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The relationship between procrastination and academic performance: A meta-analysis

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ABSTRACT

Previous findings on the relationship between procrastination and academic performance are inconsistent. We conducted a meta-analysis of 33 relevant studies involving a total of 38,529 participants to synthesize these findings. This analysis revealed that procrastination was negatively correlated with academic performance; this relationship was influenced by the choice of measures or indicators. The use of self-report scales interfered with detection of a significant relationship between procrastination and academic performance. The demographic characteristics of participants in individual studies also affected the observed relationship. Implications of this meta-analysis are discussed.

1. Introduction

Procrastination, in the shape of delaying completion of an assignment or putting off studying for an examination, is quite common among the worldwide student population. Estimates indicate that 80-95% of college students (O'Brien, 2002) or at least half of all students (Ozer, Demir, & Ferrari, 2009; Solomon & Rothblum, 1984) engage in procrastination and the prevalence of the phenomenon appears to be growing (Steel, 2007). Procrastination and its causes and effects, are therefore an interesting research subject.

There is a considerable body of empirical research on the relationship between procrastination and performance, particularly academic performance. The results have, however been inconsistent. Researchers have reported negative effects of procrastination on learning and achievement, such as lower grades and course withdrawals (e.g. Aremu, Williams, & Adesina, 2011; Balkis, 2013). The time pressure resulting from procrastination can reduce accuracy and punctuality, and on this basis it can be argued that procrastination will negatively influence performance (Van Eerde, 2003).

Other studies have failed to detect an association between procrastination and academic performance (e.g. Seo, 2011; Solomon & Rothblum, 1984) or even reported that procrastination had a positive effect on academic achievement (e.g. Brinthaupt & Shin, 2001; Schraw & Wadkins, 2007). It has been suggested that students of greater ability procrastinate more than those with lower ability (Ferrari, 1991). Ferrari concluded that procrastination tended to increase during the course of a student's academic career, as learning became more self-regulated.

The nature of the relationship between procrastination and academic performance remains ambiguous as the data do not converge. The inconsistent results may be due to the use of small samples; if this is the case a meta-analysis which integrates the results of multiple studies statistically might determine the nature and magnitude of any association between procrastination and academic performance.

The conflicting results of previous studies are also likely to be due to the influence of factors such as use of different measures, use of contaminated self-report data and differences in the demographic characteristics of samples. Van Eerde (2003) insisted that although many of the effect size categories were heterogeneous among studies about procrastination, indicating that moderators may play a role, the majority of studies did not account for moderators. We therefore hypothesized the relationship between procrastination and academic performance would be subject to influence by one or more variables. More specifically we predicted that the observed association would be influenced by (a) the choice of procrastination measure; (b) the choice of performance indicator; (c) use of self-report data and (d) the demographic profile of the sample.

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1.1. Procrastination measures

The choice of procrastination measure is affected by one's theoretical perspective on procrastination, broadly whether it is viewed as (a) a functional or dysfunctional behavior and (b) a behavior or a trait.

Researchers have traditionally regarded procrastination as a maladaptive or dysfunctional strategy used in an attempt to cope with conflict or choices (Mann, 1982). Lay and Schouwenburg (1993) and Solomon and Rothblum (1984) argued that because definitions of procrastination refer to both behavioral delay and psychological distress one should consider the magnitude of procrastination in conjunction with the magnitude of its negative psychological consequences; assumed to be emotional discomfort, including guilt, depression, anxiety or stress. From this perspective procrastination is a wholly dysfunctional behavior. The Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984), the most widely used scale for measuring procrastination in an academic context, is a representative procrastination inventory based on the assumption that procrastination is dysfunctional. It consists of items asking students to report the frequency with which they procrastinate, the extent to which procrastination causes them a problem and their desire to stop procrastination in six specified academic domains; it also includes items designed to elicit reasons for procrastination. Decisional Procrastination Scale (DP; Mann, 1982) is based on the conflict theory of decision making (Janis & Mann, 1977), according to which procrastination is a maladaptive coping behavior (Ferrari, Johnson, & McCown, 1995). The Tuckman Procrastination Scale (TPS; Tuckman, 1991) assesses academic procrastination resulting from inability to self-regulate or control task schedules (Ferrari et al., 1995) is another inventory designed to measure procrastination as a maladaptive behavior (Hensley, 2014).

Recently, several researchers have described procrastination as a functional delay (e.g. Alexander & Onwuegbuzie, 2007; Choi & Moran, 2009; Chu & Choi, 2005; Howell & Watson, 2007). The word *procrastination* originated from the Latin verb *procrastinare*, meaning 'putting forward until tomorrow', which does not have negative connotations. Procrastination acquired negative connotations during the Industrial Revolution (Ferrari et al., 1995); until then procrastination was viewed neutrally and could be interpreted as a wise course of (in)action (Steel, 2007). Procrastination can be viewed as process that is regulated by internal, individual-level norms for delay; it may be intentional and it may also be a wise strategy (Van Eerde, 2003). Working within this framework Choi and Moran (2009) developed and validated an Active Procrastination Scale which consisted of items assessing outcome satisfaction, preference for pressure, intentional decisions to procrastinate and ability to meet deadlines.

Early research on procrastination focused exclusively on the behavioral aspects of procrastination, conceiving procrastination as a task-specific avoidance behavior (Schouwenburg, 2004) i.e. as situationally determined and relatively unstable across time and contexts (Saddler & Buley, 1999; Wolters, 2003). In this paradigm the causes of procrastination are task or context variables that increase aversion for the task or fear of failure, rather than individual-level variables. Behavior-oriented measurement scales such as the Academic Procrastination State Inventory (APSI; Schouwenburg, 1995) only assess behavior during the preceding week.

If dilatory behavior becomes chronic and habitual it can be considered a typical response, or as a habit or trait (Schouwenburg, 2004). Nowadays, most researchers regard procrastination as a personality trait which is stable across time and contexts. Measurement scales for trait procrastination, including Lay's (1986) General Procrastination (GP) Scale and Aitken's (1982) Procrastination Inventory (API), investigate behavior that is often or usually displayed in various situations (Schouwenburg, 2004).

In summary, various measures of procrastination based on different theoretical perspectives have been used to examine the relationship between procrastination and academic performance. Because they are based on differing, sometimes conflicting definitions of procrastination it is plausible to assume that they would produce different results. We hypothesized that the choice of procrastination measure would influence the observed relationship between procrastination and academic performance.

1.2. Indices of academic performance

Various indices of academic performance including self-reported GPA, examination grades, assignment grades etc. have been used to examine the relationship between procrastination and academic performance. Some researchers have reported that the relationship between procrastination and academic performance depends on the choice of performance indicator, for example Tice and Roy (1998) found that the correlation between procrastination and academic performance varied from −.26 to approximately −.66 depending on whether academic performance was indexed using various examination or assignment grades. Jackson, Weiss, Lundquist, and Hooper (2003) found that procrastination, measured using Tuckman's scale, was negatively correlated with cumulative grade point average (GPA) but was not associated with American College Test score (ACT). We hypothesized that the choice of academic performance indicator would affect the observed relationship between procrastination and academic performance.

1.3. Differences between self-report and external data

Some researchers have suggested that the lack of consistency in research on the relationship between procrastination and performance is probably the result of using contaminated self-report data (e.g. Rotenstein, Davis, & Tatum, 2009; Steel, Brothen, & Wambach, 2001). Previous studies have relied on self-report measures of procrastination, which are only weakly related to external indicators of procrastination (Rotenstein et al., 2009). One study (Steel et al., 2001) reported that the correlation between observed or externally assessed procrastination and self-reported procrastination was 0.35 while the correlation between observed procrastination and course grade was −0.87; the correlation between self-reported procrastination and course grade was only −0.36.

Self-report performance data, especially GPAs, are often used in research because they are easy to obtain; however there is ongoing concern about their reliability. Disappointingly, in their meta-analysis of the validity of self-reported GPAs, class ranks and test scores Kuncel, Crede, and Thomas (2005) showed that self-reported grades were less valid than many researchers believe. More than twice as many students as under-reported their grade over-reported it (Bahrick, Hall, & Berger, 1996) in another study the ratio of over-reporting to under-reporting was even higher, at 48–1 (Zimmerman, Caldwell, & Bernat, 2002). These results indicate that the using self-report data may bias the results of investigations into the association between procrastination and academic performance.

1.4. Demographic variables

Unfortunately there has been little reported research on procrastination among younger students, for instance elementary and secondary students. Most studies of procrastination have used samples of college students or adults. Steel (2007) and Van Eerde (2003) found that younger people procrastinate more than older