Group differences in secondary school students' perceptions of feedback

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Effective feedback is a key element of quality teaching and widely recognised in teacher professional standards. Feedback has been linked to student learning and achievement with their experiences and perceptions potentially influencing how they process, respond and use feedback. There is a growing body of research that is examining students' experiences and perceptions of feedback; however, less is known about group differences that may exist for students. This paper reports on a pilot study investigation of school year level and gender group differences in secondary school students' perceptions of feedback (N = 1887) at a secondary high school in Western Australia. The findings reveal group differences in feedback perceptions and experiences according to gender and school year in areas such as feedback preferences. However, there were similarities found in aspects such as students' positive and negative experiences of feedback and the strategies they used to respond to feedback. These insights aim to contribute to understandings about how different groups of students perceive feedback and what constitutes effective feedback for them in better supporting their learning needs.

Introduction

Effective feedback is a key component in the provision of quality teaching (Hattie, 2008). The importance of effective feedback is reflected in professional teacher standards such as the *Australian Professional Standards for Teachers*, which details it as an element of high quality teaching (Standard 5.2) (AITSL, 2014). Feedback is a vital aspect in the pedagogical process (Brookhart, 2008) and a highly influential factor in student learning (Hattie, 2012) and achievement (Hattie & Timperley, 2007). There are differing definitions of feedback, but it is widely accepted that it includes the "actions taken by (an) external agent(s) to provide information regarding some aspect(s) of one's task performance" (Kluger & DeNisi, 1996, p. 255). Effective feedback focuses on the task (Hattie & Timperley, 2007), is clear and can be understood by the student (Shute, 2008), is timely (Poulos & Mahony, 2008), and meets student needs (Kulhavy & Stock, 1989).

In considering what constitutes effective feedback, it is crucial that students, who are a key stakeholder in the feedback process, are included. There is a growing body of research examining students' understandings, preferences and responses to feedback (e.g. Harris, Brown & Harnett, 2014). Students have reported that effective feedback involves an ongoing process of guided dialogue between the teacher and student, as opposed to a summative provision (Beaumont, O'Doherty & Shannon, 2011). Further, students express the need for feedback that was provided during learning and included information about how they could improve (Gamlem & Smith, 2013). However, most of these understandings are generalised and less is known about the perceptions of different groups of students towards feedback. Gender and age groupings have received some

attention, with results indicating that feedback needs and experiences differ between these cohorts (e.g. Carvalho, Santos, Conboy & Martins, 2014). In order to provide effective feedback, understandings about feedback needs for different groups are essential. Thus, this research aims to contribute to gaining greater insights about different groups of students' experiences, perceptions and needs related to feedback.

Background

The provision of effective feedback involves the teacher making decisions about how, when and what to communicate to the student. According to Molly and Boud (2014) there are two models of feedback. First, the mechanical model of feedback proposes that important information is not just about any component of the task itself, but instead information that influences performance in subsequent tasks. In contrast, the second is a constructivist model of feedback which emphasises information that helps learners to self-regulate so that they become capable of independently bridging any gaps in their learning. Other broad types of feedback include delayed feedback, which provides learners with time to reflect on their performance, and immediate feedback, which provides learners opportunities to think during their engagement in the task (Molly & Boud, 2014).

Feedback is not always about the information a teacher provides to the students. Students can also provide feedback to the teacher about their learning needs. This type of feedback has been reported as having a powerful impact on the students' learning and achievement (Hattie, 2008). Rodgers (2018) defined the feedback given to teachers by students as descriptive feedback. It includes the "critical dialogue between learning and teachers on learners' experiences in the classroom." (p.87). The concept of descriptive feedback was explored by Rodgers (2018) in an intervention study conducted with nine teachers and 50 students (Kindergarten to Year 5) and five academic leaders in New York. The intervention comprised professional learning, observation, consultation and teacher meetings. The teacher posed these questions to students: "What did you learn? How do you know you learned it? What helped you to learn it? What got in your way? How did you feel? What else do you want me to know?" (p. 93). This was aimed at developing learner skills in asking for, receiving and responding to feedback. The findings from this research included increased student agency in their learning and enhancement in students being able to identify and communicate their learning needs to the teacher.

Student perceptions of feedback

In general, students report positively on the value of feedback and understand how it may support their learning. Rowe (2011), for instance, found that university students valued feedback as it provided encouragement, a guide of their success, academic interaction, an indication of caring and respect, and assisted in reducing anxiety. Hattie (2008) reported on an instrument that was developed with the aim of examining teacher and student feedback understandings, experiences and preferences. The findings from this research included that teachers and students shared comparable views on the nature and value of feedback, but that students preferred feedback that was more "forward-looking" (p. 147).

Black and Wiliam (2009) described this type of feedback as "moving the learners forward in the context of formative assessment" (p. 8). Marrs, Zumbrunn, McBride & Stringer (2016) explored elementary student perceptions of feedback on writing tasks (N = 867). This research found that the majority of students reported liking feedback (88%) and of those, 50% perceived that the feedback would assist them in mastering their writing and approximately 25% that it would help improve their writing. However, they also found that 30% of students responded negatively to feedback with many of these students citing emotional reactions such as sadness and anger. Harris, Brown & Harnett (2014) conducted a study to examine primary and secondary students' (N = 193) perceptions of feedback using drawings and a survey to collect the data. The drawings predominantly were of the teacher leading the feedback with the feedback type mostly being portrayed as written and the provision of grades. The survey results reported that the students for the most part were positive about the feedback they received and found it constructive. However, they did express that evaluative feedback could impact negatively upon them emotionally.

While understandings are being gained about what constitutes effective feedback and its applications and practices, issues are still being cited with regard to student uptake of feedback. The teacher may provide feedback that is intended to assist students in their learning, but the students may not respond to the feedback (Handley et al., 2008). Goh and Walker (2018) reported a small scale qualitative research project (N = 10) that investigated primary school students' reflections and responses to written feedback in a music theory assessment. The teacher provided feedback to the students according to evidence-based recommendations of effective feedback. The results revealed that students' personal responses, such as their emotional state, their efforts and past experiences, how they understood the task, and their own personal choices influenced how they responded to feedback. Cowie (2005) also surmised that students can respond emotionally to feedback in situations where the feedback given is too detailed or too positive, or where negative comments are provided without any explanation. The lack of explanation and direction can also cause students to be confused by the feedback and hence not use it (Hattie & Gan, 2011). Yet, when feedback is viewed positively by students it can be a motivating factor for learning or conversely it also can be perceived negatively and inhibit students' learning (Hargreaves, 2013).

It has been found that learning conditions effect student perceptions and response to feedback. For example, it has been proposed that in order for feedback to be effective, a supportive learning environment conducive to the provision of different types of feedback is required (Plank et al., 2014). Students need to understand how to interpret the feedback and how it can improve their learning (Black & Wiliam, 2009). Gamlem and Smith (2013) undertook a study of student perceptions of classroom feedback in Norway by interviewing 11 lower secondary school students. The participating students perceived feedback as being useful when comments on how they can improve were given with sufficient time to reflect upon and then to apply the feedback. Feedback received following the submission of work was reported as being viewed negatively as the learning in this area had finished and as such there was no opportunity to address the feedback. Of particular relevance to the current study, the findings revealed that different age groups

may have different perceptions of feedback and suggested that a greater understanding of the feedback needs and perceptions of varying aged students is needed.

School year and gender group differences in feedback perceptions

Gender differences in student development, learning and interests have been well documented in the literature (e.g. Perry & Pauletti, 2011). Differences may extend to physicality, behaviour, motivation, social interactions and decision making (Seifert & Sutton, 2009). Reiterations of stereotypes, such as the "sensible girl" who is hard working, motivated and well-behaved, and the "silly boy", who is academically able, but frequently off-task, may be inadvertently contributed to by teachers in their feedback (Major & Santoro, 2014, p. 59). Whilst there has been debate about focusing on gender differences and the impact this has on students (e.g. Hyde, 2005), gender differences remain a focus of research attention. Buckley (2016), for instance, reported on the differences between female and male students' mathematics achievement, participation and engagement, which included that "female students are less engaged with mathematics, and more fearful of the subject… and more likely to be outperformed by their male peers" (p. 3). Burnett (2002) found that primary aged female students self-reported as having a more positive relationship with their teacher than male students. However, of 747 participating students, male students revealed that they received more negative feedback from their teachers than did their female peers.

Gender differences in feedback perceptions have also been identified in a study of secondary school aged students. Carvalho et al. (2014) examined 178 secondary students' perceptions of effective and ineffective feedback provided by teachers. The female students viewed the quality of feedback more critically and reported to be receiving more effective feedback than male students. Havnes et al. (2012) shared a similar finding of female students being more critical of the quality of feedback they received from teachers. In their study, they surveyed 192 teachers from five different secondary schools and 391 first year senior secondary school students in Norway. Their findings also indicated that the teachers perceived the quality of feedback more positively than the students and identified that feedback practices can vary in different school subjects. Gender differences included the finding that female students were more critical than male students about the quality of feedback received from their teachers. Interestingly, while these results indicate that female and male students have differing feedback preferences, this requires further exploration and, in particular, to examine if this remains the case across all school years.

Age group differences also have been extensively reported in the literature, but less so when combined with gender research (e.g. Eccles, Wigfield, Harrold & Blumenfeld, 1993). In extending this to student perceptions of feedback, there is limited research focused on this area. One study by Schmidt (1995) investigated secondary school students' perceptions of feedback received by their choral teacher (N = 120). Students rated their perceptions of four different types of teacher audio-recorded instruction against 7-point scales. The female students rated teacher feedback relating to approval, information and praise higher than male students in terms of it being good, effective, sincere and appropriate. Male students rated teacher disapproval higher than female students in these

same terms. Across these types of feedback, there were no school year level differences. Carvalho et al. (2020) investigated the relationship between teacher feedback and students behavioural engagement (N=2534) across the school years 6, 7, 10 and 12. They found that school years did not moderate this relationship. However there was an indication that students across the school years experienced feedback differently. For example, they reported that students in the 12th year of schooling found teacher feedback to be less effective than the other years. Conversely results revealed that students in the 7th year of schooling reported that their teachers provided more effective feedback than students in the other years.

The provision of effective feedback by teachers to students, and by students to teachers continues to be a significant educational issue. In continuing to investigate what is occurring in feedback practices in schools, the exploration of how students and groups of students perceive feedback is crucial. The current research aims to contribute to this body of knowledge and gain insights into how different groups of students perceive feedback. In this research these groups were Australian school year levels Years 7, 8, 9, 10, 11 and 12, and gender (male and female). The research questions were:

1. How do female and male secondary school students perceive feedback?
2. How do students in different secondary school years perceive feedback?

Method

An exploratory, single case study design was utilised as the methodological approach for this research. This approach was used due to alignment to the setting and sample, and because it supported the research questions which were *how* in nature (Yin, 2014). This research was part of a larger pilot study which was instigated and partially funded by the participating school. This paper reports on the exploration of group differences within the data collected through piloting the *Student Perceptions of Feedback* questionnaire (Walker et al., under review) (N = 1887).

Setting and participants

The research was conducted at a public secondary senior high school in the Western Australian metropolitan area. The school has independent status and a rating for the *Index of Community Socio-Educational Advantage* (ICSEA) (My School, 2017) that indicates the majority of the students attending the school have educationally advantaged backgrounds (ACARA, 2015). The school years are seven to twelve with corresponding student ages of 12 to 17 years old.

All students at the school were invited to participate in the research. This resulted in a participation and questionnaire completion rate of 82% (N = 1887). The gender of participants was 869 *female* students (46%), 848 *male* students (45%) and 80 students (4%) who identified as *Other*. A further 90 students elected not to identify their gender (5%). Two students did not elect to identify their year level. Table 1 provides the details of the number of participants in each school year level.

Table 1: Participants' school year

School year	Number of participants
7	318
8	275
9	339
10	282
11	334
12	337
Did not identify	2
Total	1887

Approval to conduct this research was gained from the researchers' University ethics committee, the local Department of Education and the participating school principal. In order for a student to be a participant, both the parent/carer and the student needed to provide consent for participating in the research.

Instrument

The *Student Perceptions of Feedback* questionnaire (Walker et al., 2020; under review) was the instrument utilised in this research. This questionnaire comprises demographic questions (school year level and gender), eight sections and two short answer questions. The demographic gender question required the response of *Male*, *Female* or *Other*, and the year level of *7*, *8*, *9*, *10*, *11* or *12*. The eight sections and their items each focus on a different aspect of feedback. These items require a 5-point Likert scale response of *all of the time*, *most of the time*, *sometimes*, *not very often*, or *never*. The short answer questions provided students with an opportunity to provide additional comments and recommendations for improvement of feedback practices. The questionnaire completion time was approximately 15 minutes. Table 2 details each of the sections of the *Student Perceptions of Feedback* questionnaire and the number of items.

Table 2: Number of items in each section of the
Student Perceptions of Feedback questionnaire.

Questionnaire Section	No. items
1. Content of feedback	11
2. Positive experiences with feedback	12
3. Negative experiences with feedback	16
4. Strategies students use after receiving feedback	14
5. Types of feedback students prefer	7
6. Types of feedback frequency and helpfulness	34
7. Feedback students can give to teachers	4
8. Perceptions of feedback across different subject areas	5
Short answer	2

Walker et al. (2020) reported the descriptions of each questionnaire section.

The questionnaire was completed by the participants during lesson time at school in an allocated week. The time was decided by the School's Executive team and disseminated by classroom teachers.

Data analysis

Once the questionnaires were completed by the students, questionnaire data were entered into *Excel* (Microsoft Office, Version 1807) and IBM *SPSS Statistics* (Version 25). Firstly, reliability and factor analyses were undertaken and reported in Walker et al. (2020). Cronbach's reliability analysis revealed that all sections of the questionnaire had relatively high internal consistency. Exploratory factor analysis identified that no coefficient was less than 0.3 (Williams et al., 2010). Given that these results and that the participating school's data needs, all questionnaire sections and items were retained. Analysis, for the purposes of this paper was then undertaken using descriptive statistics and analysis of variance to explore the differences between student background factors and their responses. In examining gender group differences, the binary male and female gender were compared. Although the *Other* category was selected by 79 students and 90 students did not chose a gender, this data was only included in the overall descriptive statistics.

Results

The *Student Perceptions of Feedback* questionnaire results are first reported for school year and gender whole groups and then for school year and gender for each of the questionnaire sections. When analysing the data it was found that five participating students submitted a blank questionnaire. An additional student did not identify their year group. Within the year and gender groups, there was also a number of students who did not complete all of the questionnaire items. As such, the student participant numbers differ when reporting on group and questionnaire section data analysis.

The overall sample mean for the *Student Perceptions of Feedback* questionnaire was M = 3.15 (SD = 0.38) (n = 1882). Table 3 details the total number of students in each school year and their overall questionnaire result mean and standard deviations. Table 4 details the total number of students in each gender and their overall questionnaire result mean (M) and standard deviations (SD).

Table 3: School year overall questionnaire mean and standard deviations

School year	n	M	SD
7	317	3.08	0.37
8	275	3.16	0.40
9	339	3.08	0.42
10	281	3.21	0.32
11	334	3.18	0.35
12	335	3.22	0.38
Total	1881	3.15	0.38

Table 4: Gender overall questionnaire mean and standard deviations

Gender	N	M	SD
Female	869	3.16	0.32
Male	846	3.15	0.40
Other	79	3.08	0.55
Did not identify	88	3.19	0.49
Total sample	1882	3.15	0.38

Section one: Content of feedback

The group mean for all school year levels (M = 3.47, SD = 0.62) indicates a positive assessment of the content of feedback provided to students, according to the Likert scale responses. Following this, year group means were compared to identify whether there were any statistical differences using one-way ANOVA. In this case, the assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances (p=0.002). Student ratings on the content of feedback they received indicated a statistical difference between certain school years, Welch's F(5, 865.612) = 2.444, p=.033. Specifically, there was a difference in the mean scores Year 9 students gave to the content of feedback received to Year 10 students which was statistically significant (p=.022). These results, detailed in Table 5, reveal that Year 9 students rated the content of feedback they received from teachers as lower than did the Year 10 students.

Table 5: Section one school year group significant mean differences

School year	Significant difference school year
Year 9, M = 3.37, SD = 0.66	Year 10, M = 3.52, SD = 0.57, p=.022

An independent-samples *t*-test was conducted to compare the group mean scores for the content items with gender and a statistical difference was found between group mean score for male (M = 3.55, SD = 0.62) and female students (M = 3.41, SD = 0.58); t(1712) = 4.98, p=.001. These results suggest that male students generally rate higher the content of feedback provided to them by teachers than the female students.

Section two: Positive experiences with feedback

The results for this section of the questionnaire revealed that there were no statistical differences identified between the group mean scores and school year groups. Similarly, an independent-samples *t*-test conducted to compare the group mean score for the positive experience items according to gender, showed there was not a statistical difference between the group means for male (M = 3.39, SD = 0.65) and female students (M = 3.37, SD = 0.61). These results suggest that male and female students at this school have experienced comparable positive experiences with feedback.

Section three: Negative experiences with feedback

The findings for section three of the questionnaire were that there were no statistical differences between group mean scores for negative experiences with respect to feedback

and different school year groups. An independent-samples *t*-test was conducted to compare the group mean score for the negative experience items according to gender. Once again there was also no statistical difference between group mean score for female (M = 2.51, SD = 0.66) and male students (M = 2.51, SD = 0 .79). These results support the proposition that female and male students at this school have similar negative experiences with feedback.

Section four: Strategies students use after receiving feedback

In this section, there were no statistical differences identified between strategies students use and different school year groups. The independent-samples *t*-test conducted to compare the group mean score for the strategy items with gender revealed no statistical difference between group mean scores for male (M = 3.11, SD = 0.61) and female students (M = 3.08, SD = 0.52). These results suggest that male students and female students at each school year level use similar strategies after receiving feedback.

Section five: Types of feedback students prefer

The school year mean scores for questionnaire section five are provided in Table 6.

Table 6: Section five school year mean and standard deviations

School year	n	M	SD
7	317	3.51	0.69
8	273	3.63	0.68
9	331	3.63	0.78
10	272	3.82	0.67
11	328	3.75	0.63
12	324	3.85	0.67
Total	1845	3.70	0.70

One-way ANOVA analysis was conducted to determine differences between mean scores for feedback preferences and different year groups and, once again, homogeneity of variances was violated, as assessed by Levene's test of homogeneity of variance (*p*=.013). However, statistical difference was identified, Welch's $F_{(5, 849.602)}$ = 11.528, *p*<.05. Games-Howell post hoc analysis revealed that there was a range of statistical differences between school year groups as reported in Table 7.

The results reported in Table 7 reveal that Year 7 students have different feedback preferences to Year 10, 11 and 12 students. Year 8 and 9 students have different feedback preferences to Year 10 and 12 students. These results suggest that lower school and senior school students may have different types of feedback preferences to support their learning.

Table 7. Section five school year group significant mean differences.

School year	Significant difference school year		
Year 7	Year 10, $p<.05$	Year 11, $p<.05$	Year 12, $p<.05$
Year 8	Year 10, $p=.015$	Year 12, $p=.001$	
Year 9	Year 10, $p=.015$	Year 12, $p=.001$	

An independent-samples t-test was again conducted to compare the group mean score for the preference items according to gender. There was also a statistical difference between group mean score for male (M = 3.61, SD = 0.71) and female students (M = 3.80, SD = 0.65), $M = -0.19$, $SE = 0.03$, $t(1658.530) = -5.652$, $p<.05$, suggesting that there are differences according to the type of feedback male and female students prefer. Table 8 details the mean scores when preference items are separated into gender. An independent t-test was conducted to determine if there were differences between male and female gender on each of section five questionnaire items. These differences are also reported in Table 8 and below.

Table 8: Gender group mean scores for types of feedback students prefer

Section five questionnaire items	Gender	N	M	SD	Sig. diff. between gender
The feedback should be a balance of positive comments and comments about how to improve.	Male	824	4.14	1.00	Yes
	Female	860	4.45	0.81	
I prefer feedback to be given just to me not whole class or group feedback.	Male	824	3.68	1.23	Yes
	Female	858	3.91	1.22	
When I don't understand, the teacher explains it different ways.	Male	822	3.44	1.10	No
	Female	861	3.48	1.12	
I need time after getting the assessment back to think about how I can improve and any questions I have.	Male	822	3.32	1.12	No
	Female	860	3.41	1.10	
I need to be able to take my assessment home to have time to review it.	Male	824	3.38	1.27	Yes
	Female	859	3.63	1.27	
Different students need different types of feedback.	Male	820	4.09	1.05	Yes
	Female	858	4.33	0.90	
I need time to ask the teacher about my feedback.	Male	824	3.21	1.16	Yes
	Female	860	3.38	1.16	

The results of the independent t-tests reveal a significant gender difference in five items in questionnaire section five. These are for the items:

- The feedback should be a balance of positive comments and comments about how to improve ($M = -0.31$, $SE = 0.04$), $t(1582.508) = -6.978$, $p<.05$);
- I prefer feedback to be given just to me not whole class or group feedback ($M = -0.23$, $SE = 0.06$, $t(1680) = -3.826$, $p<.05$);

- I need to be able to take my assessment home to have time to review it (*M* = -0.25, *SE* = 0.06, *t*(1681) = -4.044, *p*<.05);
- Different students need different types of feedback (*M* = -0.24, *SE* = 0.05, *t*(1612.794) = -4.98, *p*<.05); and
- I need time to ask the teacher about my feedback (*M* = -0.17, *SE* = 0.06, *t*(1682) = -2.979, *p*<.05).

In all five items, female students' responses were significantly higher than those of the male students. The remaining items in this questionnaire section where there was no statistical difference between male and female students included:

- When I don't understand, the teacher explains it different ways; and
- I need time after getting the assessment back to think about how I can improve and any questions I have.

Overall, the results from questionnaire section five indicate that female students rated items more highly than their male peers across a number of different items. Further, there were also differences related to the age of the students. Thus, in general, for type of feedback, age and gender do appear to impact on the students' preferences, however, this is an area that warrants further in-depth exploration in the future.

Section six: Types of feedback frequency and helpfulness

One-way ANOVA analysis was conducted to determine statistical differences in types of feedback frequency and helpfulness. For the frequency items, the homogeneity of variances, as assessed by Levene's test for equality for variances (*p*=.136), was not violated. Statistical difference was identified, F(5, 1819) = 4.29, *p*<.05. Bonferroni post hoc analysis revealed that there were only two statistical differences between school year groups (Table 9).

Table 9: Section six school year group significant mean differences for feedback frequency

School year	Significant difference school year	
Year 9	Year 10	Year 12
M = 2.88, SD = 0.57	M = 3.01, SD = 0.48, *p*=.019	M= 3.04, SD = 0.49, *p*=.001

For the helpfulness items, homogeneity of variances was violated, as assessed by Levene's test of homogeneity of variance (p=.003). However, statistical difference was identified, Welch's F(5, 828.506) = 5.800, *p*<.05. Games-Howell post hoc analysis revealed that there were a range of statistical differences between school years (Table 10).

An independent-samples *t*-test was conducted to compare the group mean score for the types of feedback in terms of frequency items with gender for male (M = 2.97, SD = 0.55) and female students (M = 2.97, SD = 0.44), but no statistical differences were found. An independent-samples *t*-test was also conducted to compare the group mean score for the types of feedback that would be helpful questionnaire items with regard to gender. In this

case there was a statistical difference for male (M = 3.30, SD = 0.72) and female students (M = 3.41, SD = 0.63); $t(1591)$= -3.154, p=.002. These results suggest that female students found the different types of feedback listed in this questionnaire section more helpful than the male students.

Table 10: Section six school year group significant
mean differences for feedback helpfulness

School year	Significant difference school year		
Year 7 M = 3.22, SD = 0.70	Year 10: M = 3.44, SD = 0.58, p<.05	Year 11: M = 3.44, SD = 0.62, p<.05	Year 12: M = 3.41, SD = 0.67, p<.05
Year 9 M = 3.26, SD = 0.77	Year 10: M = 3.44, SD = 0.58, p<.05	Year 11: M = 3.44, SD = 0.62, p<.05	

Section seven: Feedback students can give to teachers

A one-way ANOVA was conducted to determine if there was a statistical difference in the group mean score between school year groups for items relating to feedback students can give to teachers. The homogeneity of variances was satisfied, as assessed by Levene's test for equality of variances (p=.072) and statistical difference was identified, F(5, 1768) = 10.354, p<.05. Bonferroni post hoc analysis revealed that there were a range of statistical differences between school years as reported in Table 11. These results indicate a difference in experiences about the feedback lower and senior secondary school students give to teachers.

Table 11: Section seven school year group significant mean differences

School year	Significant difference school year		
Year 7 M= 2.88, SD = 0.89	Year 10: M = 3.12, SD = 0.74, p=.014	Year 11: M = 3.10, SD = 0.78, p=0.013	Year 12: M = 3.25, SD = 0.79, p<.05
Year 8 M = 2.96, SD = 0.81	Year 12: M = 3.25, SD = 0.79, p<.05		
Year 9 M = 2.87, SD = 0.80	Year 10 : M = 3.12, SD = 0.74, p=.007	Year 11: M = 3.10, SD = 0.78, p=.007	Year 12: M = 3.25, SD = 0.79, p<.05

An independent-samples *t*-test was conducted to compare the group mean score for the feedback that students could give to teachers according to gender. There was a statistical difference between group mean scores for male (M = 3.09, SD = 0.85) and female students (M = 2.98, SD = 0.75); $t(1551)$=2.646, p=.008. This finding reveals that male and female students may have different perceptions about the feedback they can give to teachers.

Section eight: Perceptions of feedback across different subject areas

A one-way ANOVA analysis was conducted to determine statistical difference and homogeneity of variances was violated, as assessed by Levene's test of homogeneity of variance (p=.019) and statistical difference was identified, Welch's F(5, 816.371) = 4.371,

p=.001. Games-Howell post hoc analysis revealed that there were only statistical differences between Year 7 and Year 10 / Year 12. Detailed in Table 12, these results indicate a difference in the experiences of Year 7 students to those students in the later years of school.

Table 12: Section eight school year group significant mean differences

School year	Significant difference school year	
Year 7	Year 10	Year 12
M = 3.33, SD = 0.72	M = 3.56, SD = 0.54, *p*<.05	M = 3.50, SD = 0.65, *p*=.026

An independent-samples *t*-test was conducted to compare the group mean score for the subject area feedback items according to gender. There was a statistical difference between group mean score for male (M = 3.42, SD = 0.67) and female students (M = 3.51, SD = 0.62); *t*(1575)=-2.64, *p*=.008. These results suggest gender differences in the way feedback is perceived to be used and experienced in different subject areas.

Discussion

This research conducted an investigation into group differences in perceptions of feedback received by teachers and provided to teachers by students at a secondary school. The group differences examined were school year level, Year 7, 8, 9, 10, 11 and 12, and gender, female and male. The analysis conducted on the *Student Perceptions of Feedback* questionnaire did not reveal any significant group differences in responses for any items in questionnaire sections *Positive experiences with feedback*, *Negative experiences with feedback* and *Strategies students use after receiving feedback*. This suggests that the experiences students have with feedback, both positive and negative, is comparable across school years and gender. Additionally, their perceptions of the strategies they use after receiving feedback are also comparable across school years and gender (Havnes et al., 2012). The finding of no gender differences in negative experiences presents as contradicting those found by Burnett (2002) but aligned to Carvalho et al. (2014), who also reported no gender differences in students' perceptions of ineffective feedback.

However, the analysis did reveal that there were significant group differences for school year level and for gender for the remaining five questionnaire sections. The school year level differences that were most prominent were those that distinguished perceptions of feedback between lower (Years 7, 8 and 9) and senior secondary (Years 10, 11, 12) students. This was identified in the questionnaire sections *Types of feedback students prefer* and *Feedback students can give to teachers*. These findings propose that lower secondary school students have different feedback preferences to support their learning than senior secondary students. Further, that as students progress through and experience secondary schooling, their overall feedback preferences change. It may also indicate that teachers provide different feedback to senior secondary school students than lower secondary students. This could be plausible considering the high stakes assessments that are often present in the later years of schooling. However, it may also point to students across

school years experiencing feedback and perceiving effective feedback differently (Carvalho et al., 2020).

Lower secondary students also report to providing less feedback to their teachers on their learning needs than do senior secondary students. This may be that senior secondary students have more experience with schooling leading to more confidence to inform the teacher of their learning needs, although they may still be uncomfortable providing this in front of a class (Plank et al., 2014). It appears that this is not to do with capability of providing the feedback to the feedback, but potentially opportunity and willingness. This is supported by the findings of Rodgers (2018) who reported that young students in Kindergarten to Year 5 were able to communicate to the teacher their learning needs and experiences, but this research was conducted in the context of an intervention and with support from the teacher. The early years of secondary school are likely to be challenging for many students to navigate. Therefore, irrespective of whether this difference between lower and upper school students is justified, schools may want to consider providing explicit opportunities for students in the lower years to communicate with teachers on the feedback they prefer. This will provide the benefit of requiring students to reflect on their own learning, while allowing teachers the opportunity to potentially adjust their approach to suit the needs of this demographic more effectively.

The gender group differences for male and female students were observed across the questionnaire sections of *Content of feedback*, *Types of feedback students prefer*, *Types of feedback helpfulness*, *Feedback students can give to teachers* and *Perceptions of feedback across different subject areas*. Female students more than male students indicated preferences for feedback to be a balance of positive comments and comments about how to improve, the feedback to be provided individually for the individual, the option to take the assessment home with time to review, and time to ask the teacher about the feedback. The female students also rated a greater number of different types of feedback helpful to their learning than did the male students. This suggests that female students have more of an understanding of the type of feedback needed to assist them in their learning. The male students generally responded more positively to the content of the feedback they received from teachers than the female students. This finding potentially aligns to Havnes et al. (2012) who found that female students were more critical of the quality of feedback than male students. Interestingly, male students reported more levels of agreement to providing and being able to provide the teacher with feedback about their learning needs. This type of feedback, the feedback students give to their teachers, has been labelled as descriptive feedback (Rodgers, 2018) and can contribute to students developing greater agency in their learning (Havnes et al., 2012).

Although these gender group differences were noted, they are small. Gender differences being significant but small were also observed by Hyde (2005) who conducted 46 meta-analyses. The findings included support for the hypothesis that females and males are similar on most of the psychological variables, and that differences, whilst statistically significant, are often small between genders. Perhaps, therefore, a focus on gender in relation to feedback is unnecessary for practitioners. Rather, simply encouraging all students to reflect and share feedback preferences to their teachers in an appropriate

manner, would encourage introspection by students and opportunities for teachers to provide more useful feedback to support student learning.

In this regard, whilst group differences were identified, students across years and genders reported the need for individualised feedback. Section seven of the questionnaire, item *Different students need different types of feedback* reported high levels of agreement from students and no significant group differences. Plank et al. (2014) also found that students wanted to individually work with the teacher to produce feedback and that they needed to be able to inform the teacher about their learning needs. However, there is a need for caution when providing students with the feedback types they request. Bjork et al. (2013) asserted that individuals may adopt practices based on past experiences that are ill-informed, as they are not always able to recognise what will best help them to learn. Therefore, practitioners should continue to introduce students to different types of feedback, discuss with them the rationale for providing different types and levels of feedback in different contexts, and allow opportunities for students to reflect back to teachers their individual experiences of this feedback.

Conclusion

The findings of this research suggest that lower and senior secondary students, and female and male students, have differing perceptions of feedback and feedback needs. This implies that for professional learning, schools and teachers should continue to develop and provide feedback that is personalised for individual students. Factors such as the time required by teachers to provide this type of feedback and the number of students requiring feedback will need to be taken into consideration so as not to overburden teachers.

As stated, while strategies could be explored to adjust teacher feedback practices to support female and male students, attention to the type of feedback being provided to lower secondary students appears most pertinent. Teachers could provide students with opportunities to provide feedback about their individual learning needs and preferences more expressly in this demographic. In doing this, students would also need to be supported to become better informed about types of feedback available and strategies to provide the teacher with feedback. In order to continue to understand what effective feedback is and feedback practices that best support student learning, continued exploration of feedback practices and experiences, in groups and different learning areas, is needed along with a greater understanding of the impacts of this on engagement and achievement.

Acknowledgement

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