

THE RELATIONSHIPS AMONG PROCRASTINATION, FLOW, AND ACADEMIC ACHIEVEMENT

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The purpose in this study was to examine the relationships among procrastination, flow, and academic achievement. The data were collected from 172 Korean undergraduates. The results indicated that there was not a relationship between students' procrastination and academic achievement and that, even though procrastination increased the likelihood of flow-like experiences, the procrastinators were not likely to perform better in an examination because of flow. The implications of this study are discussed.

Keywords: procrastination, flow, academic achievement.

Definitions of *procrastination* vary. Lay and Schouwenburg (1993) described procrastination as *the unnecessary delaying of activities that one ultimately intends to complete, especially when done to the point of creating emotional discomfort*. Solomon and Rothblum (1984) also suggested that because definitions of procrastination stress both behavioral delay and psychological distress, the degree of procrastination and the degree to which it presents a problem should be considered together. Schraw, Wadkins, and Olafson (2007) defined it as intentionally deferring or delaying work that must be completed. Schouwenburg (1995) suggested that procrastination referred to as postponing of tasks is inferred from the behavioral manifestations including lack of promptness either in intention or behavior. From these definitions, procrastination can be operatively defined on three dimensions: procrastination in intention; procrastination in behavior; and

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habitual procrastination. This is the sum of the degree of procrastination and the degree to which it presents a problem.

Although researchers have noted the negative effect of procrastination on learning and achievement, such as lower grades and course withdrawals (e.g., Beswick, Rothblum, & Mann, 1988; Synn, Park, & Seo, 2005; Tice & Baumeister, 1997; Van Eerde, 2003), cramming and staying up all night to complete assignments that are due are fairly commonplace among students (Conti, 2000; Saddler & Buley, 1999). Why do students procrastinate? One reason suggested by researchers is that people think procrastination behaviors do not always cause negative consequences (Alexander & Onwuegbuzie, 2007; Chu & Choi, 2005; Choi & Moran, 2009; Howell & Watson, 2007).

How can this happen? Some researchers found the answer in *flow*, which Csikszentmihalyi (1990) described as *the state of total involvement in an activity that consumes one's complete attention*. Csikszentmihalyi and other researchers have suggested that procrastination among successful college students may have little impact on performance because it allows them to achieve a sustained level of flow (Csikszentmihalyi; Lay, Edwards, Parker, & Endler, 1989; Schraw et al., 2007; Sommer, 1990; Tullier, 2000). Lay and colleagues found that procrastinators experienced a greater sense of challenge and peak experience immediately prior to examinations. Brinthaupt and Shin (2001) reported that crammers performed better on tests and reported higher levels of flow than did noncrammers. These authors argued that cramming increases flow because it increases the level of task challenge and demands a higher level of performance from the student. Schraw and colleagues (2007) suggested that peak work experience is one of the adaptive aspects of procrastination. In their study, respondents indicated that procrastination ultimately increases the likelihood of achieving a deep state of flow because procrastinators work under pressure for an extended period of time in which all of their resources are focused on one goal.

However, the finding that procrastination leads to the state of flow does not apply to all students. While time pressure resulting from procrastination can create a feeling of challenge for some students, for other students it can cause stress and anxiety (Choi & Moran, 2009) and can disturb flow (Lee, 2005; Messmer, 2001). Lee found that a high level of procrastination was associated with a low incidence of flow state. She argued that the more students procrastinate the less likely they are to experience the flow state in learning processes. Messmer suggested that one of the keys to performing an activity in a flow state is to avoid procrastination.

The findings gained in these studies give rise to two questions. First, does procrastination increase flow? Second, does flow protect procrastinators against low academic achievement. Although previous researchers have reported that procrastinators do not fail examinations because of their experience of flow,

most of these studies depended for their data on self-reported procrastination or students were intentionally selected who viewed themselves as successful procrastinators (e.g., Brinthaupt & Shin, 2001; Lay et al., 1989; Schraw et al., 2007). It is possible that unsuccessful procrastinators would report different beliefs and behaviors (Schraw et al.). Past research had limitations in that no direct empirical evidence was employed (e.g., Csikszentmihalyi, 1990; Messmer, 2001; Schraw et al., 2007; Tullier, 2000), the contextual conditions were not controlled for (e.g., Brinthaupt & Shin, 2001; Lee, 2005), or only some of the dimensions of flow and procrastination were included (e.g., Lay et al.; Lee).

Therefore, there were two objectives in this study: (a) to examine the relationship between procrastination and flow, and (b) to explore whether or not the flow of procrastinators increases academic achievement. The hope was that this study would contribute to a better understanding of the relationships among procrastination, flow, and academic achievement.

METHOD

PARTICIPANTS

The participants were 172 students enrolled on an educational psychology course at two universities in South Korea. The sample included 155 women (90.1%) and 17 men (9.9%). Students represented a variety of academic majors and consisted of one freshman (0.6%), 129 sophomores (75%), 26 juniors (15.1%), and 16 seniors (9.3%).

MEASURES AND PROCEDURE

Procrastination in behavior To measure students' procrastination in behavior, I asked participants to respond to a question concerning the midterm examination: "When did you start studying for the midterm examination of the educational psychology course?" They answered with the date when they started to study for the examination, which was held on October 23. Students' responses were converted into scores with the baseline of October 1, and possible scores ranging from 1 to 23. For example, if a student responded that she/he started to study for the midterm examination on October 20, his or her score was 20. The higher the score, the later students started to study for the examination. A high score represented a high level of procrastination behavior.

Procrastination in intention To measure students' procrastination in intention, participants were asked to respond to the following question: "When did you intend to start studying for the midterm examination of the educational psychology course?" They answered with the date when they intended to start studying. The baseline was October 1 and the range of scores was from 1 to 23. For example, if a student responded that he or she intended to begin to study for

the midterm examination on October 5, then that student's score was 5. Students' responses were converted into scores in the same way as for procrastination in behavior. The higher the score, the greater the procrastination in intention.

Habitual procrastination Solomon and Rothblum (1984) developed the Procrastination Assessment Scale – Students (PASS). Only a question on the prevalence of procrastination in studying for an examination was used in this study. Participants were asked to indicate on a 5-point Likert scale how often they procrastinated in studying for an examination (1 = *never procrastinate*; 5 = *always procrastinate*) and the degree to which procrastination in studying for an exam was a problem for them (1 = *not a problem at all*; 5 = *always a problem*). Because definitions of procrastination include both behavioral delay and psychological distress, the frequency of procrastination and the degree to which it presents a problem are summed (Solomon & Rothblum). The possible range of scores is from 2 to 10. The coefficient alpha reliability estimate of self-reported procrastination was .99 in this study.

Learning flow Suk and Kang (2007) developed the Learning Flow Scale based on Csikszentmihalyi's (1990, 1997) flow construct. The scale consists of 35 items and nine factors: challenge-skill balance, which describes how a person perceives a balance between the challenges of a situation and his or her skills, with both operating at a personally high level in flow (four items, $\alpha = .69$); action-awareness merging, referred to as no awareness of self as distinct from the actions he or she is performing (five items, $\alpha = .78$); clear goals, giving the person in flow a strong sense of what he or she is going to do (two items, $\alpha = .79$); unambiguous feedback received from the activity itself (five items, $\alpha = .95$); concentration on the task at hand, referred to as feeling really focused (three items, $\alpha = .96$); sense of control, expressed as "feeling like I can do anything in that state" (two items, $\alpha = .95$); loss of self-consciousness, which describes how concern for the self disappears during flow (five items, $\alpha = .97$); transformation of time, which describes how time may simply become irrelevant and out of the person's awareness (three items, $\alpha = .99$); and autotelic experience, referred to as an intrinsically rewarding experience (six items, $\alpha = .99$). Responses are given on a 5-point Likert scale ranging from 1 = *not at all true* to 5 = *very true*. A high score represents a high level of flow. This scale is a valid instrument to measure flow level in the learning situation (Suk & Kang). The total coefficient alpha reliability estimate of the learning flow was .98 in this study.

Academic achievement As a measure of academic achievement, midterm examination scores for the educational psychology course were obtained from an instructor.

RESULTS

Intercorrelations among procrastination, flow, and academic achievement are presented in Table 1. The level $p < .05$ was considered as the cut-off value for significance. Pearson correlations indicated that most of the dimensions of flow were significantly and positively related to all three dimensions of procrastination. However, academic achievement was not significantly associated with flow and procrastination variables.

TABLE 1
INTERCORRELATIONS OF PROCRASTINATION WITH FLOW ($N = 172$)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	-													
2	.47	-												
3	.54	.74	-											
4				-										
5	.92	.39	.39		-									
6						-								
7	.39				.65	.44	-							
8	.60		.22		.76	.24	.70	-						
9	.79	.35	.35		.90		.62	.76	-					
10	.87	.36	.37		.93		.59	.67	.83	-				
11	.84	.31	.30		.91		.59	.66	.79	.84	-			
12	.89	.37	.35		.95		.50	.64	.80	.85	.86	-		
13	.90	.38	.38		.93		.47	.60	.77	.86	.83	.92	-	
14	.95	.40	.41		.95		.55	.69	.83	.93	.89	.92	.92	-

Note: 1 = habitual procrastination, 2 = procrastination in intention, 3 = procrastination in behavior, 4 = academic achievement, 5 = flow, 6 = challenge-skill balance, 7 = action-awareness merging, 8 = clear goals, 9 = unambiguous feedback, 10 = concentration on task at hand, 11 = sense of control, 12 = loss of self-consciousness, 13 = transformation of time, 14 = autotelic experience

A multivariate regression was computed to explore the relationship between procrastination and flow. Results from the analysis indicated that procrastination variables accounted for approximately 86% of the variance in students' flow; $F(3, 154) = 313.74, p < .001$. After accounting for the other variables in the equation, habitual procrastination was the strongest individual predictor of flow ($\beta = .99, p < .001$). Procrastination in behavior also individually accounted for a significant portion of the variance in flow ($\beta = .18, p < .001$). Procrastination in intention was not a significant individual predictor of flow ($\beta = .07, p > .05$).

A two-step hierarchical multivariate regression was computed to explore the relationships among procrastination and flow variables and academic achievement. This analysis was selected so that the abilities of procrastination and flow variables to predict academic achievement could be evaluated separately.

The nine flow variables were entered in the first step of these analyses. Results from the first step of these analyses indicated that flow variables accounted for approximately 5% of the variance in students' academic achievement, but the equation was not significant; $F(9, 153) = .91, p > .05$. The three procrastination variables were also added in the second step of these analyses. Results from the second step of these analyses indicate that procrastination variables slightly increased the amount of variance explained by all of the predictors to approximately 7%, but the equation was not significant; $F(12, 144) = .91, p > .05$. In the second step, after accounting for the other variables in the equation, transformation of time was the only significant individual predictor of academic achievement ($\beta = .51, p < .05$). Other variables individually failed to predict academic achievement.

DISCUSSION

The purpose in this study was to examine the relationships among procrastination, flow, and academic achievement. Three major findings emerged from this study.

First, no relationship was found in this study between students' procrastination and academic achievement. The results showed that none of the three dimensions of procrastination was related to academic achievement. Results in this study support the claim that there is no relationship between students' procrastination scores and their course grades (Csikszentmihalyi, 1990; Ferrari, 1992; Lay et al., 1989; Schraw et al., 2007; Solomon & Rothblum, 1984; Sommer, 1990; Tullier, 2000). In their study Solomon and Rothblum concluded that the lack of correlation between self-reported procrastination and course grades may have been a methodological artefact because they had asked each student to assess his or her own tendency to procrastinate on academic activities in general without focusing on a specific course, whereas the students' academic performance was based only on their grades in the introductory psychology course. However, in the current study I proved that the lack of correlation between two factors is not a methodological artefact by limiting the measure of procrastination and course grade to a specific course. Although this pattern of results is inconsistent with the claim that crammers perform better on tests (Brinthaup & Shin, 2001), the result of Brinthaup and Shin may not be connected to actual improvement of academic achievement because they operated a cramming situation, where crammers were better practiced and more accustomed whereas noncrammers were unfamiliar with it.

Second, procrastination may enable individuals to achieve a state of flow. The results of this study showed that all three dimensions of procrastination were positively related to flow and together accounted for approximately 86% of flow.

This supports the view that procrastination is related to flow (Brinthaupt & Shin, 2001; Csikszentmihalyi, 1990; Lay et al., 1989; Schraw et al., 2007; Sommer, 1990; Tullier, 2000). In particular, those researchers had found that students who habitually delayed studying for examinations easily immersed themselves in studying to the point of losing awareness of time, themselves, and all other things except studying itself. In this study the results also indicated that the later students started studying for the examination, the more likely they were to experience a flow state in the learning process. Procrastination in behavior may make students experience a greater amount of flow because it increases the level of task challenge. Csikszentmihalyi (1997) also suggested that when students procrastinate in their studies, they are, either intentionally or unintentionally, increasing the level of challenge they are facing. In the current study, although students who intentionally delayed studying for the examination tended to report that they experienced flow more, the multivariate analysis indicated that the relationship between procrastination in intention and flow failed to reach significance. This finding indicates that, compared to habitual procrastination and procrastination in behavior, procrastination in intention may not be powerful enough to lead students to a flow state. The results of this study also indicated that among dimensions of flow autotelic experience had the strongest relationship with the three dimensions of procrastination. This finding indicates that procrastination gives students an intrinsically rewarding experience as the end result is being in a state of flow. Statements from athletes such as "I really enjoy the experience" are indicative of an intrinsically rewarding experience (Jackson & Marsh, 1996). That is, an action is executed for its own sake, with no expectation of some future reward or benefit (Jackson & Marsh). From the findings, in the current study it can be inferred that one of the reasons why procrastination still prevailed among students in spite of the psychological discomfort of cramming may be the intrinsic reward of that peak experience, especially when it was an autotelic experience, which made students satisfied with the situation they faced at that moment. Schraw et al. also suggested that despite the temporary stress, students reported a deep sense of relief and elation following stressful work periods and this justified the stress they experienced.

Third, even though cramming may increase the likelihood of flow-like experiences, the crammers were not likely to perform better in the examination because of flow. In this study it was found that none of the nine dimensions of flow was associated with academic achievement. This finding suggests that there are other cognitive and motivational strategies that procrastinators use that may help them to achieve high course grades similar to those of nonprocrastinators. Schraw et al. (2007) suggested that, as well as peak experience, cognitive efficiency is an adaptive aspect of procrastination. Sommer (1990) and Vacha and McBride (1993) found that crammers outperformed noncrammers by using a

greater variety of study strategies to achieve maximum efficiency. Ferrari (1991) also suggested that most college students procrastinate on a regular basis and do so with greater frequency as they become more self-regulated.

From the findings gained in the current study and of previous researchers, it can be inferred that although it is factors other than flow that prevent procrastinators from achieving less well academically compared with nonprocrastinators, students are deluding themselves if they believe that procrastination may have little impact on performance because it allows them to achieve a sustained level of flow. Although it is not actually connected to increased academic achievement, the flow of procrastinators makes them feel as if they study effectively in a short time and leads them to self-satisfaction in their achievement. Therefore, an implication of the results in this study is that it is necessary for teachers to let students know that the flow-like experiences that result from cramming do not lead to high achievement.

I have suggested that there may be other mediators between procrastination and academic achievement. It will be worthwhile for future researchers to investigate further the factors involved in the causal nature of the relationship between procrastination and academic achievement, such as cognitive or motivational strategies. The most significant limitation of this study is that most of the participants were female college students. Therefore, it is hard to generalize this finding to other student populations or to males. Further research is needed to determine whether or not the findings may be generalized to other student populations or men. In this study the context was limited to studying for the midterm examination of an educational psychology course. Therefore, further research is needed to determine whether or not these findings could be generalized to other academic or nonacademic settings.

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