenon of a conflict between studying and an attractive leisure activity asking for the frequency of such conflicts, for the decision students usually make, and how they experience the chosen activity after the decision. Students with high Achievement value orientation more often chose to prepare for the test when confronted with a school-leisure conflict, while students with high Well-being value orientation decided more frequently to go out with friends and to delay the learning task (Fries et al., 2005; Hofer et al., 2007). Students with highly conflicting value orientations reported higher school-leisure conflict and had more problems in deciding which option to choose than students with either a low level on both Achievement and Well-being value orientations, or with a configuration of substantially differing values (Fries et al., 2005). In the following, the term value orientation refers to the distinction between Achievement and Well-being values.

1.1.4. The two value conceptions compared

It is unclear if and what kind of connections are there between the value conceptions proposed by Schwartz (Schwartz et al., 2001) and Inglehart (Inglehart, 1997). Mohler, Rammstedt, and Wohn (2006) compared the 10 Schwartz et al. (2001) values with the early Inglehart (1977) dimensions of Materialism and Postmaterialism and found that out of twenty correlations only six were significant, three of them being weak. Materialism was connected to Security and Conformity while Postmaterialism correlated with Universalism and Self-direction. Nothing similar, to our knowledge, has been done in relation to modern and post-modern values. This further applies to the Inglehart-based Achievement and Well-being value orientations proposed by Hofer et al. (2007). Therefore, in the present study it was conjectured that the Achievement value orientation based on Inglehart's (1997) modern values dimension would likely be correlated with Schwartz's values of Achievement, Conformity, and Security. Regarding the Achievement value orientation, however, it has to be noted that the meaning of the "Achievement value" in the Schwartz value system is connected to rivalry and being superior to others. Thus, it

resembles the "performance goal orientation" (see Dweck, 1986) and has a conceptual proximity to the Power value. In contrast, the "Achievement value orientation" derived from Inglehart's (1997) modern values resembles the "mastery goal orientation". Nevertheless, both concepts are related to achievement. On the other hand, the Well-being value orientation has been conceived to tap students' leisure orientation (Schmid et al., 2005) and, therefore, in the present study it was assumed to be related to the Schwartz's values of Hedonism, Self-direction, and Stimulation.

Besides investigating the relationship between the 10 Schwartz values and the two value orientations derived from Inglehart (1997), the present study applied these two value conceptions to the study of motivational interference after a conflict between a school and a leisure activity, as well as of learning outcomes in the form of school marks.

1.2. Values in students' goal conflicts

Typically, human behavior involves multiple current concerns and people are pursuing several goals more or less simultaneously (Carver & Scheier, 1998). In educational research it is increasingly recognized that students also strive for multiple goals (Boekaerts, 2003; Boekaerts et al., 2006). A broad variety of academic and social goals that students pursue in school have been identified such as achievement goals (mastery or performance), enjoyment, affiliation and social goals (de Lemos & Goncalves, 2004; McInerney & Ali, 2006; Wentzel, 2002). Researchers have also pointed to the fact that students can find themselves in situations in which their goals can be in conflict (Dowson & McInerney, 2003). A goal conflict is defined as an inner state of uncertainty resulting from two or more behavioral means associated with negatively interdependent goals (Kruglanski et al., 2002). A special case of goal conflict exists in situations in which students have to choose between a school-related duty and a leisure desire. This conflict is evidenced in students in Western countries for whom studying at home requires high engagement, but is associated with low intrinsic motivation and with negative mood; on the contrary, sports and hobbies are typically characterized by high engagement, intrinsic motivation, and positive mood (Delle Fave & Bassi, 2003; Schmid et al., 2005; Stevenson & Stigler, 1992).

The situation of a school-leisure conflict seems especially relevant for values because the student experiences a conflict between two or more options regarded as important although they serve opposing goals. In conflict of goals persons are expected to draw on their values as normative criteria that can help them to solve the conflict in one or the other way (Verplanken & Holland, 2002). It is possible that students in a school-leisure conflict also activate their values. If they see a competition between rivaling actions due to scarcity of time and the different emotions and cognitions attached to them, the conflict may become salient and in order to be resolved, values have to be called in. Students' Achievement and Well-being value orientations have been found to be related to school-leisure conflict (Hofer et al., 2007). From the point of view of Schwartz's value conception, in the present study it was

assumed that school-leisure conflict will activate the respective values, that is, Achievement, Conformity, and Security on the one hand, and Hedonism, Self-direction, and Stimulation on the other. Theoretically, these two sets of values reflect a certain degree of opposition in the value circle insofar as Conformity and Security, reflecting "conservation of the status quo", oppose Stimulation reflecting "openness to change".

1.3. The role of value orientations in academic motivation and learning

School-leisure conflict is likely to make students aware that they need to weigh actions that serve mutually incompatible goals. If the opposing goals are important to the students then the values attached to them will also become salient. Values can, thus, help in prioritizing and in coping with goal conflicts. In studying the motivational implications of the conflict between school- and leisure-related goals, the construct of motivational interference as a cognitive, affective, and behavioral impairment of the chosen activity resulting from the incentives of the non-chosen alternative has been proposed. The concept of "motivational interference" denotes the negative influence of attractive alternatives on the ease of self-regulation within the focal task (Fries, Dietz, & Schmid, 2008). In cross-sectional studies with samples from different countries, students with high Well-being value orientation experienced higher motivational interference during studying in a school-leisure conflict. Conversely, students with high Achievement value orientation experienced higher motivational interference while carrying out the leisure activity (Hofer et al., 2010). In general, the more students valued the goal they were currently pursuing the less they experienced motivational interference.

Only a few studies have looked at the relation between value orientations and learning outcomes. Fries et al. (2005) reported that students with higher Well-being value orientation had lower school marks. In a study with elementary school children (Hofer et al., 2008), a positive significant correlation between Achievement value orientation and school achievement was found even after the effects of intelligence, age, and gender were controlled.

In summary, the two value orientations seem to be related to indices of student motivational interference in the presence of a school-leisure conflict. No studies so far have included Schwartz's value system in an educational psychological framework. As these values are well established in psychological research and share similarities with Achievement and Well-being value orientations, in the present study it was assumed that they would be related to indicators of motivational interference in a school-leisure conflict and to school marks as indicators of learning outcomes.

1.4. The present study

The present study took place in Italy. The Italian educational system is based on half-day schooling. Students have regular school classes in the morning, then go home for lunch, although on some days (i.e., two or three days a week), they return to school for additional hours in the afternoon. Data from time allocation studies make clear that Italian adolescents have to devote time beyond school hours to schoolwork. At the same time, they spend considerable amount of their time watching television, hanging out, and playing games (Delle Fave & Bassi, 2003; Flammer, Alsaker, & Noack, 1999). This leads to the assumption that they will experience school-leisure conflict. In fact, school achievement is the most frequent communication issue and the main source of conflict between Italian parents and their children (Scabini, Marta, & Lanz, 2006).

The main aim of the present study was the investigation of the relations between the 10 Schwartz values (Schwartz et al., 2001) and the Achievement and Well-being value orientations (Inglehart, 1997), as defined by Hofer et al. (2007). Drawing on the theoretical framework presented the following hypotheses were tested.

(a) Achievement, Conformity, and Security values were expected to be related to the Achievement value orientation, whereas Hedonism, Self-direction, and Stimulation values to the Well-being value orientation (Hypothesis 1).

(b) It was also expected the Schwartz values of Achievement, Conformity, and Security to be positively correlated with motivational interference during leisure activity and with school marks; on the contrary, they were expected to be negatively correlated with motivational interference during studying (Hypothesis 2a). Additionally, it was expected Hedonism, Self-direction, and Stimulation to be positively correlated with the experience of motivational interference during studying and negatively with motivational interference during leisure and school marks (Hypothesis 2b).

(c) Since Achievement and Well-being value orientations are conceived as being conceptually different from Schwartz's values and relevant to students' school-leisure conflict it was expected the value orientations to explain additional variance, beyond the Schwartz values, of motivational interference indicators and school marks. Specifically, Achievement value orientation was expected to be negatively related to the experience of motivational interference during studying and positively to motivational interference during leisure as well as to school marks (Hypothesis 3a). Additionally, Well-being value orientation was expected to be positively related to motivational interference during studying and negatively to motivational interference during leisure and school marks (Hypothesis 3b). Following previous research evidence (Fries et al., 2005; Hofer et al., 2007; Hofer et al., 2010) the strength of the relationship was expected to be higher for motivational interference variables than for school marks.

2. Method

2.1. Participants and procedure

Participants were 433 students (53.6% males and 46.4% females; $M = 14.52$, $SD = 1.33$) from 23 classes in eight

schools. Between 1 and 6 classes per school participated in the study. Each class consisted of 11−27 students. The schools were located in Milan, Italy, and the surrounding area. The sample predominantly comprised native Italian students and only eight students (1.8%) had an immigrant background with a non-Italian mother tongue. Students came from two school types: (a) Scuola Media (52.4%; $M = 13.46$ years, $SD = 0.55$) and (b) Scuola Superiore (47.6%; $M = 15.7$ years, $SD = 0.85$). Students from the Scuola Media came from public ($n = 120$), as well as government-independent private schools ($n = 107$). Students from the Scuola Superiore also came from public ($n = 146$) and government-independent private schools ($n = 60$) and were enrolled in different tracks in the Italian secondary school system (i.e., mainly scientific, classical, and professional). The percentage of students from private schools in the present sample was higher than in the general population of students.

2.2. Measures

An Italian mother-tongue professional interpreter translated the questionnaire into Italian. In order to assure the effective correspondence between the two versions and to avoid misinterpretations, a back translation procedure was used. An English translator retranslated the Italian text, followed by occasional changes that resulted in two equivalent versions of the questionnaire in Italian and English.

2.2.1. The Schwartz values

To assess the Schwartz values, the Portrait Values Questionnaire (Schwartz et al., 2001), an alternative and less abstract method of measurement compared to the original Schwartz Value Survey, was used. This method has been shown to be equivalent to the standard value survey in yielding the value structure and in predicting relations of value priorities with personality, attitude, and behavioral variables (Schwartz et al., 2001). For every value, several items were included making a total of 40 items. Each item is assigned to one of the 10 Schwartz values. The question format was:

> Here we briefly describe some people. Please read each description and think about how much each person is or is not like you. Put an X in the box to the right that shows how much the person in the description is like you.

For example, one item was "It is important to him to be rich. He wants to have a lot of money and expensive things. How much like you is this person?" Responses were given on a 6-point Likert-type scale ranging from 5 (very much like me) to 0 (not like me at all). A confirmatory factor analysis tested the proposed 10-value structure in this sample of Italian adolescents. The model fit was $\chi^2(695, N = 385) = 1518.34$, $p < 0.01$, CFI = 0.78, RMSEA = 0.06, and SRMR = 0.08. Following Schwartz and Boehnke (2004), who applied the combination of RMSEA and SRMR as a criterion to evaluate model fit for confirmatory factor analyses of the Schwartz values, this fit can be seen as acceptable. Internal consistencies of all values are displayed in Table 1. Cronbach's alphas,

ranging from 0.51 to 0.79, turned out to be marginal for some of the Schwartz values. However, low internal consistencies are common and quite reasonable for value measures because items in each index were selected to cover all components of broad definitions with few items rather than to measure narrowly defined constructs (Schwartz, 1992; Schwartz et al., 2001). Additionally, as Cronbach's alpha is a function of the length of a test, the mean inter-item correlations of the value scales with marginal internal consistencies were also tested. Briggs and Cheek (1986) suggest that this coefficient is a clearer indicator of item homogeneity. All measures showed a mean inter-item correlation between 0.20 and 0.48, which is quite good.

2.2.2. Achievement and well-being value orientations

Achievement and Well-being value orientations were measured with two descriptions of students representing value prototypes adopted from Fries et al. (2005). The assessment of value orientations through prototypes has been proven to be feasible for younger students, since it is easily comprehensible and not as abstract as value statements (Bubeck & Bilsky, 2004). The item for the Achievement value prototype depicted a student who has clear goals, struggles through difficult tasks and wants to achieve something in life. The item for the Well-being 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. Each item of the two prototypes was presented in a gender-congruent version.

Participants were asked to indicate how similar they are to the two value prototypes; responses were given on a 6-point Likert-type scale ranging from 5 (very similar) to 0 (very dissimilar). Participants were also asked to express how much they liked the two value prototypes; responses were given on a 6-point Likert-type scale ranging from 5 (very likable) to

Table 1
Means (and *SD*), Cronbach's alphas and intra-class correlations.

	M (SD)	Cronbach's α	ICC
1. Power	2.30 (1.09)	0.68	0.05**
2. Achievement	3.16 (0.99)	0.79	0.01
3. Hedonism	3.39 (0.83)	0.55	0.02
4. Stimulation	3.35 (0.95)	0.64	0.02
5. Self-direction	3.61 (0.71)	0.56	0.03*
6. Universalism	3.31 (0.85)	0.79	0.05**
7. Benevolence	3.31 (0.89)	0.75	0.07**
8. Tradition	2.80 (0.81)	0.51	0.01
9. Conformity	2.97 (0.86)	0.64	0.00
10. Security	3.08 (0.83)	0.63	0.00
11. Achievement value orientation	3.04 (0.93)	0.65	0.02
12. Well-being value orientation	2.73 (1.04)	0.76	0.02
13. MI during studying	1.19 (0.49)	0.87	0.06**
14. MI during leisure	1.19 (0.60)	0.83	0.07**
15. School marks	6.98 (1.26)	0.83	0.20**
16. Age	14.52 (1.33)	−	0.75**

MI = motivational interference.
ICC = Intra-class correlation (estimated in baseline models using HLM 6).
*$p < 0.05$; ** $p < 0.01$.

0 (very unlikable). For each prototype, the two ratings were combined to form one mean score. The rating scales were presented after the complete descriptions of both prototypes. Cronbach's alphas were marginally satisfactory, $\alpha = 0.65$ and 0.76 for the Achievement value and Well-being value prototypes, respectively.

The test-retest reliabilities of the value portraits were analyzed in a German study ($N = 54$) with an interval of two weeks between the two measurements. The reliabilities were satisfactory, $r = 0.57$ and $r = 0.71$ for the Achievement and Well-being value prototypes, respectively.

2.2.3. Motivational interference

To assess motivational interference, a vignette depicting a concrete conflict situation was used (Hofer et al., 2007). The vignette described a conflict situation contrasting the school-related activity "studying for an exam" with the leisure-related activity "meeting friends":

Imagine the following situation. It is the afternoon or weekend and you are just about to start studying for a test when the phone rings. One of your friends calls to ask if you want to join him and some other friends. He wants to come pick you up right away.

After the presentation of the vignette, students were asked to imagine that they had chosen the school-related activity ("Assume, you stay home and study for the test and you don't meet your friends. What will happen?"). Then, the students answered 14 items about their assumed mood and behavior in that hypothetical situation (see Appendix A) on 4-point Likert-type response scales ranging from 3 (totally true) to 0 (not at all true). The items depicted the following mood states and behaviors: (a) distractibility (e.g., "While studying, I'll be easily distracted"); (b) shallowness of processing (e.g., "I'll be soon completely absorbed in studying so that I won't think about anything else"; item reversed); (c) low persistence (e.g., "It'll be very hard for me to keep on until the end"), (d) switching (e.g., "I'll start to study, but then switch to another activity quickly"); and (e) mood (e.g., "I'll get into a bad mood easily sitting at the desk while the others have fun"). The various items were intercorrelated. The correlations ranged from 0.11 to 0.55 and the Cronbach's alpha was satisfactory, $\alpha = 0.87$. Consequently a mean score of the 14 items was used denoting motivational interference during studying.

The same procedure was followed with respect to the leisure-related activity. Students were asked to imagine that they had chosen this activity ("Assume you decide to meet your friends and do not stay home and study for the test. What will happen?"). Then they answered seven items about their assumed mood and behavior in that hypothetical situation (see Appendix B) on 4-point Likert-type response scales ranging from 3 (totally true) to 0 (not at all true). The items depicted the following mood states and behaviors: (a) mood (e.g., "I'll have a guilty conscience.") and (b) distractibility (e.g., "Nothing will be able to distract me from my friends." [Item reversed]). The number of items was smaller than for

motivational interference during studying because only these two aspects apply to the leisure-related activity. The items were intercorrelated. The correlations ranged from 0.25 to 0.58 and the Cronbach's alpha was satisfactory, $\alpha = 0.83$. Consequently a mean score of the 7 items was used denoting motivational interference during leisure activity.

2.2.4. School marks

Students indicated the school marks they received on their last report card in Italian, math, and English. School marks varied from 1 to 10, with ten being the best mark. The individual school marks were combined to one mean score. In a German sample, high school students' self-reported school marks accurately reflected teachers' reports of the same marks (Dickhäuser & Plenter, 2005).

3. Results

3.1. Descriptives

Table 1 also displays the means, standard deviations, and the intra-class correlation coefficients (ICCs) of the variables in the sample. The ICCs indicate the proportion of total variance that is due to variance between school classes (Lüdtke, Köller, Marsh, & Trautwein, 2005). The amount of variance between classes was significant for eight variables, and highest for school marks with 20% of variance between classes. The mean scores of the variables motivational interference during school activity and leisure activity indicate that students rated themselves as experiencing a medium degree of motivational interference (see Table 1).

Table 2 shows the first-order correlations between the variables. As shown in Table 2 gender correlated with some of the value variables. For instance, girls had significantly higher values in Conformity, Tradition, Benevolence, Universalism, Self-direction, and in Achievement value orientation compared to boys, but lower values in Schwartz's Achievement and Power. Girls had higher motivational interferences during leisure and better school marks. Furthermore, the variable age contributed to a varying degree to the dependent variables. As a consequence, in the regression analyses, age and gender were controlled for.

Regarding our first research question, the correlations between the Schwartz and Inglehart value conceptions were computed. As expected (Hypothesis 1), Achievement value orientation significantly and positively correlated with the values Conformity (0.31), Security (0.29), and Achievement (0.23). On the other hand, there were also correlations with the values Universalism (0.28), Self-direction (0.18), Tradition (0.18), and Benevolence (0.15), whereas a significant negative correlation was found with Hedonism (−0.11). These correlations point to a somewhat different pattern in the semantic structures of the two value conceptions. Most notably, Achievement value orientation was related only to a moderate degree to Achievement value, while it correlated with values that are located on opposite poles in the Schwartz value circle, namely with Benevolence and Universalism. Interestingly, the

Table 2
Intercorrelations between the variables of the study.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Power																
2. Achievement	0.53**															
3. Hedonism	0.32**	0.36**														
4. Stimulation	0.18**	0.26**	0.48**													
5. Self-direction	0.15**	0.32**	0.22**	0.41**												
6. Universalism	−0.16**	−0.01	−0.06	0.09	0.33**											
7. Benevolence	−0.19***	−0.06	0.04	0.10*	0.29**	0.60**										
8. Tradition	−0.24**	−0.16**	−0.12*	−0.05	0.07	0.50**	0.42**									
9. Conformity	−0.08	0.07	−0.14**	−0.16**	0.16**	0.51**	0.46**	0.52**								
10. Security	0.12*	0.28**	−0.02	−0.05	0.21**	0.40**	0.23**	0.35**	0.52*							
11. Achievement value orientation	0.08	0.23**	−0.11*	−0.04	0.18**	0.28**	0.15**	0.18**	0.31**	0.29**						
12. Well-being value orientation	0.08	−0.01	0.37**	0.30**	−0.02	−0.14**	0.01	−0.14**	−0.28**	−0.22**	−0.43**					
13. MI during studying	0.21**	0.05	0.29**	0.09	−0.15**	−0.29**	−0.14**	−0.16**	−0.33**	−0.17**	−0.38**	0.39**				
14. MI during leisure	−0.15**	0.01	−0.22**	−0.19**	0.05	0.26**	0.17**	0.15**	0.34**	0.22**	0.32**	−0.39**	−0.46**			
15. School marks	−0.06	−0.01	−0.15**	−0.15**	0.06	0.07	0.03	−0.04	0.05	−0.02	0.21**	−0.19**	−0.34**	0.16**		
16. Age	0.09	0.14**	0.11*	0.04	0.12*	−0.01	−0.01	−0.07	0.04	0.06	−0.04	0.02	0.21**	−0.08	−0.37**	
17. Gender	−0.23***	−0.13**	−0.01	−0.02	0.15**	0.26**	0.23**	0.12*	0.11*	0.05	0.10*	−0.07	−0.09	0.18**	0.20**	0.09

MI = motivational interference.
Gender: 1 = male, 2 = female.

values Achievement and Power were highly intercorrelated (0.53), while Achievement value orientation did not correlate at all with Power. On the other hand, Well-being value orientation showed, in line with Hypothesis 1, significant positive correlations with the values Hedonism (0.37) and Stimulation (0.30), but unexpectedly not with Self-direction. Furthermore, it was negatively interrelated to the values Conformity (−0.28), Security (−0.22), Universalism (−0.14), and Tradition (−0.14), thus displaying a certain opposition to Achievement value orientation.

To further test Hypothesis 1, a weakly constrained confirmatory multidimensional scaling analysis (MDS; Bilsky, 2008) was used. The MDS analysis is a nonmetric multidimensional scaling technique repeatedly used by Schwartz (e.g., Schwartz et al., 2001) to display values as points in a multidimensional space so that the geometric distances between the points reflect the intercorrelations among the values. To avoid methodological artifacts, weakly constrained confirmatory MDS analysis begins with a starting configuration that assigns every variable its starting point based on the theoretically hypothesized value structure (Bilsky, 2008). Following Bilsky (2008) a design matrix was specified, in which each of the Schwartz values was represented by two coordinate values that reflected Schwartz's (1992) revised model. Since there is uncertainty about the relation between the Schwartz and the Inglehart value conceptions, starting values for the two value orientations were placed at the center of the two-dimensional space. The MDS analysis was performed using the SPSS procedure PROXSCAL, which allowed using the design matrix as the starting configuration. The calculation was based on scale values (Hinz, Brähler, Schmidt, & Albani, 2005) because the relation between the constructs was of major interest. A Pearson correlation coefficient matrix was calculated and used as the basis for the MDS analysis. Dimensions were fixed to two.

Figure 1 shows the results of the MDS analysis for the ten Schwartz and the two Inglehart values. Stress-1 was 0.08.[1] Although the Schwartz values did not form a perfect circle, our results correspond to the basic sequence of the Schwartz values, except for the reversed localization of Universalism and Benevolence as well as slightly reverse localization of Achievement and Power. The Well-being value orientation emerges closest to the values Stimulation, Hedonism, and Self-direction, and thus it lies closest to the pole openness to change.[2] Achievement value orientation is located closest to the values Security and Conformity and, therefore, closest to the conservation pole. In sum, the Schwartz circle basically could be replicated and the location of the two value orientations could be determined.

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[1] Stress-1 provides information about the goodness of fit of an MDS, the smaller the values of Stress the better the fit (Kruskal, 1964).

[2] The dimension openness to change vs. conservation contrasts values stressing independence and favoring change to those placing emphasis on stability or protection (Devos, Spini, & Schwartz, 2002).
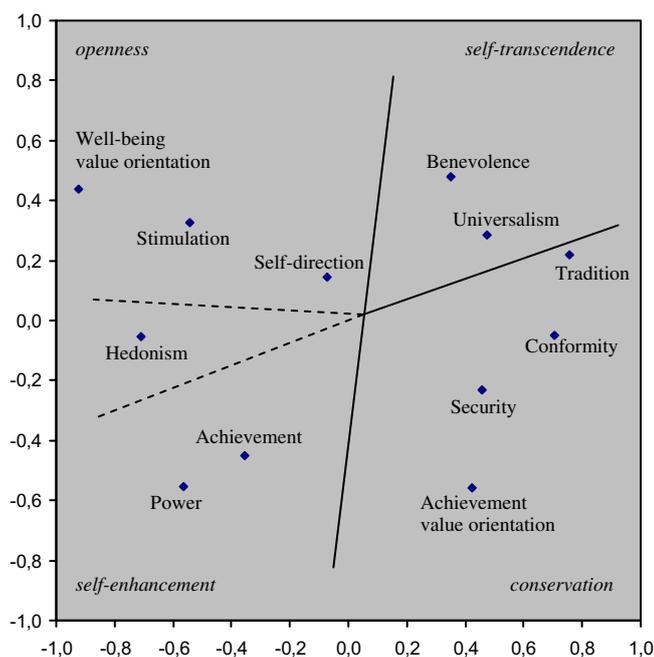
Fig. 1. Results of multidimensional scaling.

3.2. Overview of regression analyses

Regression analyses were used to test Hypothesis 2 and 3. Although no predictors on the classroom level were postulated, as students were nested within classes a hierarchical analysis of the data was necessary. Therefore, the relationships between variables were tested using HLM 6 (Raudenbush & Bryk, 2002). In order to test these relationships, a series of intercept-only-models (i.e., fixed slopes and intercepts varying between the classes) was run. This allows for the representation of complex error structures associated with nested data sets with the inclusion of both individual, as well as class-specific error terms. All variables were group mean-centered.

Four models were calculated for each of the three dependent variables. (a) In the first model, age and gender were entered as predictors. (b) In the second model, the 10 Schwartz values were added. (c) In the third model, the Achievement and Well-being value orientations were entered additionally. (d) In the fourth model motivational interference during leisure was included to predict motivational interference during studying as well as the other way round, and the two measures of experience of motivational interference were included to predict school marks. The fourth model was introduced to take into account the fact that the two measures of motivational interference were correlated with each other as well as with school marks.

3.2.1. Regression analyses with the Schwartz values

The relationship between the 10 Schwartz values, on the one hand, and motivational interference during studying and during leisure as well as school marks, on the other (Hypotheses 2a and 2b) were tested with the abovementioned Model 2. As can be seen from Tables 3—5, in all three cases

the second models provide significant increases in explained variance.

Regarding the experience of motivational interference during studying (Table 3), the inclusion of the 10 Schwartz values led to an increase in explained variance from 1% to 23%. Model 2 shows that, as expected (Hypotheses 2a and 2b), Achievement and Conformity were negatively associated with motivational interference during studying, whereas Hedonism was positively related. On the other hand, in the case of Self-direction, although a positive relation was expected, it turned out to be negative. Also, no influence of Power on motivational interference during studying was expected; yet, a positive relation was found. In case of motivational interference during leisure (Table 4), the inclusion of the Schwartz values (Model 2) increased the amount of explained variance to a significant degree, from 3% to 17%. The results are in line with the predictions of Hypotheses 2a and 2b as Conformity and Achievement contributed positively, while Hedonism and Stimulation contributed negatively. Although no effect of Tradition was expected, it was found to have a negative effect.

Finally, when looking at school marks as a criterion (Table 5), a significant increase from 6% to 13% can be observed after the inclusion of the Schwartz values. With respect to Achievement and Stimulation the results are in line with the predictions of Hypotheses 2a and 2b. Unexpectedly, Self-direction was connected with higher and not with lower school marks. However, since the first-order correlation between the two variables did not differ significantly from zero this result should not be overemphasized.

3.2.2. Including the two value orientations

The crucial point of Hypotheses 3a and 3b was whether the inclusion of the two value orientations, namely Achievement and Well-being value orientations, in addition to the 10 Schwartz values would improve the prediction of students' self-reports of motivational interference during studying and leisure as well as their school marks. As can be seen in Tables 3—5, the inclusion of the two value orientations (Models 3) in each case did provide a significant increase in the prediction of the respective variables. Regarding the experience of motivational interference during studying (Table 3), the additional inclusion of the two value orientations increased the explained variance from 23% to 32%. As expected, a negative contribution of Achievement value orientation and a positive contribution of Well-being value orientation were found. For motivational interference during leisure (Table 4), the amount of explained variance increased from 17% to 22%. A small but significant increase from 13% to 15% was also observed for the prediction of school marks. Achievement value orientation contributed significantly while Well-being value orientation did not contribute significantly to explaining additional variance of school marks (Table 5).

Including the two value orientations in the regression models (Tables 3—5, respectively; Model 3) made the predictive power of some of the Schwartz values (Tables 3—5; Model 2) disappear, pointing to the partial overlap between the two value conceptions. The remaining significant Schwartz

Table 3
Regression models predicting motivational interference during studying.

Level-1 predictors	b	SE	t	R^2 level-1	ΔR^2 level-1	F for ΔR^2 level-1
Model 1				0.01		
Age	0.04	0.04	1.04			
Gender	−0.09	0.04	−2.14*			
Model 2				0.23	0.23	12.43**
Age	0.04	0.03	1.30			
Gender	0.01	0.05	0.22			
Power	0.10	0.02	5.05**			
Achievement	−0.04	0.02	−2.09*			
Hedonism	0.13	0.02	5.36**			
Stimulation	0.00	0.03	0.03			
Self-direction	−0.10	0.03	−3.90**			
Universalism	−0.09	0.04	−2.52*			
Benevolence	0.06	0.04	1.65			
Tradition	0.07	0.03	2.26*			
Conformity	−0.18	0.03	−5.24**			
Security	0.01	0.03	0.51			
Model 3				0.32	0.09	25.89**
Age	0.04	0.03	1.54			
Gender	0.04	0.04	1.18			
Power	0.10	0.02	6.19**			
Achievement	−0.00	0.02	−0.15			
Hedonism	0.08	0.03	3.08**			
Stimulation	−0.02	0.03	−0.84			
Self-direction	−0.08	0.03	−3.18**			
Universalism	−0.08	0.03	−2.33*			
Benevolence	0.04	0.04	1.10			
Tradition	0.08	0.03	2.90**			
Conformity	−0.14	0.03	−4.96**			
Security	0.03	0.02	1.18			
Achievement value orientation	−0.10	0.03	−3.66**			
Well-being value orientation	0.09	0.02	5.28**			
Model 4				0.36	0.04	30.19**
Age	0.05	0.03	1.72			
Gender	0.07	0.04	1.95			
Power	0.09	0.02	5.04**			
Achievement	0.01	0.02	0.27			
Hedonism	0.07	0.03	2.57*			
Stimulation	−0.03	0.03	−1.01			
Self-direction	−0.09	0.03	−3.28**			
Universalism	−0.06	0.03	−2.14*			
Benevolence	0.04	0.04	1.22			
Tradition	0.06	0.03	2.25*			
Conformity	−0.11	0.03	−4.47**			
Security	0.03	0.02	1.30			
Achievement value orientation	−0.09	0.03	−3.26**			
Well-being value orientation	0.07	0.02	3.68**			
MI during leisure	−0.20	0.03	−6.93**			

Gender: 1 = male, 2 = female.
MI = motivational interference.
*$p < 0.05$; **$p < 0.01$.

value predictors can be regarded as contributing to the dependent variables above the two value orientations. This is especially true for Power, Conformity, and Self-direction in the case of motivational interference during studying, for Conformity and Tradition in the case of motivational interference during leisure, and for Stimulation and Tradition in the case of school marks.

Because motivational interference during studying and motivational interference during leisure were negatively interrelated, the effect of values was further tested after controlling for the effect of the other form of motivational interference (Table 3 and 4; Model 4). When including motivational interference during leisure as a predictor of motivational interference during studying, all values that were significant in the prior step (Table 3; Model 3) remained significant. When predicting motivational interference during leisure after controlling for motivational interference during studying, Tradition and Achievement value orientation were

Table 4
Regression models predicting motivational interference during leisure.

Level-1 predictors	b	SE	t	R^2 level-1	ΔR^2 level-1	F for ΔR^2 level-1
Model 1				0.03		
Age	−0.00	0.03	−0.10			
Gender	0.23	0.08	3.00**			
Model 2				0.17	0.14	7.09**
Age	0.01	0.03	0.30			
Gender	0.18	0.06	3.03**			
Power	−0.04	0.04	−1.19			
Achievement	0.08	0.04	2.23*			
Hedonism	−0.10	0.03	−3.11**			
Stimulation	−0.06	0.02	−2.45*			
Self-direction	−0.01	0.04	−0.26			
Universalism	0.09	0.06	1.43			
Benevolence	−0.00	0.04	−0.01			
Tradition	−0.08	0.04	−1.97*			
Conformity	0.18	0.05	3.69**			
Security	0.02	0.05	0.51			
Model 3				0.22	0.05	14.95**
Age	0.01	0.03	0.33			
Gender	0.15	0.06	2.59*			
Power	−0.05	0.03	−1.38			
Achievement	0.05	0.04	1.23			
Hedonism	−0.04	0.03	−1.47			
Stimulation	−0.03	0.03	−1.34			
Self-direction	−0.03	0.04	−0.95			
Universalism	0.07	0.05	1.33			
Benevolence	0.02	0.03	0.72			
Tradition	−0.09	0.04	−2.29*			
Conformity	0.14	0.04	3.08**			
Security	0.01	0.05	0.21			
Achievement value orientation	0.08	0.03	3.11**			
Well-being value orientation	−0.11	0.03	−4.08**			
Model 4				0.28	0.06	30.23**
Age	0.02	0.03	0.93			
Gender	0.16	0.06	2.91**			
Power	−0.01	0.04	−0.36			
Achievement	0.05	0.04	1.32			
Hedonism	−0.02	0.03	−0.52			
Stimulation	−0.04	0.03	−1.42			
Self-direction	−0.06	0.04	−1.61			
Universalism	0.04	0.05	0.91			
Benevolence	0.04	0.03	1.09			
Tradition	−0.06	0.04	−1.56			
Conformity	0.09	0.04	2.10*			
Security	0.02	0.04	0.44			
Achievement value orientation	0.04	0.03	1.69			
Well-being value orientation	−0.08	0.03	−3.08**			
MI during studying	−0.35	0.06	−6.18**			

Gender: 1 = male, 2 = female.
MI = motivational interference.
*$p < 0.05$; **$p < 0.01$.

no longer significant. Gender, Conformity, and Well-being value orientation remained significant (compared to Table 4; Model 3).

When including the two variables of motivational interference as predictors of school marks (Table 5; Model 4), a further increase in explained variance from 15% to 18% was achieved. The experience of motivational interference during studying was a significant predictor unlike motivational interference during leisure; the contribution of the predictors

in Model 3 remained. This means that motivational interference during studying represents a new source of common variance. Given the moderately high intercorrelation between the two motivational interference variables this result has to be interpreted with caution.

In light of these results, a mediator analysis was carried out to investigate whether motivational interference during studying mediates between Achievement value orientation and school marks. Following the steps recommended by Baron and

Table 5
Regression models predicting school marks.

Level-1 predictors	b	SE	t	R^2 level-1	ΔR^2 level-1	F for ΔR^2 level-1
Model 1				0.06		
Age	−0.12	0.07	−1.79			
Gender	0.58	0.12	4.77**			
Model 2				0.13	0.07	3.30*
Age	−0.11	0.06	−2.03*			
Gender	0.60	0.15	4.04**			
Power	−0.02	0.05	−0.34			
Achievement	0.16	0.06	2.82**			
Hedonism	−0.11	0.07	−1.61			
Stimulation	−0.27	0.07	−3.72**			
Self-direction	0.23	0.12	2.03*			
Universalism	0.09	0.09	0.94			
Benevolence	−0.11	0.08	−1.42			
Tradition	−0.19	0.08	−2.41*			
Conformity	0.11	0.09	1.24			
Security	−0.12	0.09	−1.43			
Model 3				0.15	0.02	4.20*
Age	−0.12	0.06	−2.11*			
Gender	0.56	0.15	3.84**			
Power	−0.02	0.05	−0.49			
Achievement	0.11	0.06	1.89			
Hedonism	−0.06	0.07	−0.89			
Stimulation	−0.25	0.07	−3.56**			
Self-direction	0.21	0.11	1.86			
Universalism	0.07	0.09	0.78			
Benevolence	−0.09	0.08	−1.16			
Tradition	−0.20	0.08	−2.56*			
Conformity	0.06	0.08	0.77			
Security	−0.14	0.09	−1.60			
Achievement value orientation	0.16	0.06	2.65**			
Well-being value orientation	−0.06	0.07	−0.93			
Model 4				0.18	0.03	7.53*
Age	−0.09	0.06	−1.65			
Gender	0.61	0.14	4.42**			
Power	0.02	0.05	0.51			
Achievement	0.12	0.06	1.98*			
Hedonism	−0.03	0.07	−0.38			
Stimulation	−0.26	0.07	−3.76**			
Self-direction	0.16	0.11	1.39			
Universalism	0.03	0.09	0.38			
Benevolence	−0.07	0.08	−0.89			
Tradition	−0.17	0.08	−2.11*			
Conformity	0.01	0.08	0.08			
Security	−0.12	0.08	−1.43			
Achievement value orientation	0.12	0.06	2.08*			
Well-being value orientation	−0.03	0.07	−0.42			
MI during studying	−0.55	0.16	−3.44**			
MI during leisure	−0.15	0.15	−1.01			

Gender: 1 = male, 2 = female.
MI = motivational interference.
*$p < 0.05$; **$p < 0.01$.

Kenny (1986) the results showed that motivational interference during studying was a partial mediator because (a) Achievement value orientation was related to school marks, (b) Achievement value orientation was related to motivational interference during studying, and (c) motivational interference during studying was related to school marks when motivational interference during studying and Achievement value orientation were entered simultaneously. Figure 2 displays the results of this analysis. Students with high Achievement value orientations had better school marks because of a higher Achievement value orientation but also because this value orientation was related to lower motivational interference during studying. As motivational interference during leisure was not significant in the above regression analysis (Table 5; Model 4) a mediation effect concerning this variable was not tested.
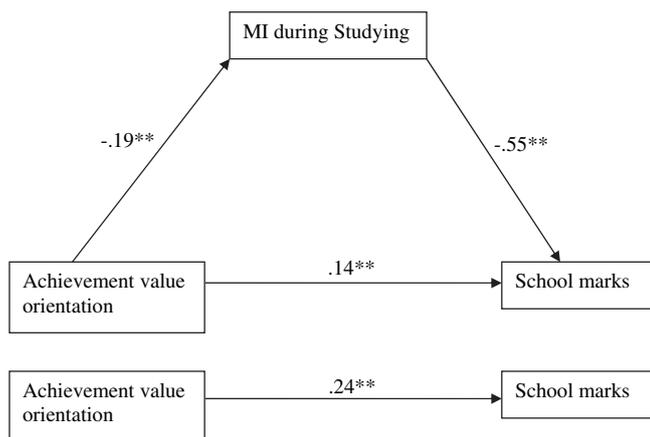
Fig. 2. Results of mediation analysis of Achievement value orientation on school marks. Unstandardized regression coefficients were calculated using HLM 6. *$p < 0.05$; **$p < 0.01$.

4. Discussion

In the present study, two value conceptions were investigated regarding their interrelations as well as their differential effects on motivational interference in school-leisure conflict and learning outcomes. With one exception, Hypothesis 1 that focused on the relationship between the Schwartz values and the value orientations was confirmed. Contrary to the expectations, Self-direction was not related to Well-being value orientation. Hypothesis 2a that dealt with the relations of Achievement, Conformity, and Security with the three dependent variables was partially supported. Achievement and Conformity seem to be relevant for both types of motivational interference, whereas for school marks only Achievement was significant. The relations of Hedonism, Self-direction, and Stimulation with the dependent variables that were proposed in Hypothesis 2b were partially supported. Hedonism was relevant for both types of motivational interference, Self-direction for motivational interference during studying and school marks, and Stimulation for motivational interference during leisure and school marks. Hypothesis 3a was supported since Achievement value orientation significantly predicted all three dependent variables. Hypothesis 3b was partially supported, since Well-being value orientation was relevant for both types of motivational interference but not for school marks.

In what follows, first, the relations between the two conceptions of values will be commented. Then, the role of the Schwartz values in predicting motivational interference in school-leisure conflict and school marks will be discussed and, finally, the additional impact of the two value orientations.

4.1. Comparing the two value conceptions

Regarding the correlations between the variables originating from the two value conceptions, divergences and overlaps arose. The correlations of values within their respective value conception were higher than those between

value conceptions. Specifically, within the Schwartz set of values, the highest correlation was the one between Power and Achievement ($r =$ 0.53) and the correlation between Achievement value orientation and Well-being value orientation was $r = −0.43$. The latter relationship has also been found in different samples (Fries et al., 2005; Hofer et al., 2007; Hofer et al., 2010) and points to the fact that the two value orientations are not completely independent. However, as quite a lot of students indicated in their responses that they regarded themselves as being similar to the prototypes of both value orientations we would not regard them as opposite poles of one dimension.

However, correlations between Achievement and Well-being value orientations and the 10 Schwartz values were low to moderate ranging from zero to 0.37. Achievement value orientation correlated with the Schwartz values Conformity, Security, Universalism, and Achievement. The highest correlations of Well-being value orientation were with Hedonism and Stimulation, and of Achievement value orientation with Conformity. Based on the above pattern of interrelations, on the one hand, it seems safe to say that the two value conceptions center around different sources of variance within the value system of the students; on the other hand, there is clear overlap too. This finding is further supported by the results of the MDS analysis that showed conceptual proximity between the Achievement value orientation and the values Security and Conformity. This clearly shows that Achievement value orientation compared to Schwartz's Achievement value includes less the aspect of power. The Well-being value orientation positively correlated with Hedonism as well as with Stimulation, but negatively with Conformity, Security, Tradition, and Universalism. In the MDS analysis these relations were also shown. Taken together, the above findings are in line with the findings of Mohler et al. (2006) regarding the relation between the Achievement value orientation and the Schwartz values Security and Conformity. It fits also with the conception of well-being as a value orientation primarily oriented to leisure-type activities fostering enjoyment and favoring the pleasure of the moment in the hedonic sense (see, also, Ryan & Deci, 2001).

If we take the Schwartz value circle as a reference point (see Figure 1), the two value orientations lie in opposite poles of the dimension of Conservation versus Openness. The first pole, involving Security and Conformity, represents what is expected from students, that is, to put academic goals at the top of their priorities. The other pole involves values that give priority to activities that are open to stimulation and enjoyment. From this point of view, one could see an analogy to the distinction between intrinsic and extrinsic motivation (see, e.g., Ryan & Deci, 2000). An alternative perspective could be that the Well-being value orientation represents preference of the pleasures of the here-and-now as opposed to hard work that may pay off in the future. An antagonism such as this resembles the notion of delay of gratification. The notion of delay of gratification is defined as the tendency to delay a positive reward at the expense of immediate satisfaction with a smaller good (Metcalfe & Mischel, 1999). It has been shown

that the incentive value of a given reward decreases as a function of the length of its temporal delay (Logue, 1995). It seems worthwhile to investigate whether students high in Achievement value orientation are higher in future time perspective (FTP, see, Bembenutty & Karabenick, 2004; Lens, Simons, & Dewitte, 2002) than students high in Well-being value orientation. Such a research would add a new aspect to the Schwartz value circle that has not been considered so far. Yet, one should be cautious because the moderate negative correlation between the two value orientations, as well as theoretical considerations, indicate that multiple values are being endorsed by the students.

4.2. Relevance of the Schwartz values for school-leisure conflict and school marks

The 10 Schwartz values accounted for a significant amount of explained variance in each of the three dependent variables of this study, namely the two motivational interferences and school marks. It makes sense that students with high Conformity value, namely, endorsing what others expect them to do, can concentrate on studying. It is also understandable that Hedonism correlated positively with motivational interference during studying because students valuing enjoyment highly are presumably distracted by thoughts stemming from the desire for more pleasant activities. It is difficult, however, to explain why also Power was found to positively predict motivational interference during studying. Possibly students valuing power are disturbed during studying because they worry about their results being lower compared to their classmates. In the case of motivational interference during leisure, the Schwartz values also explained a considerable percentage of variance. As expected, students with high Conformity value reported high motivational interference when going out while a duty waited for them; on the contrary students with high Hedonism and Stimulation values could enjoy the leisure activity without a conflict.

Finally, when looking at school marks as a criterion variable, a moderate but significant increase of explained variance was observed after inclusion of the Schwartz values. Specifically, Achievement value contributed positively to the prediction of school marks. Interestingly, not only Stimulation but also Tradition showed a unique negative contribution to the explained variance. This is puzzling, as one would expect students high in traditional values to strive more for academic achievement. However, because the first-order correlation between Tradition and school marks was not significant this result should not be overvalued.

4.3. Differential impact of the two value orientations on school-leisure conflict and school marks

The two value orientations were found to correlate to a higher degree with the three dependent variables than the Schwartz values (Table 2). Moreover, the two value orientations explained significant variance of motivational interference during studying and leisure beyond that of the Schwartz values.

As expected, a negative contribution of Achievement value orientation and a positive contribution of Well-being value orientation were found for the experience of motivational interference during studying. For the experience of motivational interference during leisure the opposite pattern was found. These findings are in line with those of other studies using the two value orientations (Fries et al., 2005; Hofer et al., 2007; Hofer et al., 2010) and they show that the impact of value orientations is beyond that of the other value predictors, which is an important finding. This additional prediction is probably due to the fact that the measures used in the present study were specifically tailored to the situation of a school-leisure conflict, since they are assessed with descriptions of students, and the dependent variables are school-specific.

As regards school marks, contrary to the finding of Fries et al. (2005) but confirming the results of Hofer et al. (2008), only Achievement value orientation positively predicted school marks. The Schwartz values Stimulation and Tradition remained significant even after introducing the two value orientations. These findings may point to the fact that there is unique variance in some of the Schwartz values when it comes to motivational interference and learning outcomes. It should be also noted that some of the Schwarz values predicting motivational interference remained significant even when the correlation between the two measures of motivational interference was controlled for. This means there is a distinct effect of those Schwartz values on the two motivational interferences that is not due to the shared variance between the two motivational interference measures. Motivational interference by itself is a factor that impacts school marks. The inclusion of the two motivational interference variables contributed beyond the Schwartz values and the value orientations to the prediction of school marks. There is evidence that motivational interference during studying at least partially mediates between Achievement value orientation and school marks.

4.4. Conclusions

Generally speaking, the role of individual values in academic motivation and learning could be a promising avenue for future research. One conclusion from the present study is that the Achievement and Well-being value orientations may be integrated into the Schwartz system and could rearrange the dimensional description of values in terms of a dimension ranging from Conservation to Openness. Second, the explanatory power of the Schwartz values with regard to students' experience of school-leisure conflict can be enhanced when the two value orientations derived from Inglehart are included. Vice versa, some of the Schwartz values seem to capture aspects of the school-leisure conflict situation that are not included in the two value orientations. Specifically, as Tradition and Power add in the prediction of variance, their contribution should be analyzed more intensely in future studies. Since both value conceptions predicted the dependent variables in this study we would recommend including both value conceptions in further empirical studies. The third conclusion refers to the suitability of the Schwartz value circle for mapping goal conflicts. Boekaerts

et al. (2006) already warned to be cautious about the mutual exclusiveness of values in the Schwartz system. Within our methodological framework and the situation studied, we cannot draw a valid conclusion as to whether values lying on opposite sides of the Schwartz circular structure may underlie motivational conflict on a behavioral level. Future studies should more specifically center on the question which values are mutually exclusive and how this situation affects academic motivation and learning.

One limitation of this study is its correlational character. To investigate the possible causal effect of values on learning motivation and learning outcomes, an experimental design is needed. In fact, in a study in which value orientations were induced by using a priming paradigm, students in the Well-being value orientation group indicated higher motivational interference during studying compared to a control group (Hofer, Kilian, Kuhnle, & Schmid, in press).

Another limitation regards the fact that the measures of the two value conceptions differed in their number of items and also somewhat in the phrasing of the items. Finally, due to possible multicollinearity of the value measures, the interpretation of the regression coefficients has to be regarded with caution (see Schwartz, 2009), particularly when the first-order correlation between two measures pointed in a different direction than the regression coefficient as it is the case with Tradition and motivational interference during studying.

From an educational standpoint, the role of values has to be discussed in terms of their pedagogical relevance. Which practical conclusions can be drawn regarding value education? Explained variance is quite high for motivational interference and medium for grades. Educational psychologists usually try to improve academic achievement. Providing incentives for achievement to students who prefer well-being, hedonism, and stimulation over achievement, might improve school marks only to the extent that these students also possess an achievement value orientation. For a student who does not value academic achievement low school marks are not threatening. Moreover, to strive for well-being, hedonism, and stimulation is as legitimate for students as for adults (see Schmid et al., 2007). Therefore, not a single approach can be effective for all students.

There is evidence that extracurricular leisure activities offered to students in countries with full-time school systems have no detrimental effects on learning. On the contrary, participation in such activities is associated with high academic achievement (Feldman & Matjasko, 2005). Also, for a self-directed structuring of activities that are related to one's values, self-control competencies are needed. Supporting this, high self-control competencies have shown to be related to a lower frequency of school-leisure conflicts (Kuhnle, Hofer, & Kilian, 2010). A successful synthesis of values would occur when different values are satisfied in one and the same action. Can school activities be organized to be effective and enjoyable at the same time? Learning often requires cognitive effort and self-discipline and, therefore, will frequently be dismissed when put into competition with less demanding activities offered by the leisure industry. This implies that

students may have to realign their values. At certain points they must decide when to discard goals due to lack of time or energy and to reallocate investments by reflecting on their preferences. Temporary disengagement from highly valued activities to the extent that duties are urgent is a helpful strategy (Wrosch, Scheier, Carver, & Schulz, 2003).

Taken as a whole, a positive personality development of youths can be strengthened if students are able to successfully deal with the multiplicity of their values in face of value-related goal conflicts.

Acknowledgments

Appendix A. Experience of motivational interference during studying

1. I'll study superficially to be done sooner.
2. I'll soon be completely absorbed in studying so that I won't think about anything else [Item reversed].
3. I'll have the feeling that I'm missing out on something important.
4. I'll feel edgy, because there are so many nicer things in life than studying for the test.
5. I'll study until everything is done, even if it takes a lot of effort [Item reversed].
6. I'll study really thoroughly [Item reversed].
7. I'll start to study, but then switch to another activity quickly.
8. I'll switch between studying and other activities.
9. I'll give up early if I don't understand immediately how to do it.
10. While studying, I'll be easily distracted.
11. I won't be able to concentrate properly, because I'll always have to think about what the others are doing.
12. It will be very hard for me to keep on studying until the end.
13. I'll try to do everything as good as possible [Item reversed].
14. I'll get into a bad mood easily because I sit at my desk while the others have fun. Now and then I'll interrupt studying to do something else in between.

Appendix B. Experience of motivational interference during leisure

1. I won't think about the upcoming test as soon as we are together [Item reversed].
2. I'll have a guilty conscience.
3. I'll have the feeling that I'm missing out on something.

4. Nothing will be able to distract me from my friends [Item reversed].
5. I'll be glad that I don't have to struggle with studying [Item reversed].
6. I won't be able to stop thinking about the fact that I should be studying for the test.
7. I'll feel edgy, because I am not done with studying yet.

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