

Perseveration and Academic Failure in Healthy Male Undergraduates

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Western culture admonishes that “winners never quit,” but sometimes the termination of a specific goal is the best choice for a student. Cognitive perseveration is commonly defined as one repeating an action after learning that it produces a poor outcome and may be considered a form of “never quitting.” This type of cognitive perseveration predicted poor academic performance in a group of male but not female undergraduates. The perseverative males repeated more courses, failed more courses, earned lower GPAs, and took longer to graduate than nonperseverating males and all females. We discuss the implications of distinguishing between productive persistence and self-defeating perseveration and the importance of advising students how to decide when persistence is not productive.

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Advisors often encounter students so intent on an inappropriate academic goal that they not only fail to attain the objective, they also damage their chances of academic success in general. The prototypical example is the poorly performing but determined pre-med student who repeats basic science classes over many semesters despite a plummeting GPA, not only foreclosing on the possibility of medical school admission, but also jeopardizing graduation with a bachelor's degree. Shaffer and Zalewski (2011) comprehensively reviewed the extensive study of such students, termed *foreclosures*, within an Ericksonian developmental framework linked to personality differences. Foreclosures have committed to a goal prior to completing the life crisis necessary to form self-identity. Foreclosure is associated with personality traits such as low need for cognition and low openness to experience.

In this paper, we address a specific tension between foreclosures and conflicting cultural mandates: “Winners never quit and quitters never win” versus “know[ing] when to fold ‘em” (Rogers as

cited in Miller & Wrosch, 2007 p. 776). The distinction between an appropriate level of persistence that leads to success and the largely maladaptive extreme of perseveration can be unclear. In general, perseverative tendencies have been linked to a range of negative life outcomes in interpersonal relationships, education, and vocation, as well as in mental and physical health (Miller & Wrosch, 2007). We examine this issue from a neurocognitive, performance-based perspective that is not mutually exclusive to the developmental foreclosure model, but rather narrows the question to ways students who persevere solve problems.

We conceptualize perseveration as a type of cognitive style exhibited by (a) repeating contextually inappropriate problem-solving behaviors or responses, and (b) continuing these behaviors despite receiving feedback that they are ineffective (Braff & Perry, 1998; Crider, 1997; Dangelmeier, 2005). This definition suggests that individuals who persevere may be motivated to succeed, but lack the cognitive flexibility to try a different tactic when necessary. While much of the information about perseveration comes from studies of cognitive and affective disorders, recent research suggests that cognitive perseveration may be a personality trait found among individuals with no marked cognitive or affective difficulties (Robinson & Cervone, 2006).

In the current study, we examine the problem of cognitive perseveration in college undergraduates. In contrast to those focusing on the foreclosure literature, we did not start our investigation by identifying students experiencing specific problems, but rather asked what, if any, academic consequences may be linked to inflexibility in problem solving. To do this, we looked at the academic correlates of cognitive inflexibility on the Wisconsin Card Sorting Test (WCST) (Heaton, 1993), a common measure of perseveration. Specifically, we asked if cognitive perseveration predicted future academic performance. Recognizing that success in the competitive environment of higher education generally requires high levels of persistence (Harcakiewicz, Barron, & Elliot, 1998), one might expect the perseverative students to perform better

Table 1. Academic performance by sex and Wisconsin Card Sorting Test group status: mean (standard deviation; sample size)

Sex	Group	Final Cumulative GPA	Number of Failed Courses	Number of Repeated Courses	Number of Withdrawn Courses
Male	Nonperseverative	2.69 (0.74; 22)	2.09 (2.47; 22)	0.59 (0.80; 22)	2.45 (2.58; 22)
	Perseverative	2.50 (0.52; 7)	4.71 (2.43; 7)	1.29 (1.11; 7)	6.00 (3.56; 7)
Female	Nonperseverative	2.93 (0.70; 31)	1.97 (3.44; 31)	0.61 (1.02; 31)	1.84 (2.70; 31)
	Perseverative	2.89 (0.81; 12)	1.00 (1.91; 12)	0.33 (0.49; 12)	2.00 (2.52; 12)

academically than the nonperseverative students. Conversely, as suggested by Miller and Wrosch (2007), if persistence can be maladaptive, then one could expect perseverative students to fare worse academically than nonperseverative students.

Methods

Participants

We recruited the student sample from introductory psychology classes at a large public university in the upper South. We excluded four students from analysis due to their age (40 years and over) and we dropped an additional 10 participants because of missing data, leaving 56 females and 32 males for analysis ($N = 88$). The participants ranged in age from 17 to 38 years with a mean of 21.2 ($SD = 6.2$). The racial distribution of the data represents that of the region: 76.4% reported non-Hispanic Caucasian, 14.7% referred to themselves as African American, and the remainder described themselves as Hispanic/Latino American, Asian American, or other. Sixty-eight percent of the students were freshmen at the time of the initial assessment.

We recruited the students between 2002 and 2006, with academic transcripts covering 3 to 7 years following cognitive evaluation. Some of the academic performance analyses were conducted using smaller sample sizes due to failure of some participants to complete the items.

Measures

Wisconsin Card Sorting Test. The WCST is a neuropsychological measure of executive functioning. Test results provide several scores that reflect the different cognitive processes used in the task. These scores can then be used to identify the specific types of errors, including perseverative errors, contributing to task performance. The perseverative error score reflects the percentage of total errors on the task that can be attributed to perseveration. We used results from the WCST

(computerized) to assign students to clinically perseverative (above 10% perseverative error) and nonperseverative (10% and below) groups. The WCST has high interrater and test-retest reliability, ranging from .88 to .96, and moderate generalizability coefficients with an average of .57 for adults.

Academic performance. We coded students' academic transcripts for four common measures of academic performance. These include cumulative GPA and number of failed, repeated, and withdrawn courses over the students' college careers through 2009.

Results

Perseveration Distribution by Sex

In our total sample of 32 males, 7 (21.9%) were in the perseverative group and 13 of the 56 (23.3%) females were classified as perseverative. The difference between the sexes was not statistically significant ($\chi^2 = .021, p = 0.8875$).

Perseveration and Academic Performance by Sex

We conducted a series of 2(sex) $\times$ 2(perseveration) analyses of variance (ANOVAs) to investigate possible effects of sex and perseveration on four academic performance variables. Table 1 summarizes the means of key performance variables, standard deviations, and sample sizes for each variable by sex and perseveration group. Perseverative males exhibited consistently poorer academic performance than perseverative females, with sex-perseveration interactions being significant for three of the four performance measures. Males in the perseverative group had the lowest GPA of the four groups, although the effects were not statistically significant at $p < .05$.

The ANOVA used to examine the effects of sex and group on number of failed courses revealed a significant main effect of sex: $F(1, 72) = 5.90, p = .018, \eta_p^2 = .080$. We also found a

statistically significant interaction between group and sex that reflects a higher mean number of failed courses by males in the perseverative group: $F(1,72) = 5.17, p = .026, \eta_p^2 = .071$. Likewise, the data on males in the perseverative group showed a significantly higher mean number of repeated courses, resulting in a significant sex $\times$ group interaction: $F(1,72) = 3.88, p = .05, \eta_p^2 = .050$. Lastly, we examined the number of withdrawn courses and found the $F(1,72) = 9.47, p = .003, \eta_p^2 = .10$; $F(1,72) = 6.10, p = .016, \eta_p^2 = .080$. We also found a statistically significant interaction between group and sex that reflects a higher mean number of withdrawn courses for perseverative males than for perseverative females (no significant differences were found by sex between the nonperseverative groups): $F(1,72) = 5.09, p = .027, \eta_p^2 = .070$.

We examined the frequency of graduation rates by sex and perseverance groups. Based on the traditional 4-year minimum graduation time frame, perseverative male students had the lowest graduation rate (16.7%, $N = 6$), followed by perseverative females (30%, $N = 10$), nonperseverative males (33%, $N = 15$), and nonperseverative females (53.6%, $N = 28$). None of the distribution differences were statistically significant at $p \leq .05$.

In sum, male students classified as perseverative might fare worse academically than their nonperseverative male counterparts and female students. The data from all academic performance measures suggest that perseverative males may need advising geared to ameliorate unrealistic expectations.

Depression and IQ as Contributors to Perseveration

To rule out the possibility that perseveration status and academic performance were affected by depression, we covaried students' scores on the *Beck Depression Inventory* (BDI) (Beck, Steer, & Brown, 1996) with the sex–perseveration inter-actions on academic performance. The results showed that the BDI scores were not significant covariates for any of the analyses, nor did we find significant differences in mean BDI scores across the sex–perseveration groups. Therefore, we conclude that depression did not account for our ANOVA findings. Likewise, we did not find any significant differences in mean IQ scores as measured by the Wechsler Adult Intelligence Scale–III (WAIS-III) (Wechsler, 1997) among the

four groups, indicating global cognitive abilities could not explain the differences in academic performances.

Discussion

Cognitive Perseveration and Academic Performance in Males

Results from our study suggest that males classified as perseverative have poorer academic careers and graduation rates than nonperseverative male and all female, regardless of perseverative status, students. Neither depression nor IQ scores differed among our groups and therefore these characteristics unlikely account for the results. As we measured perseverance 3 to 7 years before the academic measures were completed, perseverance in this study can be legitimately viewed as a predictor of future academic work. Why might such an interaction between sex and perseverance occur and how might this inform advising?

Providing feedback about errors during testing constitutes a significant part of the WCST, and males and females react differently in the face of negative feedback (Roberts & Nolen-Hoeksema, 1989). Specifically, females generally show greater influence from negative feedback than do males. Male students who persisted in answering WCST items incorrectly after receiving negative feedback about their testing may possess a general personality trait that could also apply to negative feedback about academic performance. Instead of seeking appropriate academic help, some male students may keep trying the same ineffective strategies with the same bad outcomes, even in (or especially in) the face of evidence of failure.

Relationship to Foreclosures

We do not know if the perseverative males in our study meet criteria as foreclosures. Some overlap between foreclosure and cognitive perseveration seems likely, making a good premise for further research. Likewise, future studies of foreclosures might include specific neuropsychological performance measures, such as those obtained by the WCST. In addition to complementing the developmental theory of foreclosure, performance measures could contribute to the elucidation of the specific psychosocial mechanisms that underlie premature closure of identity conflict.

Interventions

Advisors can choose from two forms of intervention when confronted with student foreclosures or those who persevere to failure. Shaffer and Zalewski (2011) aptly described one approach, taken in the form of questions directed toward reevaluating the student's goals and decision making, in a *special conversation*. We agree with Shaffer and Zalewski that students must understand that giving up an old goal does not equate to failure, but rather constitutes the first step in a more successful plan.

The second approach is less intuitive and not generally known to academic advisors, but follows directly from the findings of this study. Cognitive training programs have been developed that increase flexibility, not only on the WCST but also more importantly across other decision-making domains (Wykes, Huddy, Cellard, McGurk, & Czobor, 2011). If others replicate our findings, then upon further research, cognitive flexibility may prove a useful measure at admissions, and appropriate interventions may help students before they accrue a failing record.

Early Identification and Intervention

How can advisors identify those students, in particular, most in need of the special conversation about realistic goals? Until further research replicates the predictive validity of cognitive testing specific to perseveration, advisors can review academic transcripts to identify students who repeat the same course with minimal or no improvement. They then can broach the difference between persistence with and without performance change (*cognitive inflexibility* would be a harsh term in such situations) and the need to recognize when a different goal is appropriate. They could follow this introduction with a positive review of the student's interests and strengths as well as adding encouragement that a change of direction often leads toward a successful future and does not indicate shortcomings. This approach comports with research suggesting foreclosures tend to avoid engaging in purposeful consideration and instead rely on more automatic styles of thought and the guidance of others (Shaffer & Zalewski, 2011). While our data suggest that male students are particularly at risk, we would suggest that addressing failure early with an emphasis on explicit behavior change will benefit all struggling students.

Instead of simply permitting a student to repeat a failed required course, an advisor may request

(or require if policy allows) that the student make an appointment to review the factors contributing to the poor grade. Many students view a failed course as a relatively minor misstep relatively easy to remediate by a retake (especially in circumstances when old grades can be replaced). Reasons for failure of critical, core, or prerequisite courses need to be identified immediately, and in a dedicated appointment, the advisor should focus explicitly on the need for new and different approaches to the class. Specifically, the advisor may discuss time management, scheduling issues, course load, tutoring or remediation, conflict with family or work commitments, ambivalence toward the goal (consciously expressed or not), study skills, in-class behavior, engagement, and other potential stumbling blocks to academic success. Ideally, no student needing to retake a class would simply reenroll without an explicitly different plan for the second time; the advisor may help them operationalize their efforts at trying harder with specific suggestions that encourage effective behavior change.

Students who repeatedly fail in courses required for graduate programs may benefit from a contract, made between student and advisor, that stipulates a goal-based review of progress each semester based on the student's investigation of the admission requirements for the desired program. The advisor can also encourage students to develop an alternate plan, often with the assistance of the university career center, and to keep both paths in mind while making curriculum decisions.

We have found most students receptive to these interventions when they work with advisors as collaborators toward a career goal using data (the student's performance) to make evidence-based triage time lines or deadlines. The advisor needs to continue to support the student through the development of a Plan B, if necessary, and assist the student in reinterpreting any residual feelings of failure.

Motivational persistence that incorporates cognitive flexibility is quite different (and much more desirable and successful) than motivational persistence coupled with cognitive inflexibility (perseveration). A generic effort to encourage students to keep a plan that has not yielded desired outcomes may not help students, especially in an absence of an examination of the individual's characteristic cognitive strategy in problem solving. Unless advisors assess carefully the ways students are being cognitively persistent,

they risk conflating cognitive inflexibility with motivation, undermining both student and institutional academic goals. Advisors as advocates for students certainly do not want to risk advisee demoralization, delay, and dropping out of school. However, as representatives of the institutions, they must recognize that perseverative students often consume valuable resources at the expense of other students and negatively affect institutional graduation rates.

Policy Implications

Until further empirical evidence emerges, we encourage stakeholders to review some of the assumptions, practices, and policies used by faculty members, advisors, and institutional leaders in light of our findings. For example, when students enter the university intent on medical school, but fail the core classes in biology and chemistry several times, should the response always involve encouragement to try again? Is it in students' best interests to have no limit on the number of times required classes can be repeated before forced to choose another major? Is the institutional policy encouraging students to linger, repeating the same efforts, long past a reasonable opportunity to succeed or recover good standing so that short-term retention statistics look good? Do these ostensibly "supportive" policies in fact thwart student progress (Habley, Bloom, & Robbins, 2012) and paradoxically lead to poor retention rates? We suggest that those working with students think in terms of triaging student efforts toward success by helping them make more realistic choices after an honest appraisal of their own performance data (Lewine, 2013); that is, teaching students to know when to let go of unproductive choices in favor of revised goals and a feasible plan makes sense. The special conversation, conducted upon the first hint of failure, should help students distinguish between productive persistence and self-defeating perseveration.

Summary

Helping students to know when to fold 'em extends beyond the realm of academics as ample evidence shows that cognitive flexibility in the face of error is associated with a range of positive life outcomes in interpersonal relationships, education, and vocation as well as in mental and physical health (Miller & Wrosch, 2007). Efforts at addressing cognitive inflexibility in undergraduates may also confer benefits beyond the classroom to

enhance students' lives in the larger world. Ideally, others will join advisors in the formal assessment and study of cognitive perseveration and its implications for mapping out academic paths. We invite inquiries from colleagues who would be interested in such a research effort.

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