



Measuring Students' Perceptions of Writing Feedback

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Abstract

How students perceive the feedback that they receive on their writing can either foster or inhibit other important writing beliefs, yet feedback perceptions is a relatively new construct. The goal of this study was to develop a valid and reliable instrument for measuring students' perceptions of writing feedback. Evidence for validity and reliability were gathered throughout the development of the Student Perceptions of Writing Feedback Scale (PWFS), a self-report questionnaire that asks students how they perceive the feedback they received from their instructors about their writing. The PWFS is based explicitly on the research and theory on students' feedback perceptions, how helpful and valuable students find feedback, and students' affective responses to feedback. The psychometric properties of the PWFS are satisfactory, based on analyses of data across two studies with 275 students in high school and college.

Measuring Students' Perceptions of Writing Feedback

Feedback - instructors spend countless hours providing it to their students, reading and re-reading assignments, conferencing, making edits, and commenting in the margins. This feedback can be in the form of praise, constructive criticism, and/or suggestions for improvement and may be verbal (e.g., verbal praise or suggestions) or written (e.g., comments in the margins or at the end of an assignment). Three assumptions that seem to follow the provision of feedback are that students will read and understand the feedback, the feedback is useful or helpful, and students will use feedback as a guide for improving performance on future work. Unfortunately, the feedback process does not always align with these assumptions, and the provision of feedback is not necessarily enough to encourage improved student performance. For example, Hattie and Timperley [1] found that when students were given feedback that specifically guided them to do tasks more effectively, the effects of feedback on achievement were larger than just providing praise, rewards, or punishments. Even when feedback is specific, in order for it to be beneficial to students, they must be able to actively use the feedback they receive [2]. That is, feedback is only effective when the learner is willing to accept and grow from it [3]. This is complicated by the fact that feedback can have varied and unanticipated negative effects on students [2,4]. A better understanding of students' experiences with and perceptions of receiving feedback is needed to fully understand the powerful role feedback can play on student learning and writing success. However, student feedback perceptions is a relatively new construct. The aim of this article is to describe the development of a valid and reliable instrument that measures how students perceive the feedback they receive on their writing.

Students' perceptions of feedback

The importance of students' perceptions of feedback has begun to receive increasing attention in the literature (e.g., [5-9]). The majority of this work has largely focused on feedback perceptions generally and not on the feedback students receive on a particular task or in a specific content area (e.g., [10,11]). To date, researchers have explored the disconnect between instructors' and students' perceptions of feedback (e.g., [3,12,13]), barriers to the utility of feedback (e.g., [10,14]), if and how students use feedback [14], and students' feedback preferences [15]. Recurring themes among these studies is that students often view feedback as unhelpful (e.g., [3,10,12,13]) and that instructors and students appear to have different perceptions about what constitutes helpful feedback [12]. For instance, college students in one study described feedback as being illegible, too vague, impersonal, and, generally unhelpful [10]. Part of the reason so many students seem dissatisfied with feedback they receive may be because of the expectations they have developed of what function such feedback should serve. For instance, college students' qualitative responses from several studies revealed that students expect feedback to justify their grades on assignments (e.g., [10,13,16]). Findings from other studies suggest that some students believe they should receive feedback from instructors simply as a form of reciprocity for their effort on an assignment [10]. It is not surprising, then, that students view feedback as effective when it is prompt [12,16-18], specific [4,10,16-19], personal [4,16,18], encouraging [4,16,18-20], and includes tips on how to improve [16,17,19,20].

While many students acknowledge that they at least read the feedback they receive [10,20,21], and recognize feedback as a means for improving learning (e.g., [13]), how or if they use such feedback is unclear [10]. Additionally, few studies have explored how students feel about and react to feedback beyond perceptions of its helpfulness. The emerging role of emotions in the feedback process has recently begun to gain attention (e.g., [22]). As a result, we know that receiving feedback can be a difficult experience for students, and these experiences may elicit strong emotional reactions among students, ranging from feelings of pride and happiness to feelings of frustration, anger, and sadness (e.g., [9,23,24]). Indeed, emotions have a focal role in feedback uptake because they have the power to influence students' future motivation and self-esteem [25]. Given the importance of feedback for learning and achievement, it is essential to understand not only students' views of the feedback they receive, but also the ways in which they respond to feedback [26]. This is particularly true regarding the feedback students receive on their writing.

Students' perceptions of writing feedback

How students perceive the feedback they receive on their writing has been linked to both their students' writing self-efficacy and writing self-regulatory behaviors [5,9]. Self-regulatory behaviors that writers use include goal setting, planning, self-monitoring, self-instruction, revising, and help seeking [8] and these behaviors are requisite of developing



proficiency for writing [6]. Writing self-efficacy has also been shown to impact overall student writing success [7,27] as well as grade in a writing course [28] and may be a more powerful predictor of writing success than writing aptitude or previous writing performance [7]. Given the proposed relationships feedback perceptions have with other writing variables, Ekholm & colleagues [5] sought to test the mediational role of writing feedback perceptions in linking writing self-efficacy and writing self-regulation of college students. They found that college students' perceptions of writing feedback partially mediated the relationship between self-efficacy for writing and writing self-regulation [5]. That is, the magnitude of the relationship between writing self-efficacy and writing self-regulation was significantly weaker when writing feedback perceptions was included in the model.

Related to this work is an important question-do students like to receive feedback on their writing? To answer this question and to begin to address the lack of research in this area at the K-12 level, Marrs & colleagues [23] asked elementary students if they liked to receive feedback on their writing from their teachers and to provide reasons for liking/disliking writing feedback. Most students reported liking to receive feedback on their writing and cited reasons associated with mastery of writing and positive affect. For example, many students said that feedback they received made them "feel good" or proud. Other students said feedback made them feel special or showed them that their teacher liked their writing. In several instances, students also noted feeling motivated to write because of the feedback they received from their teacher. Reasons for not liking feedback on writing primarily related to negative affect. For these students, feedback evoked negative emotions or memories; many student responses suggested that feedback induced feelings of sadness. Other responses noted feelings of timidity, nervousness, and fear. In some cases, students said feedback made them feel like they were a bad writer. Developmentally, most elementary students have yet to master the skills necessary to write [29], and as such, it seemed feasible that older students, who have had more experience with writing, might provide different reasons for liking/disliking writing feedback. In a subsequent mixed methods study, Zumbrunn & colleagues [9] asked the same qualitative question to secondary students in grades six through ten. When students indicated a liking of feedback from their teacher, many of their reasons as to why echoed those of younger students. For instance, secondary students also reported feeling happy, more confident as a writer, encouraged, and motivated to write better next time when asked why they liked feedback on their writing. Similar to younger students, some secondary students also associated negative emotions with receiving feedback from their teacher. Students mentioned feelings of anxiousness, embarrassment, strong anger toward teachers, and general unhappiness as a reason for disliking feedback on their writing. These findings begin to illustrate the complex and highly individualized nature of students' writing feedback perceptions. Developing a valid and reliable scale for measuring students' perceptions of the feedback they receive about their writing is critical for understanding the construct itself as well as how it relates to other writing variables.

Measuring feedback perceptions

To date, there have been three attempts to create a tool for measuring students' perceptions of feedback. In their mixed methods study, Lizzio & Wilson [4] collected qualitative data from college students to identify domains of criteria they use to evaluate feedback. Themes from the qualitative data subsequently guided the creation of the Assignment Feedback Questionnaire [4], a three-factor scale to measure students' perceptions of feedback; subscales included Developmental Feedback, Encouraging Feedback, and Fair Feedback. Similarly, Rowe & Wood [11] explored the feedback perceptions of undergraduate and postgraduate economics and finance students through focus groups, the themes of which, in conjunction with themes identified through a literature search, were used to develop a questionnaire. Results suggested that all groups of questions could be defined by one dimension except preferences for feedback, which was two-dimensional. One group of students preferred feedback that allowed them to think deeply about the material and encouraged independent learning while the other group preferred feedback that gave them the correct answers or explained their grade. King, Schrodt, & Weisel [26] also took steps toward developing a tool for measuring students' perceptions of feedback specifically in communications courses. They collected data from both communications students in their home department as well as from a nearby community college to improve the generalizability of their results and shared drafted items with communications faculty and students for review to improve validity evidence based on test content. A Principal Components Analysis (PCA) produced the four-factor, 33-item Instructional Feedback Orientation Scale (IFOS) [26]. The four subscales, which included Feedback Utility, Feedback Sensitivity, Feedback Confidentiality, and Feedback Retention, each demonstrated acceptable reliability and a subsequent CFA confirmed the four-factor structure. Correlations of the IFOS subscales with other constructs were conducted to

gather evidence of concurrent and discriminant validity.

Unfortunately, Lizzio & Wilson [4] did not provide psychometric properties for the Assignment Feedback Questionnaire (AFQ), and their study design seemingly did not include gathering evidence for validity based on test content. Moreover, the qualitative data that guided item development came from primarily female students, limiting the generalizability of conclusions that can be made when using the AFQ. Though Rowe & Wood [11] did begin to address the role of emotions in the feedback process, the results of their study were somewhat unclear. Furthermore, no discussion of the appropriateness of PCA for their purposes or of psychometric properties for the questionnaire and subscales were provided. King & colleagues [26] presented a scale development study that included processes for gathering evidence for validity and reliability. However, it is likely that feedback perceptions are related or inversely related to other variables than those they included. Furthermore, affect is missing from the IFOS and we now know that receiving feedback can be a difficult and very emotionally charged experience for some students [2,9,23,24]. Finally, perceptions of feedback may differ across content areas. Knowing how students view writing feedback might be beneficial, especially since writing is so prevalent in both college and K-12 education and is a necessary skill for many fields. Additionally, and as previously mentioned, students' writing feedback perceptions have the potential to impact other writing variables, including writing success. Though Ekholm & colleagues [5] and Zumbrunn & colleagues [9] provided useful evidence of writing feedback perceptions as a mediator for writing self-efficacy and writing self-regulation, their measure of feedback perceptions more closely reflected students' general openness to receiving feedback and was not a comprehensive measure of writing feedback perceptions.

To begin expanding our understanding of students' perceptions of writing feedback, we conducted two studies to develop and validate an instrument to measure this construct. First, building upon prior research, Study 1 sought to develop the Student Perceptions of Writing Feedback Scale (PWFS), a self-report questionnaire that measures how students perceive the feedback they receive about their written work. Following the recommendations of the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education provided in the Standards for Educational and Psychological Testing [30], validity evidence based on test content, internal structure, and relations to other variables were gathered to support the use and resulting inferences made from using the PWFS. Reliability evidence for internal consistency of PWFS scores was also gathered. In an effort to test the psychometric properties of the resulting instrument, Study 2 sought to confirm the factor structure of the PWFS and expand validity evidence based on internal structure and stability of scores.

Study 1

Methods

Participants

A sample of high school students ($n=275$; 55% female) were recruited from English classes in two suburban, mid-Atlantic, public school systems. Students identified as White (63%), Black/African American (11%), Hispanic/Latinx, Middle Eastern, or Caribbean (less than 5% total), or two or more races (7%). Seven percent of students chose not to disclose their race/ethnicity. Students primarily reported receiving as (40%) or Bs (44%) in writing, though 14% reported receiving Cs and less than 1% reported receiving Ds or Fs.

Procedures

Scale development: Development of the PWFS began with a literature search to identify studies focusing on students' perceptions of feedback, with a particular focus on writing feedback. Based on the literature search, a pool of 70 items were drafted and reviewed by a research team of graduate students and their faculty mentor whose work focuses on students' beliefs about writing. Items were also reviewed by a faculty member whose work focuses on students' beliefs about formative assessment. Based on their suggestions, 39 items were removed. The remaining 31 items were then sent to researchers in the field of feedback perceptions, asking their professional judgment on the representativeness and appropriateness of the items. Based on their feedback, all 31 items were included in data collection.

Data collection: The PWFS and the WFA [31] were both administered to the identified sample of secondary students in their classrooms. Students' teachers shared the link to the online survey; once students arrived at the questionnaire webpage, they were



instructed to read each item and rate their level of agreement or disagreement. Students responded to all items in one sitting, but were not required to answer all questions and were not limited in time. The questions were divided into three sections: the PWFS, the WFA [31] and demographics. Items on the two questionnaires were counterbalanced to limit the impact of testing effects.

Data analysis: The feedback perceptions literature suggested that different subgroups of items may function differently for different test-takers. In order to identify whether this is true for the PWFS, it was necessary to subject the items to a statistical data reduction analysis. Given the purposes of the current study, data were analyzed using Exploratory Factor Analysis (EFA). Before conducting EFA, the assumptions of normality, multicollinearity, and sphericity were assessed. Once the assumptions were assessed and items were removed based on non-normality, items were subjected to an EFA using oblique rotation to allow factors to correlate with one another [32]. To determine how many factors were extracted from the data, a scree plot, eigenvalues, and communalities after extraction were inspected.

Evidence based on relationships to other variables: To provide convergent and discriminant validity evidence of the PWFS, scores were correlated with scores on a previously existing measure of feedback perceptions, the Writing Feedback Attitudes Scale (WFA) [31]. This five-item scale asks students to rate their overall openness about receiving feedback on their writing from others on a 4-point Likert scale from 1 (Never) to 4 (Always). The WFA is developmentally appropriate for K-12 writers and repeatedly demonstrates acceptable evidence for internal consistency.

Evidence based on internal consistency: Cronbach’s alpha was calculated for each resulting subscale of the PWFS to determine agreement of answers on items [33].

Results

Before proceeding with the Exploratory Factor Analysis (EFA), the assumptions of normality, multicollinearity, and sphericity were assessed and descriptive statistics were examined to check the data for outliers and missingness. Items 8, 10, 15, and 21 violated the assumption of normality and were dropped from subsequent analyses. Upon examining the correlation matrix of remaining items, no item correlations were greater than .9, indicating the assumption multicollinearity was satisfied [34]. A significant Bartlett’s [35] test ($\chi^2(351) = 3492.68, p < .01$) indicated that the assumption of sphericity was not violated [34,36]. Finally, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .89, indicating the sample size was adequate enough to proceed with EFA [36]. The remaining 27 PWFS items were subjected to an EFA using oblique rotation and principal axis factoring extraction, which allowed the factors to correlate with one another [31]. Six factors having an eigenvalue greater than one were extracted that together accounted for 52.99% of the variance in responses. However, the scree plot suggested a five-factor model might represent the data better. To further explore the factor structure of the PWFS, the pattern matrix and communalities were examined. The pattern matrix revealed that nine items loaded onto the first factor, five items to the second factor, seven items to the third factor, and four items to the fourth factor. Two of the PWFS items (items 26 and 28) loaded onto the fifth factor, but loaded more strongly onto the third factor. Only one item (item 3) loaded onto the sixth factor; this item also loaded onto factor one. Item 2 did not load onto any of the extracted factors and was dropped. The first factor was labeled Writing Improvement because these items focused on ways feedback can help students improve their writing and grow as a writer. These items also reflected the value and usefulness students place on feedback for helping them improve their writing. Nine items originally loaded onto the first factor. Item three, “Feedback is not important if I get a good grade” had the weakest loading and low communality after extraction, in addition to not theoretically aligning with the rest of the items. Dropping this item resulted in an increase in Cronbach’s alpha for the writing improvement subscale from .89 to .90. Thus, item three was removed from the PWFS. The second factor was labeled positive affect and consisted of four items related to positive emotional reactions students have as a result of receiving feedback on their writing. A fifth item, item 13, “Feedback on my writing is positive,” originally loaded onto the positive affect subscale, as well. Both the loading and the communality for this item were substantially lower than that of the other four items. Item 13 also did not align well with the other items as it did not address a specific affective response to writing. Thus, item 13 was dropped, which resulted in an increase in Cronbach’s alpha from .89 to .94 for the positive affect subscale.

Factor three was made of five items that reflected negative emotional responses students have with receiving writing feedback and was labeled negative affect. Item 11, “Feedback I get on my writing is too critical,” and Item 14, “Feedback on my writing is confusing,” were originally part of the negative affect subscale but were dropped

because they did not align well with the other items, resulting in lower factor loadings. Cronbach’s alpha for the negative affect subscale increased from .83 to .84 upon dropping items 11 and 14. These items also had low communalities, further supporting the removal of item 11 and item 14. The fourth factor was labeled feedback message because the three items that loaded onto this factor described the specific messages feedback seemed to convey to students. A fourth item, item 17, initially loaded onto this factor but was dropped because it did not align well with the other items. Cronbach’s alpha dropped slightly (from .64 to .63) when item 17 was removed. However, the value of alpha both with and without item 17 is not above .70, the recommended cut off. Furthermore, the communality of item 17 was low, which suggested the variance of the item was not explained by the extracted factors. Collectively, the fifth and sixth factors only accounted for an additional 3.6% of the variance. All items loading to these two factors also loaded more strongly to other factors. Thus, these final two factors were removed from the PWFS. A final list of items included in each of the four factors as well as eigenvalues for each factor is provided in (Table 1).

Table 1: Factor Loadings and Eigenvalues of Final PWFS Factors.

Item	Factor			
	1	2	3	4
4. I look forward to feedback on my writing	0.66	0.06	0.05	-0.18
5. Feedback I get on writing makes me want to become a better writer	0.64	-0.22	-0.04	-0.07
6. Feedback on my writing encourages me to do better next time	0.79	-0.14	-0.09	-0.01
18. Feedback helps me write better next time	0.73	0	0.05	0.14
19. Feedback on my writing is useful	0.74	0.1	0.07	0.17
20. Feedback makes me a better writer	0.64	-0.1	-0.01	0.16
22. I use feedback to help me write better next time	0.5	0.03	0.08	0.11
23. Feedback on my writing is helpful	0.72	0.06	0.06	0.15
1. Feedback makes me feel like I am a good writer	0.07	-0.82	0.01	-0.03
29. Feedback on my writing makes me feel proud	0	-0.87	-0.08	0.07
30. Feedback on my writing makes me feel	-0.09	-0.92	0.04	.08 confident
31. Feedback on my writing makes me feel happy	0.09	-0.89	0.01	-0.05
7. Feedback on my writing makes me feel like I am a bad writer	-0.03	-0.14	0.74	-0.04
25. Feedback on my writing makes me want to give up	0.18	0.06	0.68	-0.05
26. Feedback on my writing makes me feel hopeless	0.12	-0.02	0.63	0.03
27. Feedback on my writing makes me feel nervous	-0.02	0.03	0.86	-0.13
28. Feedback on my writing makes me feel frustrated	0.03	-0.19	0.59	0
9. Feedback on my writing explains my grade	0.06	-0.03	-0.05	0.47
12. Feedback is very specific	-0.12	-0.09	0	0.78
16. Feedback tells me what I did well in my writing	0.09	-0.08	0.08	0.48
Eigenvalue	7.98	3.12	2.28	1.56



Note: Method of extraction was principal axis factoring.

Scores on the PWFS were correlated with students' scores on the Writing Feedback Attitudes Scale (WFA) [32]. Specifically, subscale scores were created for each of the four PWFS factors. These subscale scores were then correlated with a total scale score for the WFA (α=.77). Scores on the PWFS subscales correlated positively with scores on the WFA Scale and ranged from weak (r=.27) to moderately strong (r=.57). A moderately strong, positive correlation among the WFA Scale and the PWFS Writing Improvement subscale provided evidence for convergent validity. Both sets of items address students liking to receive feedback, particularly the PWFS item, "I look forward to feedback on my writing" and WFA item "I like it when my teachers comment on my writing." The weaker relationships between the WFA and the positive affect, negative affect, and feedback message subscales provided discriminant validity evidence, as these remaining PWFS subscales and the WFA measure different facets of feedback perceptions. While two of the WFA items contain the words "I feel," these items refer to feelings about feedback specifically and not about emotional responses to receiving writing feedback. Furthermore, none of the WFA items address specific content or messages sent by feedback, such as the items comprising the feedback message subscale of the PWFS. Thus, a different pattern of responses would be expected.

Reliabilities of factors one, two, and three were quite high while the reliability of factor four was less than what is typically acceptable. For each subscale, the Cronbach's alpha coefficient if item deleted was also calculated. Reliability of scores on the eight Writing Improvement subscale items was .90. Deleting any one of the eight items would have resulted in either a decrease or no change in the value of alpha. The Positive Affect subscale items yielded an alpha of .94. Deleting any of the four positive affect items would have resulted in a lower alpha. Similarly, deleting any of the five negative affect items would also result in lowering Cronbach's alpha for that subscale from .84. The lowest alpha value of the four subscales was that of the feedback message subscale at .63. Removing any of the three items comprising this subscale would result in an even lower alpha value.

Resulting instrument

A literature review, item construction and expert review, and data reduction procedures led to the development of the student Perceptions of Writing Feedback Scale (PWFS). The resulting PWFS was a 20-item questionnaire comprising four subscales: Writing improvement, positive affect, negative affect, and feedback message. A final list subscales, items, and reliabilities is provided in (Table 2).

Table 2: Correlation of PWFS scores with writing feedback attitudes scores.

S.no	Score	1	2	3	4	5
1	Feedback Attitudes	1				
2	Improvement	0.57	1			
3	Positive Affect	0.28	0.42	1		
4	Negative Affect	0.37	0.37	0.17	1	
5	Feedback Message	0.27	0.46	0.3	0.2	1

Study 2

Methods

Participants

Participants included 101 (74% female) college students enrolled in education courses in a suburban, mid-Atlantic, public university. The additional sample of higher education students intended to confirm the factor structure of the PWFS and extend generalizability of findings and use of the PWFS across the developmental spectrum. Students identified as White (52%), Black/African American (17%), Asian (10%) Hispanic/Latinx (10%), Middle Eastern (3%), or two or more ethnicities (4%). Five percent of students chose not to disclose their ethnicity. Students primarily reported receiving As (51%) or Bs (40%) in writing, though 8% reported receiving Cs.

Procedures

Data collection: Students' instructors shared the link to the online survey; once students arrived at the questionnaire webpage, they were instructed to read each item

and rate their level of agreement or disagreement. Students responded to all items in one sitting on their own time and were not required to answer all questions. Questions were divided into two sections: the PWFS and demographics. Items on the PWFS were counter balanced to limit the impact of testing effects.

Data analysis: To test the psychometric properties of the resulting PWFS and expand external validity, the four-factor structure suggested by EFA results was tested with Confirmatory Factor Analysis (CFA). Data analysis was conducted using Stata14 with the robust maximum likelihood estimator. Given the results of the EFA and the lower Cronbach's alpha of the fourth factor, models for the full, four-factor model were compared to a three-factor model with the fourth factor removed. Cronbach's alpha was calculated again for each PWFS subscale to determine agreement of answers on items as well as stability of scores over multiple administrations [33].

Results

The four-factor model with congeneric item loadings did not demonstrate satisfactory model fit or parsimony according to the guidelines suggested by Hu & Bentler [37], Satorra-Bentler $\chi^2(164)=386.76, p<.01, RMSEA=.11, and CFI=0.83.$ The three-factor model with congeneric items loadings demonstrated marginally better, yet still unsatisfactory, model fit, Satorra-Bentler $\chi^2(116)=291.61, p<.01, RMSEA=.12, and CFI=0.84.$ Cronbach's alpha for the Writing Improvement (α=.92), Positive Affect (α=.87 and Negative Affect (α=.82) subscales were once again high. The Feedback Message subscale demonstrated much better internal consistency in study two (α=.82) than in Study 1 (α=.63). As for part one, Cronbach's alpha if item deleted suggested that all items should be retained.

Discussion

This work sought to develop a scale for measuring students' perceptions of feedback they get on their writing. Using a systematic process guided by the recommendations put forth by APA, AERA, and NCME in the standards [30], items were developed and, subsequently, subjected to Exploratory Factor Analysis (EFA). Once the initial set of items were drafted, they were shared with scholars in the field for expert review. After data collection, descriptive statistics suggested that four items should be removed from the PWFS prior to conducting the EFA due to non-normality. The items having skewed distributions were items that we would generally expect most students to agree with. For instance, 89.8% and 92.0% of students responded with one of the agree options to "I get feedback on my writing" and "I read the feedback I get on my writing," respectively. Similarly, all of the students in a study by Higgins & colleagues [10] also reported reading feedback, though the time spent reading the feedback varied. Exploratory factor analysis suggested that a four-factor structure underlies the items comprising the Student Perceptions of Writing Feedback Scale (PWFS). That is, the PWFS consists of four subscales that capture different facets of students' perceptions of writing feedback. The factor loadings for items on the feedback message subscale were not as strong as loadings for other subscales; this subscale produced the lowest alpha, also. A subsequent confirmatory factor analysis was somewhat unsuccessful in confirming the factor structure of the PWFS. Though the three-factor model did demonstrate marginally better fit than the full, four-factor model, internal consistency of the fourth factor was much higher in Study 2 than in Study 1. Future research should continue to evaluate the items in the Feedback Message subscale, possibly adding items to create a more comprehensive subscale. Moreover, it is possible that the inadequate fit indices are a result of sample size and lack of power and are not an accurate representation of the underlying factor structure of PWFS items. The maintenance or improvement of internal consistency across administrations of PWFS subscales suggest that the items in each factor function well together. More work is needed to better understand the structure of the PWFS.

To assess validity evidence based on relationships to other variables, scores on each of the four PWFS subscales were correlated with scores on the Writing Feedback Attitudes Scale (WFA) [32]. The WFA items focused primarily on students' openness to receiving feedback while the PWFS focused on how students feel about feedback they have previously received as well as how helpful and valuable previous feedback was to them. The PWFS also includes students' affective responses to feedback, a major component of students' feedback perceptions that has largely been absent from the extant literature [11,15] particularly from scales that measure students' writing feedback perceptions (e.g., [26]). Scores on the writing improvement subscale had a moderately strong, positive relationship with WFA scores. Considering the individual sets of items that contribute to these scores, it makes sense that students who view feedback as encouraging, useful, and helpful for making improvements would also be more open to receiving feedback on their writing. Furthermore, WFA scores



correlated strongly with students' attitudes toward writing in a previous study [31]. Thus, students who have positive attitudes toward writing seem to have positive attitudes toward writing feedback, and are more open to receiving feedback on their writing. Relationships between WFA scores and the feedback message, positive affect, and negative affect subscales were weak. The feedback message subscale addresses very specific pieces of feedback, which likely prevents it from having strong relationships with other, more general, measures of writing feedback perceptions. It would be beneficial for future research to investigate the results of expanding this subscale. Moreover, it might also be worthwhile to use an expanded feedback message subscale as an indicator of the types of feedback students are receiving. Such expansions would allow researchers to tease apart writing feedback perceptions based on the types of feedback students receive.

The scores on the negative affect scale did not correlate with WFA scores. Again, this makes sense when we consider the items and think about how students might respond to them. Students who are not as open to receiving feedback are likely the same students for whom feedback prompts feelings of nervousness, frustration, and hopelessness. The weak relationship between the positive affect subscale and the WFA scale was somewhat surprising since we would expect that students who are open to receiving feedback from others would be students for whom writing feedback elicits a positive emotional response. While the correlation between these two was positive, it was weak-to-moderate, at best. Perhaps being open to receiving feedback does not necessarily mean that feedback elicits positive emotional responses among students. It is also possible that being open to receiving feedback may mean that students simply are open to receiving it because they value it or see its worth without necessarily having emotional responses to the feedback they receive. Rowe & Wood [11] initially began exploring the role of emotions in receiving feedback by including items related to emotions on their questionnaire measuring students' perceptions of and preferences for feedback. However, their principal components analysis did not yield a separate component consisting of affective items. They note including only a small number of items related to emotions, which may be why there was not a separate component. The wording of their emotion items does not mention specific affective responses, such as pride or frustration. It is possible that the items created to represent emotions captured a different aspect of feedback, causing them to load onto other components rather than form an independent factor. The PWFS affective items included very specific reactions to feedback and, in many instances, were words students included as reasons for liking and disliking feedback on their writing from teachers in two recent studies by Zumbrunn & colleagues [9] and Marrs & colleagues [23].

Lizzio & Wilson [4] did not specifically address emotions related to feedback. They did, however, include items on their feedback perceptions scale that were related to encouragement. In fact, encouraging feedback emerged as a separate factor in their analysis. Sample items from this factor include "[Feedback] acknowledged my good points or ideas" and "Positive comments were made." Though these items are not tied specifically to emotions, it is possible that these items make students think of emotional reactions they have had with feedback previously. King et al. [26] did not purposefully focus on emotions, either. However, some of their items contain the word "feelings." For instance, "My feelings can easily be hurt by corrective feedback from a teacher" is a sample item that loaded onto their Feedback Sensitivity factor, which seems similar to the PWFS's negative affect subscale. Similar to the PWFS's Writing Improvement subscale, Lizzio & Wilson's [4] analysis yielded a factor labeled developmental feedback. Items on this factor related to the role feedback plays in scaffolding students to improve their writing ability. Both subscales include items that refer to usefulness and value of feedback for helping students become better writers. The first-factor extracted from King & colleagues [26] set of items was similar, as well. They labeled this factor feedback utility, as items reflected the value and usefulness of feedback in helping them make academic improvements. Items related to fairness and clarity of feedback emerged as a separate factor in Lizzio & Wilson's study [4]. Only two items ("Feedback I get is too critical" and "Feedback I get is confusing") were included on the PWFS that related to fairness or clarity and both items were removed because they had weak loadings. These items are also related to the content or message feedback conveys to students. Again, items such as these may serve as indicators of the kinds of feedback students receive rather than serve as a separate dimension of students' feedback perceptions.

Implications

Once the functionality and psychometric properties of the PWFS are well established, the instrument will be useful to researchers and practitioners alike. Researchers will be able to use the PWFS as a way to reliably measure students' perceptions of writing feedback. Scores on the subscales can then be used in complex

models investigating theoretical relationships of feedback perceptions to other variables. For instance, does a more complete and theoretically-based measure of feedback perceptions yield the same mediation model between feedback perceptions, writing self-regulation, and writing self-efficacy? Practitioners will now have access to a short set of items that they can administer to their students to get a quick sense of their students' views of writing feedback. The most important piece of this for practitioners might be the positive and negative affective subscales. Administering these items alone to students would give educators a sense of the types of interactions their students have had in the past with receiving writing feedback. Knowing which students report feeling nervous or hopeless as a result of receiving writing feedback could prompt practitioners to have meaningful conversations with their students around the uses of feedback and benefits it can provide for learning and improving future performance.

Limitations

For Study 1, we were prohibited from recruiting students in 11th grade due to a state-mandated writing assessment, leaving a sample of primarily 9th and 12th graders. While 9th and 12th grade students are categorized as secondary students, it is possible that 12th grade students and 9th grade students may have different overall perceptions of writing feedback due to different classroom experiences with writing, as well as increased expectations for their writing as they progress through school. Findings from previous research suggested that students across the developmental spectrum have similar views of feedback. Moreover, feedback perceptions partially mediated the relationship between writing self-efficacy and writing self-regulation among both college and secondary students [5,9]. Thus, Study 2 sought to confirm the factor structure of the PWFS with college students and expand generalizability of findings and appropriate use of the PWFS. However, it is possible that college students have slightly different perceptions of feedback than students still in high school. Future research should test for measurement invariance among PWFS scores for students in different developmental age groups. Though students in these studies identified with a range of racial ethnicities, students primarily identified as white. Future research should strive to increase representativeness of samples. Additionally, most students reported earning As or Bs in writing, which suggests that these students were all of similar academic ability. Collecting teacher reported grades for students rather than having students self-report their writing grades should be considered.

Conclusion

Writing feedback perceptions is a relatively new construct. The creation of the PWFS was a critical first step toward a better understanding of students' perceptions of writing feedback, which will lead to a better understanding of the theoretical and practical implications of students' perceptions of writing feedback. The PWFS was designed to comprehensively measure the complexity of students' feedback perceptions. Though additional studies are needed to confirm, this work helps ensure that the use of the PWFS will produce reliable scores and that inferences made from its use are valid.

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