

# **PREDICTING DROP-OUT INTENTIONS FROM STUDENTS' PERCEPTIONS OF ACADEMIC FEEDBACK AND PROCRASTINATION TENDENCIES. 'CAN PERSONALIZED FEEDBACK SOMETIMES BE TOO MUCH OF A GOOD THING?'**

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## **ABSTRACT**

In this research, we investigated a three-way relationship between academic feedback, procrastination tendencies, and the intention of dropping out of school in a sample of 532 undergraduate students. We used a cross-sectional, associative research design, with scales developed based on corroborating themes, obtained in previous interviews with the students, with instruments from the literature. The models were tested using variance-based SEM (PLS) and our measurements showed very good psychometric properties. The study's findings indicate that overall, academic feedback is negatively associated with both procrastination and drop-out intention, but when the personalization aspect of the academic feedback is differentiated from the 'impersonal' academic feedback, it might not help mitigate the intention to drop out. Our findings provide additional support to existing research while opening a new line of inquiry into the interplay between the three main constructs mentioned above, which, to date, are scarcely studied together. Albeit with several conceptual and methodological limitations, educational researchers and educators can benefit from the evidence provided in this research.

## **KEYWORDS**

Academic drop-out, procrastination, academic (teacher-provided) feedback, PLS-SEM

## **1. INTRODUCTION**

While education is increasingly acknowledged as an important factor for societal development, many educational institutions across the World struggle with student retention. Student retention, or, conversely, the phenomenon of academic drop-out is neither new nor ignored. However, its complexity and the multitude of causes and inter-related mechanisms and contributing factors, make it a difficult challenge for educators as well an ever-current field of research. Specifically, academic drop-out can be the result of many factors, varying from personal (e.g., attitudes, self-beliefs, self-regulation strategies, etc.) to institution-related (resources, interactions with the instructors and administrative staff, etc.). In this paper, we perform a quick overview of how academic drop-out is related to two of its most important predictors, i.e., an external factor, academic feedback (as a form of teacher support), and procrastination, as a personal, internal factor, and we present the results of our research which investigated their interrelationships.

## 2. THEORETICAL BACKGROUND / LITERATURE REVIEW

### 2.1 Academic drop-out and procrastination

Extant research related drop-out intentions to a variety of causes, ranging from students' perceptions regarding teachers' effectiveness, including the provision of feedback (Nikolaidis et al., 2022) to the effective organisation of learning and putting in the required amount of work, i.e., keeping up to date with academic assignments (Donnelly & Kovacich, 2014). However, maintaining a good work ethic is neither easy, nor to be expected in all people, and in all contexts, and many individuals postpone engaging in certain tasks that are required of them, a phenomenon commonly known as procrastinating. Unsurprisingly, procrastination can be encountered in students at all educational levels (Afzal & Jami, 2018) and has an important negative impact on learning and achievement (Ferrari, 2001).

Solomon and Rothblum describe procrastination as the tendency to delay the initiation or completion of important tasks to the point that it can induce discomfort (1984). Schouwenburg's (Schouwenburg, 1995; Schouwenburg & Lay, 1995) research are suggestive of the pervasive nature of procrastination, both as an everyday behavior, which affects almost everyone, and has an undesirable academic conduct (over 2/3 of the students having reported procrastinating in various academic contexts). More recently, Klingsieck (2013) detailed four main psychological perspectives of procrastination. The first perspective frames procrastination as a personality trait, not unlike conscientiousness. The second one treats procrastination as a process that specifically has to do with motivation and volition. The third perspective is more clinical in nature, and looks for psychopathological correlates and potential underpinnings. Finally, the fourth perspective embeds procrastination in a specific context, linked to external factors, such as the task's or collaborator's characteristics (e.g., teacher's style, behavior, goal alignment with the task's outcome, etc.).

In psychological research, but also in educational research, procrastination is often explained via (disadaptive) coping mechanisms (Hen & Goroshit, 2020; Kim et al., 2016), low self-efficacy (Graff, 2019; Kandemir, 2014), or perfectionist tendencies (Serdar et al., 2021). Mental health problems are important in and of themselves, in and out of school, but, beyond that, they are relevant predictors of both academic success and attrition (Cuijpers et al., 2019). As such, some of their close correlates, even though not classifiable as mental disorders, can also be valid predictors of dropout. In turn, procrastination was linked to emotional suffering and mental disorders, including in school contexts (Grunschel et al., 2013; Karami & Mahmoodi, 2018; Rozental et al., 2014, 2015). It also appears to affect more those with learning disabilities (Goroshit & Hen, 2021) and that is more prevalent in men than in women (Fior et al., 2022).

The (undesirable) academic consequences of procrastination were mostly linked to poor academic performance; for instance, Steel's (2007) meta-analytical review showed consistent evidence of negative associations between procrastination and academic success, and an overall framing of procrastination as a self-regulatory failure, at least in the long run (Hen & Goroshit, 2020). Procrastination was also found to be a constant success-impeding factor in academic writing (Lonka et al., 2019), which could be related to the difficulty of approaching ill-defined problems (Lonka et al., 2019; Yurtseven & Doğan, 2019). Because procrastination is closely related to the concepts of persistence and engagement (Park et al., 2019), it bears a direct relevance to drop-out intentions. For instance, with respect to online learning, procrastination was identified as one of the most salient causes of academic drop-out (Doherty, 2006). In turn, academic feedback was related to self-regulation, assignment completion, and academic achievement (Suamuang et al., 2021).

Narciss (2008) defined feedback as the information provided to the learner following performing an action, which has the potential to influence the learner on various levels, i.e., cognitive, metacognitive, and motivational. The dominant perspective is that personalizing feedback can (and is expected to) improve the learners' performance (Aleven et al., 2017; Narciss, 2008). It is important to note, though, that not all existing research unequivocally supports the significant effect of academic feedback on learning performance. For instance, in their research, H. Wang & Lehman (2021) found that, while personalized feedback may benefit learning by improving motivation, its effect on performance outcomes was not significant, and "[we] speculate that more complex factors may have obscured any performance effect" (H. Wang & Lehman, 2021, p. 553).

Students themselves expect instructors to provide quality feedback, capable of helping them navigate academic requirements. In certain situations, students expect concrete and specific advice with respect to what they should be doing, when, and why. (Bozarth et al., 2004; Henry, 2020). Furthermore, students expect the feedback to be positive (i.e., constructive, supporting) and encouraging (Peterson, 2001), and to address not only the outcome (e.g., the final result, the grade) but also the procedure (Şahin & Yurdugül, 2022). Notably,

Şahin & Yurdugül (2022) found that it is especially learners who display procrastination behavior that expect feedback on the procedural aspects of the task, rather than on the final outcome. Importantly, lack of feedback was found to be a cause for dropping out (Bozarth et al., 2004; Doherty, 2006), and overall, a good (mentoral) relationship between students and instructors is associated with reduced procrastination (Q. Wang et al., 2022).

## **2.2 The research questions and associated hypotheses in the current study**

While the bi-directional relationships between ‘drop-out intentions’, ‘academic feedback’, and procrastination have been studied rather extensively, we did not identify quantitative research that explicitly related all three constructs. Therefore, we based our study on the theoretical framework developed by Rumberger and Rotermund, which is a multi-level framework that combines individual and institutional tiers in situating and explaining the behavior in academic contexts. Rumberger and Rotermund’s framework avoids the temptation of using either purely psychological frameworks, which, as insightful as they are, situate the problem strictly on an (inter- and/or intra-) individual level or, conversely, shift the emphasis solely on pedagogical approaches, which tend to place too little focus on the personal characteristics.

Against the backdrop presented above, our main research questions were whether or not the ‘drop-out intention’ is significantly associated with ‘academic feedback’ and ‘procrastination’ tendencies (RQ1), and if ‘academic feedback’ is a valid predictor for ‘procrastination’ (RQ2) while concomitantly predicting ‘drop-out’ intentions. Consequently, the working hypotheses for RQ1 assumed that a positive association exists between ‘academic feedback’ and ‘drop-out intention’ (H1), on the one hand, and ‘procrastination’ and ‘drop-out intentions’ (H2), on the other hand. Finally, our last hypothesis assumed that ‘procrastination’ mediates between ‘academic feedback’ and ‘drop-out intentions’ (H3).

## **3. METHODS**

### **3.1 Research design and measurements**

We used a one-time, cross-sectional associative research design, in which ‘drop-out intention’ (DRPINT) was the predicted (dependent/outcome) variable, and ‘academic feedback’ (AF) and ‘procrastination’ (PROCR) were the predictors (with PROCR conceptualized as mediating between AF and DRPINT).

### **3.2 Measurements**

The respondents provided their answers to three 7-step Likert scales (corresponding to the three main constructs), measuring agreement vs disagreement. We based our scales on themes derived from interviews with a pilot group of 30 participants, but we also observed the dimensions used by existing instruments. Specifically, to develop the procrastination items we consulted Tuckman’s Procrastination Scale (1991) and McCloskey’s Procrastination Scale (2011; 2015). Similarly, for the drop-out intention, we consulted Schmitt et al.’s (2021) WWH-dropout scale and Vaughn et al.’s (2020) Dropout Risk Inventory. With respect to academic feedback, we found Jan-Willem Strijbos’s work on feedback measurement to be the most closely related to our research purposes (Strijbos, 2010; Strijbos et al., 2010, 2021). Nevertheless, all the above-mentioned instruments either included too many dimensions which would have made our model too complex, or included aspects that, however relevant for each of the main construct, departed too much from the themes that resulted from our interviews with the pilot participants. Consequently, we designed our own set of items, inquiring directly into [a] the quality and characteristics of academic feedback (a total 18, of which 11 referred to ‘impersonal’ traits of the feedback, such as timeliness, support, relevance, clarity, etc., and 7 inquiring into whether or not the feedback considered the learners’ personality traits, aims, and specific interests and evolution), [b] participants’ procrastination tendencies (6), and [c] their drop-out intentions (11).

### 3.3 Participants and procedure

The participants were  $N = 532$  ( $M_{age} = 20.65$ ,  $SD_{age} = 2.02$ ) students enrolled in undergraduate courses at the Technical University of Cluj-Napoca, out of which  $N_{female} = 274$  were women ( $M_{agefemale} = 20.37$ ,  $SD_{agefemale} = 1.39$ ) and  $N_{male} = 258$  were men ( $M_{agemale} = 20.95$ ,  $SD_{agemale} = 2.49$ ).

The participants were contacted during the first month of the first academic semester and inquired with respect to their perceived challenges and difficulties and to their experiences and expectations regarding their academic performance and context, including the academic relationship with the instructors. These inquiries were a normal part of the interactions with the students, and allowed the researchers to invite potentially interested participants to a series of interviews concerning their procrastination tendencies, expectations and perceptions regarding teacher feedback, and possible drop-out intentions. Thirty participants (16 women, 14 men) accepted to provide answers to the interviews, consequent to which a series of common themes were extracted. These extracted themes, corroborated with the measurements previously used in the literature, lead to the development of the questionnaires used in this study.

The measurements were disseminated using a web-based form during the first semester of study of the academic year, via the e-learning platform formally used by the University. The form contained a starting section dedicated to Informed Consent (including a description and an explanation of the research aims, and making clear the rights to withdraw at any time, without consequences, to request data deletion, and to contact the researchers throughout the research and after), continued with the questionnaires, and ended with a debriefing section (allowing the participants to send questions to researchers and maintain contact, if needed).

### 3.4 Data processing

The data processing and all associated statistical analyses were performed using R Software (R Core Team, 2017) to ensure the transparency and reproducibility of the study. Less than 3% of data were missing, which our analysis determined were missing at random, and no aberrant patterns of responses (e.g., indicative of responding randomly, linearly, or of unengagement) were identified. Consequently, considering the small number of missing data, a mean imputation was performed for the missing values.

Because our study was vastly exploratory in nature (albeit guided by the above-mentioned hypotheses) we performed an exploratory factor analysis, followed by a variance-based modeling structural equation modeling, aka, partial least squares SEM. With specific regard to the PLS-SEM, we developed and compared two models, i.e., one that aggregated all ‘academic feedback’ items and one factor for each of ‘drop-out intention’ and ‘procrastination’, and a second model that followed the factor structure suggested by the EFA, namely two latent ‘academic feedback’ factors, and one factor for each of ‘drop-out intention’ and ‘procrastination’.

## 4. RESULTS

Our measurements<sup>1</sup> showed good internal consistency (as a measure of reliability) and validity, for both models, as shown below in Table 1 for model 1 and Table 2 for model 2. Specifically, alpha and rhoA exceed 0.7, while the average variance extracted (AVE) exceeds 0.5 (with the AVE for PROC borderline at 0.5) and no crossloadings.

Table 1. Reliability and validity indices for Model 1

Scale	Mean	Std. deviation	Raw alpha	Std. alpha	rhoA	AVE	AF	PROCR
DRPINT	2.72	1.39	0.93	0.94	0.94	0.58	0.29	0.38
PROCR	4.58	1.27	0.85	0.85	0.86	0.50	0.25	
AF	4.30	1.10	0.96	0.96	0.96	0.54		

Note: the last row of Table 1, above, presents the internal consistency for academic feedback as a single-factor/unidimensional scale.

<sup>1</sup>the list of items and the results of the EFA could not be included in this paper due to space restrictions but they can be requested from the authors

Table 2. Reliability and validity indices for Model 2

Scale	Mean	Std. deviation	Raw alpha	Std. alpha	rhoA	AVE	AF_PERS	AF_GEN	PROCR
DRPINT	2.72	1.39	0.93	0.94	0.94	0.58	0.16	0.31	0.38
PROCR	4.58	1.27	0.85	0.85	0.86	0.50	0.24	0.24	
AF_GEN	4.58	1.15	0.95	0.95	0.96	0.60	0.75		
AF_PERS	3.57	1.27	0.89	0.89	0.91	0.63			

We first tested the model in which all three constructs (i.e., ‘academic feedback’, ‘procrastination’, ‘drop-out intention’) conceptualized as single factors (model 1, shown in Figure 1, below). However, because the EFA suggested that ‘academic feedback’ items load on two different factors, we also tested a subsequent model, which followed the structure suggested in the EFA.

The first model (Model 1) indicated that both ‘academic feedback’ and ‘procrastination’ are valid predictors of ‘drop-out intention’ (H1 and H2), with ‘procrastination’ mediating between ‘academic feedback’ and procrastination’ (H3).

Figure 1, below, shows the resulted path model in which all ‘academic feedback’ items were considered together (loading on a single parent factor).

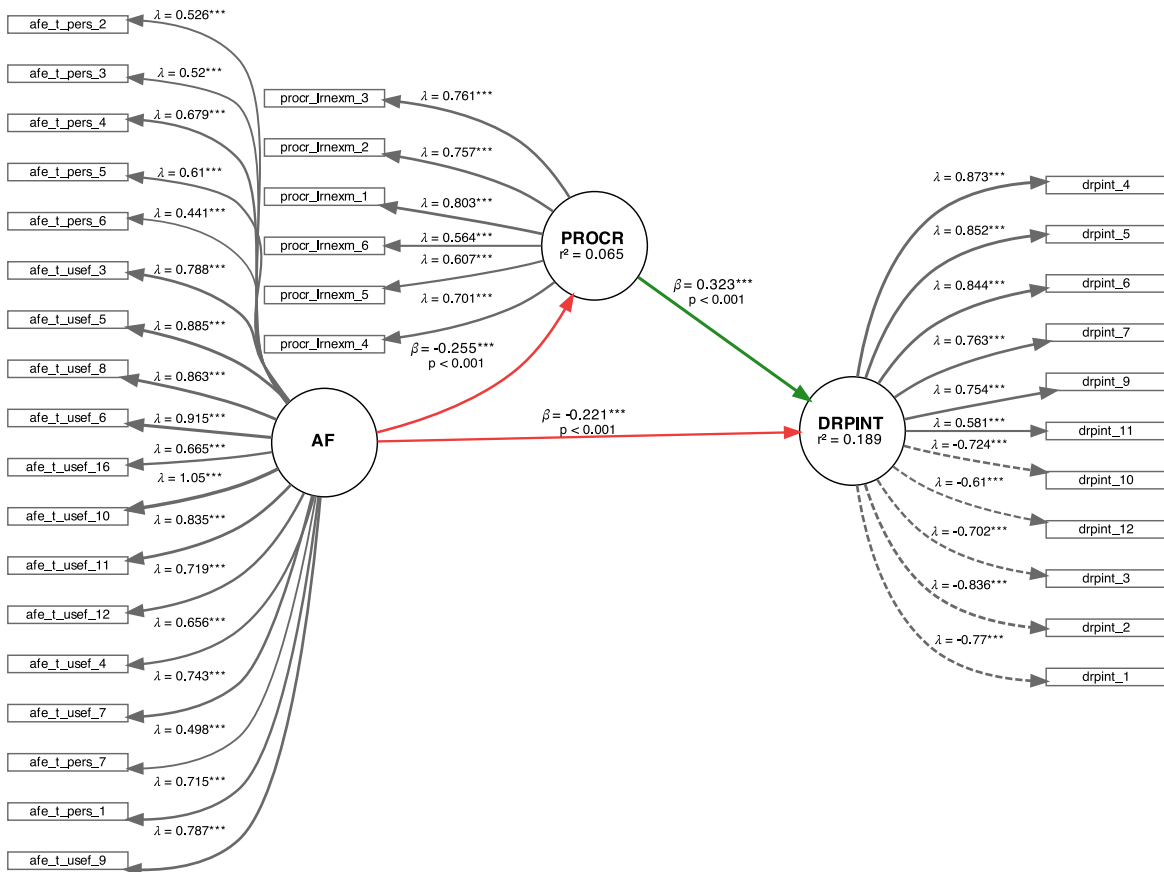


Figure 1. Path model with 1 AF factor

Figure 2, below, shows the path model for the case of two latent factors of ‘academic feedback’.

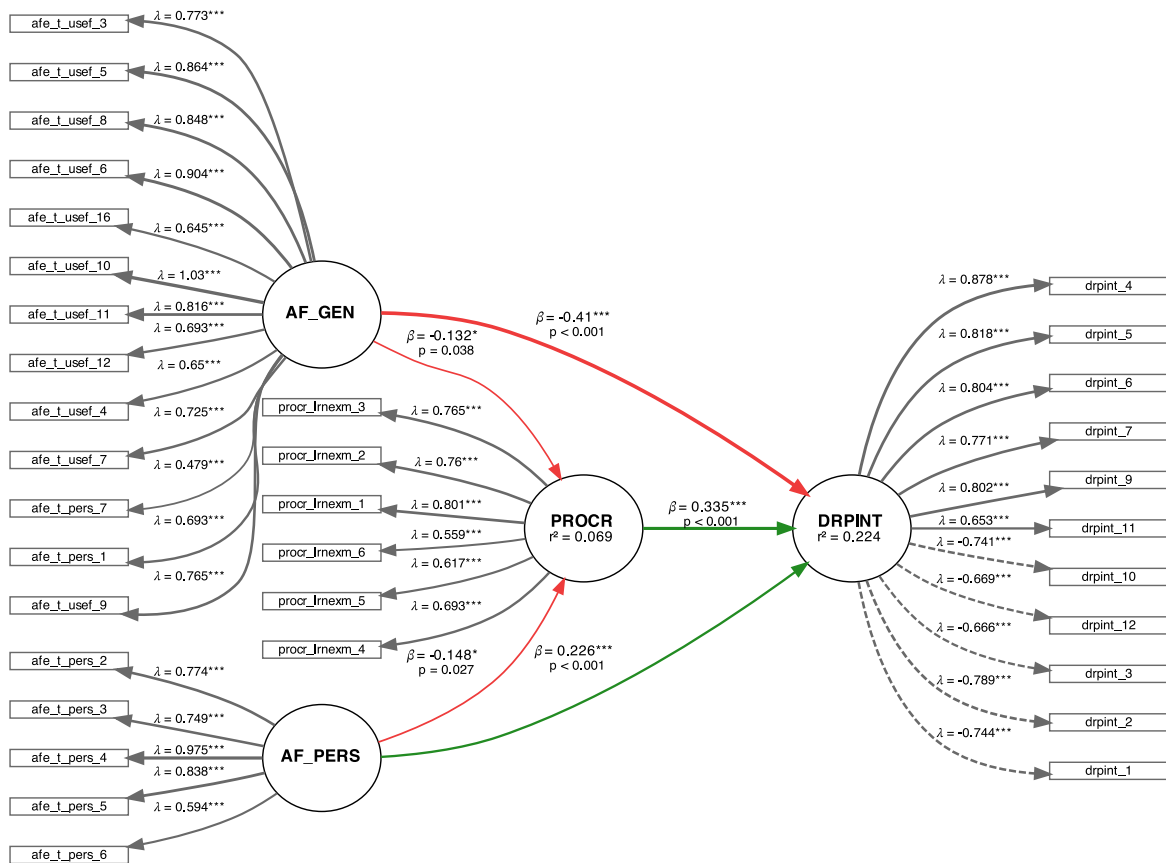


Figure 2. Path model with 2 AF factors

The associations (betas) between ‘academic feedback’ and ‘procrastination’, as predictors, and ‘drop-out intention’ as predicted/outcome, are presented in Table 3, below:

Table 3. Path Estimates

model	relationship	Original Est.	Bootstrap Mean	Bootstrap SD	T Stat.	2.5% CI	97.5% CI
Model 1 (1 AF factor)	AF PERS -> PROC	-0.15	-0.15	0.08	-1.78	-0.31	0.02
	AF PERS -> DRPINT	0.23	0.22	0.06	3.59	0.10	0.35
	AF GEN -> PROC	-0.13	-0.14	0.08	-1.76	-0.28	0.01
	AF GEN -> DRPINT	-0.41	-0.41	0.06	-6.58	-0.53	-0.28
	PROC -> DRPINT	0.33	0.34	0.04	7.93	0.26	0.42
Model 2 (2 AF factors)	AF PERS -> PROC	-0.15	-0.15	0.08	-1.92	-0.31	0.00
	AF PERS -> DRPINT	0.23	0.23	0.07	3.36	0.10	0.35
	AF GEN -> PROC	-0.13	-0.14	0.07	-1.78	-0.28	0.01
	AF GEN -> DRPINT	-0.41	-0.41	0.06	-6.38	-0.53	-0.29
	PROC -> DRPINT	0.33	0.34	0.04	7.68	0.26	0.42

AF denotes ‘academic feedback’

## 5. DISCUSSION AND CONCLUSION

The results associated with the first model provided support for all our three hypotheses and explained .22% of the overall variance in the outcome variable (‘drop-out intention’). Namely, the effect of AF on DRPINT was  $\beta = -0.22$  at  $p < 0.001$ , and PROC was also a significant predictor of DRPINT with  $\beta = 0.32$  at

$p < 0.001$ , while, concomitantly, PROCR mediated between AF and DRPINT. However, the most surprising result was provided by model 2, in which AF was conceptualized as two different factors, associated with one, more ‘general’ (or, in better words, ‘impersonal’) dimension of feedback and one, more specific dimension, which attracted items inquiring into how much the instructors’ feedback was adapted to the learner’s personality. Specifically, model 2 shows that the ‘personal’ AF factor was *positively* associated with the ‘drop-out intention’, which, at a superficial, face-value approach, appears to speak to the futility of such type of feedback, or of the attempts to personalize academic feedback.

Nevertheless, while surprising, this result is neither unexplainable nor direct evidence of the lack of usefulness of personalizing the academic feedback. For instance, the literature indicates there is some criticism as to what personalized feedback actually means (H. Wang & Lehman, 2021). In this regard, and which we acknowledge as a clear limitation, our ‘academic feedback’ questionnaire was not nuanced and faceted enough to capture the many intricacies of what ‘personalized’ ‘academic feedback’ means (for a lengthy and clarifying discussion about these facets, see H. Wang & Lehman, 2021). One possible explanation is the case when students at risk of dropping out of school are specifically ‘targeted’ by the instructors, to be provided more personalized feedback, which (some of) them could interpret; in such a case, these students would report increased levels of personalized instructor feedback. Furthermore, if the reason for this positive association between AF\_PERS and DRPINT was a consequence of help-seeking by the students, and is performed in situations of poor academic achievement, then our findings are consistent with those of Suamuang et al. (2021), insofar students can contemplate dropping out as a potential course of action and perceive the personalization of feedback as endorsing their prospects of dropping out.

Overall, our findings support existing research (Grunschel et al., 2013; e.g., Suamuang et al., 2021) while opening new lines of inquiry into the valences of personalized academic feedback. Procrastination is a relatively stable behavioral characteristic, that changes rather insignificantly throughout the semester (Kokoç et al., 2021). It is therefore to be expected that the sooner interventions on deterring procrastination tendencies, the more impactful they would be. Also, our findings provide additional evidence that the feedback provided by teachers and educators does, indeed reduce procrastination, and that, regardless of how it reflects on more distal variables (such as the ‘drop-out’) is a significant gain in and of itself.

Finally, our research had several methodological and conceptual limitations. First, methodologically, as mentioned above, our questionnaire did not capture the many intricacies of personalized feedback or the sensitive nature of properly balanced AF (Xavier & Meneses, 2021). Second, conceptually, and with relevance for the research design, future development will need to account for learning disabilities, as well as for more precise separation (i.e., operationalization) of the various facets of feedback. In our future work, we intend to refine the instruments used here, perform a thorough CFA and perhaps an exploratory SEM, including doing a thorough analysis of the scales used and reducing their complexity (i.e., maintaining only the minimum number of most relevant items) and investigate in more depth why various types and features of academic feedback may have opposing effects.

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