

# Materialistic Values and Well-Being Among Business Students: Further Evidence of Their Detrimental Effect<sup>1</sup>

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According to an environmental-match perspective regarding the content of values (Sagiv & Schwartz, 2000), extrinsic or materialistic values should positively predict well-being in populations in which extrinsic values match the environmentally promoted values (e.g., among business students). However, other value researchers (Kasser & Ahuvia, 2002) disagree with these claims. Although the present study shows that business students ascribe higher importance to extrinsic values than do education students, the negative relation of extrinsic values with well-being and the positive relation with internal distress and substance use was not moderated by the department to which students belonged. Finally, mediational analyses revealed that value orientations could account for the fact that business students report lower well-being and higher substance use in comparison to education students.

Currently, there is a controversy concerning the type of associations that should exist between value orientations and well-being. Drawing on humanistic (Fromm, 1976; Maslow, 1954) and organismic (Deci & Ryan, 2000; Ryan & Deci, 2000) theorizing, some authors (Kasser, 2002; Kasser & Ahuvia, 2002) have argued that being focused on extrinsic or materialistic values, such as financial success, fame, and physical appearance, rather than on intrinsic values, such as growth, community contribution, and affiliation, is detrimental for people's well-being. Such an effect would occur because extrinsic goal pursuits relate to excessive interpersonal comparisons (Lyubomirsky & Ross, 1997) and unstable self-esteem (Kernis, Brown, & Brody, 2000), both of which relate negatively to well-being.

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Furthermore, extrinsically oriented individuals would engage less often in activities that can satisfy the psychological needs of autonomy, competence, and relatedness (Deci & Ryan, 2000; Kasser, 2002; Ryan & Deci, 2000) that function as nutriments for one's well-being (La Guardia, Ryan, Couchman, & Deci, 2000; Sheldon, Elliot, Kim, & Kasser, 2001). For instance, extrinsic value pursuits tend to crowd out psychological need-satisfying behaviors, such as prosocial engagement and affiliation (Duriez, Vansteenkiste, Soenens, & DeWitte, 2004; Ryan, Sheldon, Kasser, & Deci, 1996; Solberg, Diener, & Robinson, 2004).

In contrast, other researchers (Sagiv & Schwartz, 2000) have claimed that the associations between (materialistic) values and well-being depend on the match between people's value orientation and the type of values that are emphasized within their environments. Holding environmentally congruent values should be positively related to well-being. Thus, the relation between people's values and well-being would not depend as much on the content of the values that are held, but on the fit between these values and the values that are emphasized and encouraged environmentally. That is, if an environment provides opportunities to meet goals embodied in one's values and provides support and reinforcement for the importance of such values, then holding environmentally congruent values should positively predict well-being, regardless of its content. This hypothesis is also held by various organizational researchers (e.g., Meglino, Ravlin, & Adkins, 1989).

These two different positions result in diverging hypotheses concerning the relationship between materialistic values and well-being among business students. According to the position defended by Kasser and Ahuvia (2002), an extrinsic value orientation should negatively predict well-being, even among business students who are socialized in rather extrinsically oriented environments (Sagiv & Schwartz, 2000). In line with this hypothesis, Kasser and Ahuvia (2002) reported that among a group of Singaporean business students, extrinsic values negatively predicted self-actualization, vitality, and general happiness while they were related positively to anxiety and physical complaints. Similar results were obtained by Srivastava, Locke, and Barthol (2001) among a group of entrepreneurs and business students.

However, from an environmental-match perspective, the well-being of extrinsically oriented business students should be enhanced because holding extrinsic values is congruent with the type of values that are supported in a business school environment (Holland, 1985). In contrast, the well-being of psychology students, for instance, should be increased if they emphasize the attainment of community contribution, a value that is encouraged within their immediate environment. In fact, Holland classified psychology as an environment that stresses the importance of caring for and helping others. In line with this reasoning, Sagiv and Schwartz (2000) showed that there was

no main effect of valuing power (i.e., an extrinsic value) over universalism (i.e., an intrinsic value) on well-being, as indexed by satisfaction with life (Diener, Emmons, Larsen, & Griffin, 1985), positive affect (Bradburn, 1969), and general mental health (Becker, 1989) in a group of Israeli business and psychology students, but that the effect of value orientation interacted with the type of environments in which people are placed. In line with the environmental-match hypothesis, this interaction suggests that business students who emphasize power above universalism report more positive affect, higher life satisfaction, and better mental health, while psychology students report more optimal functioning when they value universalism over power.

These diverging findings may be a result of the different type of value measures used in both studies. While Sagiv and Schwartz (2000) used the Schwartz Value Inventory (1992), Kasser and Ahuvia (2002) assessed people's values with the Aspiration Index (Kasser & Ryan, 1996). Because the Aspiration Index was explicitly developed to distinguish between intrinsic and extrinsic values and to examine its relation with well-being, we decided to make use of this questionnaire in the current study.

### Aim of the Present Study

The aim of this study is to test further these conflicting hypotheses because there are only a few studies (Kasser & Ahuvia, 2002; Sagiv & Schwartz, 2000) that have researched them directly. In doing so, we used a bigger sample of both business students ( $N = 119$ ) and education students ( $N = 129$ ) than was used in past research. In addition, we elaborated on these previous studies in three different ways.

First, next to measures of vitality, we also include a measure of life satisfaction (Diener et al., 1985). Although this important well-being variable was assessed by Sagiv and Schwartz (2000), it was missing in the study by Kasser and Ahuvia (2002). In addition, we also assess the use of cigarettes, alcohol, and other drugs. This was not considered in past value research among business students in spite of the fact that some authors (e.g., Kasser & Ryan, 2001; Williams, Cox, Hedberg, & Deci, 2000) found that extrinsic values positively predicted the use of cigarettes and alcohol. These behaviors are interpreted as indicators of self-medication. Extrinsically oriented individuals will be more prone to engage in these distracting activities as a way to cope with the lack of natural need satisfaction that they experience during their extrinsic value pursuits (Kasser, 2002). Finally, we also include a measure of internal distress that has been missing in past value research among business students.

Second, we examine how being focused on intrinsic rather than extrinsic goals in general and on financial success versus community contribution in

particular relates to well-being. Although Kasser and Ahuvia (2002) found a negative effect of adopting an extrinsic value orientation among business students, this effect might have been a result of the fact that the extrinsic value measure contained, next to financial success, physical appearance and status/fame. It is likely that the pursuit of the latter two types of extrinsic values might be supported less in business school environments. Therefore, we explicitly focus on the effect of financial success, which is considered to be reinforced more strongly within business schools than within infant school teaching environments; versus community contribution, which is considered to be encouraged more strongly within business schools than within infant school teacher environments.

Third, we want to examine whether any differences between the business and infant school sample in terms of vitality, life satisfaction, substance use, and internal distress are a function of the type of values that students hold. In other words, we explore whether value orientations will mediate any possible differences in well-being and physical health between the two samples.

## Method

### *Participants*

Study participants were 119 (54 male, 65 female) 18- to 20-year-olds who were majoring in business studies, and 129 (21 male, 108 female) 18- to 20-year-olds who were studying to become infant school teachers at a Belgian college. Participants completed the questionnaire package at the end of their regular school hours in small group sessions of 20 to 30 students.

Students had been exposed to the environments that (mis)match with their own values during 9 months prior to their participation in the study. All participants had Belgian nationality and belonged to the Flemish-speaking part of the country. The translation of the questionnaires into Flemish was done according to the guidelines of the International Test Commission (Hambleton, 1994), using the translation/back-translation procedure (Brislin, 1980). Differences between the back-translated and the original versions were minimal. A committee of bilingual research assistants decided on the final Flemish version (Van de Vijver & Leung, 1997).

### *Measures*

*Values.* Participants completed the Aspiration Index (Kasser & Ryan, 2001), which assesses the importance that people place on intrinsic and

extrinsic values. Participants used a 7-point Likert-type scale to record whether they valued the extrinsic goals of financial success (e.g., "I will have many expensive possessions"; Cronbach's  $\alpha = .73$ ), fame (e.g., "I will be admired by other people";  $\alpha = .97$ ), and image (e.g., "Achieving the 'good look' that you're searching for";  $\alpha = .82$ ), as well as the intrinsic goals of growth (e.g., "Developing yourself and learning new things";  $\alpha = .70$ ), community contribution (e.g., "Helping people in need";  $\alpha = .89$ ), and affiliation (e.g., "I will express my love for special people";  $\alpha = .81$ ).

To support the classification into intrinsic and extrinsic values, a second-order factor analysis with promax rotation was conducted on these six scales. There are two interpretable factors (each defined by the three hypothesized scales) that were found, explaining 77% of the variance. Each subscale had a minimal loading of .61, and no cross-loading above .30 was found. This provides support for the theoretically based distinction between intrinsic and extrinsic values, as found in other studies (Kasser & Ryan, 1996). Subsequently, an intrinsic value orientation score ( $\alpha = .86$ ) and an extrinsic value orientation score ( $\alpha = .94$ ) was constructed by summing and averaging the separate intrinsic and extrinsic subscales. Both factors were strongly negatively correlated in the present sample ( $r = -.67, p < .001$ ).

*Well-being.* Participants completed the Satisfaction with Life Scale (Diener et al., 1985) and the Vitality Index (Ryan & Frederick, 1997), which served as indicators of well-being. The Satisfaction with Life Scale is a widely used measure of well-being, consisting of five items (e.g., "I am satisfied with my present life"). It is intended to measure the cognitive component of subjective well-being (Diener, 1984). The seven-item vitality scale (e.g., "I feel energized") measures the state of feeling alive and alert. The items of both scales were rated on a 5-point scale. Cronbach's alphas were .94 for the Satisfaction with Life Scale and .96 for the Vitality Index. An item of the Vitality Index that considerably reduced the internal consistency of the scale was omitted. Because both scales were highly correlated ( $r = .93, p < .001$ ), they were combined to form a single index of well-being.

*Internal distress.* The internal distress measure that was used is the Internal Distress Scale (IDS; Weinmann, 1992), which is composed of 13 items that were derived from the Depression Scale of the Center for Epidemiological Studies (CES-D; Radloff, 1977). Items refer to somatic and psychological symptoms of internal distress, such as headaches, stomachaches, colds, anxiety, tension, and depression. Participants were asked to indicate how often they experienced each symptom over the past month on a 4-point scale ranging from 0 (*never*) to 3 (*often*). Cronbach's alpha in the present sample was .78.

*Substance use.* Participants indicated on a 4-point scale the extent to which they had engaged in cigarette (one item), alcohol (two items), and drug use (two items) since the beginning of the academic year. The scale

ranged from 0 (*never*) to 4 (*often*). Internal consistency of this five-item scale was satisfactory ( $\alpha = .71$ ).

## Results

### *Preliminary Analyses*

To examine whether business students will, on average, more strongly emphasize extrinsic values in general and community contribution in particular compared to education students, we performed a series of independent *t* tests, which are reported in Table 1. These analyses reveal that education students valued each of the intrinsic values more strongly and valued each of the extrinsic values less strongly, compared to business students. Importantly, in line with our reasoning, the largest effects were obtained for community contribution,  $t(246) = -12.91, p < .001$ ; and financial success,  $t(246) = 29.83, p < .001$ . Next, we examined within-group differences in attributed importance to community contribution and financial success. As expected, paired-sample *t* tests indicate that business students more strongly emphasized the pursuit of financial success, rather than community contribution,  $t(118) = 15.12, p < .001$ ; whereas education students valued community contribution more strongly than financial success,  $t(128) = -23.00, p < .001$ .

These findings replicate the results obtained by Sagiv and Schwartz (2000) and indicate that, as expected, business students are highly oriented toward wealth, while education students primarily focus on contributing to the community. This difference in value orientation might result either from the types of values that are emphasized within the students' immediate environments, or from the fact that students choose environments that promote values that are consistent with their own (i.e., self-selection).<sup>3</sup>

### *Correlational Analyses*

In line with Kasser and Ahuvia (2002) and Sagiv and Schwartz (2000), in a first step, we considered the correlations between the intrinsic and extrinsic

<sup>3</sup>Independent-sample *t* tests indicate that male participants ascribed higher importance to extrinsic values,  $t(246) = 3.42, p < .001$ , than did female participants. In contrast, women were oriented more strongly toward intrinsic values than were men,  $t(246) = 3.66, p < .001$ . No differences were found between male and female participants for well-being and internal distress, but male participants reported engaging more in cigarette, alcohol, and substance use than did female participants,  $t(246) = 6.14, p < .001$ . Therefore, we decided to control for gender in all subsequent analyses.

Table 1

*Means for Intrinsic and Extrinsic Values Among Business and Infant School Teaching Students*

	Business students		School teachers		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Intrinsic values	5.15	0.46	5.48	0.28	-13.78***
Growth	5.60	0.34	6.03	0.43	-8.90***
Community contribution	3.90	0.97	5.27	0.70	-12.91***
Affiliation	5.88	0.31	6.24	0.42	-7.73***
Extrinsic values	4.01	0.87	2.20	0.69	18.32***
Financial success	5.76	0.56	2.80	0.93	29.83***
Fame/image	2.22	1.42	1.54	0.61	4.95***
Physical appearance	4.06	1.00	2.25	0.90	14.99***

\*\*\* $p < .001$ .

values and the three outcome variables (i.e., well-being, internal distress, and use of drugs). These correlations are presented in Table 2.

Each of the three intrinsic values was related positively to well-being and negatively to substance use, while growth and community contribution also were negatively related to internal distress. Each of the three extrinsic values was negatively related to well-being. Both financial success and physical appearance were positively related to substance use, and physical appearance was negatively related to internal distress. Only 4 out of 18 correlations between the values and the outcome variables were not significant. However, each of them was in the predicted direction. In addition, both the overall intrinsic and extrinsic value orientations were related significantly (in the expected direction) to the three outcome variables.

### *Regression Analyses*

To test our hypotheses further, hierarchical regression analyses were conducted. Each of the three outcome measures was predicted by entering students' department (1 = business, 2 = education) and gender in a first step; their values in a second step; and the interaction between department and values, as well as the interaction between gender and values in a final step. If

Table 2

*Correlations Between Intrinsic and Extrinsic Values and Outcome Variables*

	Well-being	Substance use	Internal distress
Intrinsic values	.26***	-.31***	-.15*
Growth	.27***	-.27***	-.14*
Community contribution	.19**	-.24***	-.14*
Affiliation	.23***	-.29***	-.07
Extrinsic values	-.22***	.36***	.13*
Financial success	-.21***	.44***	.12
Fame/image	-.15*	.10	.10
Physical appearance	-.22***	.34***	.13*

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Sagiv and Schwartz's (2000) claim that the degree of experienced well-being depends on the fit between the environment (i.e., department) and the person (i.e., individual value orientation) is correct, then the interaction term should explain a significant amount of variance in the outcome variables.

Because two different measures reflecting the relative importance placed on intrinsic versus extrinsic values were constructed, two different sets of regression analyses were executed. The first regression contained people's overall intrinsic value orientation relative to their extrinsic value orientation as an independent variable, while the second yielded the importance attributed to community contribution relative to financial success as a predictor. The value predictors were constructed by subtracting the mean of extrinsic values from the mean of intrinsic values for the first regression, and by subtracting the mean for financial success from the mean for community contribution for the second. This procedure is analogous to the one used by Sagiv and Schwartz (2000). This procedure was supported by the present data because both intrinsic and extrinsic value orientations ( $r = -.67$ ,  $p < .001$ ) and community contribution and financial success were strongly negatively related ( $r = -.67$ ,  $p < .001$ ). Based on the environmental-match hypothesis, we expected that the interaction term in the second regression, when using community contribution versus financial success as value predictor, would turn out to be significant, because these types of values are valued most differentially in both departments.



In the first step of the regression analysis, it was found that education students reported higher well-being ( $\beta = .16, p < .05$ ) and less engagement in substance use ( $\beta = -.23, p < .001$ ) than did business students. No differences were found for internal distress ( $\beta = -.06, ns$ ). In the second step, it was found that both the intrinsic versus extrinsic composite score and the community contribution versus financial success composite score positively predicted well-being ( $\beta = .34, p < .01$ ;  $\beta = .33, p < .01$ ) and were negatively related to substance use ( $\beta = -.26, p < .01$ ;  $\beta = -.37, p < .01$ ),<sup>4</sup> as well as internal distress ( $\beta = -.34, p < .01$ ;  $\beta = -.32, p < .01$ ).

The interaction between gender and each of the composite value scores was not significant for any of the outcome variables. Most importantly, the third step of the regression analysis reveals that the interaction between department and each of the composite value scores was not significant for any of the outcome variables ( $\beta$ s ranging between  $-.06$  and  $.04, ns$ ), whereas the main effects of the intrinsic versus extrinsic value composite and the community contribution versus financial success composite remained unchanged.

These results suggest that the effect of value orientation on well-being is not dependent on the type of values that are emphasized within the environment. Apparently, the upholding of extrinsic values also constitutes a psychological and health cost for people who are placed in an environment that supports their extrinsic goal pursuits. The independent variables explained a significant portion of the variance in each of the three outcome variables ( $R^2$ s =  $.04$  to  $.24, p < .05$ ).

### *Mediational Analyses*

A final aim of the present study was to examine whether the difference in well-being between the two student samples was mediated by the type of values people hold. In order to determine whether value orientations mediate the relations between type of department and outcome variables, tests of mediation were conducted. Each test consisted of checking four necessary conditions for strict mediation (Baron & Kenny, 1986): (a) the independent variable predicts the dependent variable; (b) the independent variable predicts the mediating variable; (c) the mediator is related to the dependent variable, even after controlling for the independent variable; and (d) the

<sup>4</sup>In a follow-up analysis, we examined the effects of intrinsic versus extrinsic values, and financial success versus community contribution on the three subcomponents of substance use; that is, cigarette use, alcohol use, and drug use. Intrinsic versus extrinsic values predicted alcohol and drug use negatively, but were, unlike previous studies (e.g., Williams et al., 2000), unrelated to cigarette use; whereas financial success versus community contribution negatively predicted the three indicators of substance use.

Table 3

*Betas for Paths in Mediation Analyses Using Intrinsic Versus Extrinsic Values and Community Contribution Versus Financial Success as Mediating Variables*

Values	Step 1	Step 2	Step 3	R <sup>2</sup>
Intrinsic vs. extrinsic (I/E)				
Well-being	.16*	-.10	.32**	.06**
Use of drugs	-.34	-.16	-.23*	.13**
Community contribution vs. financial success (CC/FS)				
Well-being	.16*	-.11	.31**	.05*
Use of drugs	-.34**	-.03	-.37**	.15**

*Note.* Step 1 refers to the path from the independent variable (department) to the dependent variable (well-being or use of drugs). Step 2 refers to the path from the independent to the dependent variable controlled for the mediating variable (I/E values or CC/FS values). Step 3 refers to the path from the mediating variable to the dependent variable controlled for the independent variable. R<sup>2</sup> = variance explained in the dependent variable.

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

effect of the independent on the dependent variables disappears after statistical control for the mediator. The mediational results using intrinsic versus extrinsic value orientation as a mediator can be found in the upper half of Table 3, whereas the mediational results using community contribution versus financial success as the mediator can be found in the lower half of Table 3.

First, the analyses show a significant effect of type of department on well-being ( $\beta = .16, p < .05$ ) and substance use ( $\beta = -.34, p < .001$ ), but not on internal distress ( $\beta = -.06, ns$ ). Therefore, the mediational analysis for internal distress was not continued. Second, the effect of type of department on mediator variables (i.e., the two composite value scores) was also significant. Education students were oriented more strongly toward intrinsic than extrinsic values ( $r = .78, p < .001$ ) and more strongly emphasized the attainment of community contribution than financial success ( $r = .86, p < .001$ ). Third, after controlling for type of department, the intrinsic versus extrinsic value composite score positively predicted well-being ( $\beta = .34, p < .01$ ) and was related negatively to substance use ( $\beta = -.24, p < .05$ ).

Similarly, the community contribution versus financial success composite positively predicted well-being ( $\beta = .33, p < .01$ ), and it negatively predicted substance use ( $\beta = -.37, p < .01$ ). Finally, when the intrinsic versus extrinsic value composite was taken into account, the significant effect of type of department on well-being and substance use disappeared ( $\beta$ s =  $-.10$  and  $-.15, ns$ ). Similarly, the significant effect of department on well-being and substance use disappeared after entering the community contribution versus financial success composite ( $\beta$ s =  $-.11$  and  $-.03, ns$ ). Hence, it can be concluded that the type of values that students hold mediates the relationship between the type of department to which they belong and the outcome variables of well-being and substance use.

### Discussion

The present study reveals three important findings. First, business students more strongly endorse extrinsic values than do education students, while simultaneously attaching less importance to intrinsic values. Second, in spite of the match between their personal value orientation and the values emphasized within their environments, extrinsically oriented business students display lower psychological well-being, show more signs of internal distress, and engage in more substance use. Third, business students' lower well-being and enhanced substance use, compared to education students, is mediated largely by their extrinsic value orientations. We discuss each of these findings in more detail.

Concerning the types of values held by business and education students, the present study demonstrates that extrinsic goals are strongly valued by business school students, while education students ascribe higher valence to intrinsic values. In line with Sagiv and Schwartz's (2000) description of both departments, the largest effects between both departments were found for community contribution and financial success. Specifically, it appears that especially the extrinsic value of financial success is a crucial aspect of business students' value systems, while the intrinsic value of community contribution is not so important to them. The reverse is true for education students, who emphasize more strongly the attainment of community contribution over financial success. In line with Holland (1985) and Sagiv and Schwartz (2000), we speculate that the differential importance placed on these two types of values reflects the different types of values promoted within each environment.

As a consequence, if a matching hypothesis (Sagiv & Schwartz, 2000) is correct, extrinsically oriented business students and intrinsically oriented education students should display the most optimal pattern of functioning

because the effect of the content of values is said to depend on the match between one's own values and the values that are stressed within the environment. In contrast, other authors (Kasser & Ahuvia, 2002) have claimed that extrinsic values are negatively related to well-being, regardless of the type of values that are promoted within the environment and, hence, that an extrinsic value orientation also should negatively predict well-being and physical health among people living in an extrinsically oriented environment (e.g., business students).

Because the strongest differences between both groups were found for the values of financial success and community contribution, it is particularly important to explore how being more focused on wealth relative to helping people in need predicts well-being in both samples. This question has not been addressed in previous research, which only considered the effect of an overall extrinsic versus intrinsic value orientation among business students (Kasser & Ahuvia, 2002).

The present study reveals that focusing on financial success relative to community contribution undermines well-being, increases engagement in substance use, and is positively associated with internal distress. The absence of an interaction between type of values and type of department (business schooling vs. infant teacher schooling) suggests that the negative effect of valuing financial success over community contribution on well-being also occurs among people who find themselves in an environment that presumably supports the attainment of extrinsic values. A similar pattern of findings emerged when considering the overall effect of intrinsic versus extrinsic values. These results provide evidence for the assumption of Kasser and Ahuvia (2002) that extrinsic values negatively predict well-being and optimal functioning, even within environments that reinforce and encourage the pursuit of such values.

Notably, the strongest effects in the present study were obtained for physical health, as measured through people's use of cigarettes, alcohol, and drugs. It seems that highly pursuing extrinsic values is related not only to poorer psychological functioning, but also places people at risk for development of cardiovascular disease and reduced life expectancies associated with the use of cigarettes and the consumption of alcohol (Grundy, Pasternak, Greenland, Smith, & Fuster, 1999; McGinnis & Foege, 1993).

In addition, the present study reveals another interesting finding. Mean differences in self-reported well-being and substance use between business students and education students could be explained fully by the type of values about which each group was primarily concerned. Business students are less satisfied with their present lives, feel less vital, and engage in more self-medicating behaviors because they are more oriented toward wealth

than toward helping people in need. These findings are consistent with Sheldon and Krieger's (2004) observation that law students report a decrease in well-being from the beginning to the end of the first year in law school, partly because they become more heavily oriented toward the attainment of extrinsic goal pursuits.

Although the results of the present study are straightforward, a few limitations must be mentioned. First, the present results are based on self-report and are cross-sectional in nature. It would be instructive to obtain objective scores of students' psychosocial functioning in order to obtain more evidence for the validity of these relationships. In line with Sheldon and Krieger (2004), it also would be important to obtain longitudinal data to explore whether an increase in extrinsic value pursuits, under the influence of students' immediate environment, would account for a possible decline in well-being.

A second limitation is that past value studies assumed that the type of values students hold are influenced by the type of values reinforced within their immediate environments. However, no previous study directly assessed the type of values prevailing in students' environments. So, future research might well incorporate such environmental value measures to determine whether the different types of values held by both groups of students are indeed influenced by the school environments in which they are socialized.

Third, in line with other researchers' suggestions (Deci & Ryan, 2000; Williams et al., 2000), we reasoned that extrinsically oriented individuals might engage in self-medicating behaviors, such as cigarette, alcohol, and substance use in order to compensate for the lack of psychological need satisfaction they experience because of their pursuit of materialistic goals. In a similar vein, the lack of experienced psychological need satisfaction might well explain the undermining of their well-being and the presence of internal distress, but future research might explore this mediating hypothesis more directly.

Fourth, a possible reason why the present study and the research by Kasser and Ahuvia (2002) reveal a different picture than that of Sagiv and Schwartz (2000) is that business students' values were assessed differently. While Sagiv and Schwartz (2000) used the Schwartz Value Inventory (Schwartz, 1992), Kasser and Ahuvia (2000) used the Aspiration Index (Kasser & Ryan, 1996) to assess intrinsic and extrinsic values. We also used Kasser and Ryan's Aspiration Index in the present study because these value measures might more accurately represent the type of extrinsic values on which self-determination theory (Deci & Ryan, 2000; Ryan & Deci, 2000) focuses; namely, the tendency to focus on external signs of worth and success. Nevertheless, it would be instructive for future research to include both the Schwartz Value Inventory and the Aspiration

Index to explore which values of Schwartz's questionnaire cluster together with people's intrinsic and extrinsic aspirations, as measured by Kasser and Ryan.

The goal of the present study was to shed light on the relationship between extrinsic values and well-being among business students, an issue that deserves further attention against the background of an ongoing controversy in the literature. Our findings disconfirm the matching hypothesis and provide considerable evidence for Kasser and Ahuvia's (2002) claim that holding an extrinsic value orientation is associated with a poorer pattern of psychological functioning and physical health, even when one is placed in an environment that highly encourages and reinforces the pursuit of extrinsic values. Although the pursuit of extrinsic values seems to be associated with psychological and physical costs for both intrinsically and extrinsically oriented people, more research is needed to explore whether these conclusions also would be drawn in other extrinsically oriented samples (e.g., business managers), and when other intrinsic versus extrinsic value questionnaires are used. Such research might help to better understand the conflicting evidence reported in the literature.

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