

Student-delivered intensive smooth speech programs for adolescents and adults who stutter

A preliminary exploration of student confidence, anxiety, and interest

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KEYWORDS

COMPETENCIES

INTENSIVE

PROGRAMS

SMOOTH SPEECH

STUDENTS

STUTTERING

THIS ARTICLE
HAS BEEN
PEER-
REVIEWED

Gaining clinical competencies in the assessment and management of stuttering is challenging for speech pathology students in many university programs. Lack of local expertise in fluency management and funding shortfalls have resulted in a paucity of quality services in public and private health facilities and schools for adolescents and adults who stutter (AAWS). One method of developing competencies and capacity to support student learning and the needs of AAWS is through student-led intensive smooth speech programs. This study investigated 38 students' perceptions of their anxiety, confidence, and interest levels in working with AAWS. This information was collected prior to and immediately following participation in 5-day intensive programs. Results indicated that students' reported levels of anxiety decreased and that their confidence and interest levels in working with AAWS increased following the program. The benefits of student-delivered intensive programs in clinical education and elements that contribute to their success are discussed.



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Stuttering affects approximately 4–5% of children and 1–2% of the adult population (Craig, 1998) and has the potential to have marked negative educational (e.g., Anderson & Conture, 2000; Ribbler, 2006), social (e.g., Linn, 1998; Messenger, Onslow, Packman, & Menzies, 2004), and vocational (e.g., Hayhow, Cray, & Enderby, 2002; Klein & Hood, 2004) consequences for the individual. Recent reviews and studies support the growing view that there is a strong relationship between stuttering and anxiety and/or social phobia in adulthood (Blumgart, Tran, & Craig, 2010; Iverach et al., 2009; Iverach, Menzies, O'Brian, Packman, & Onslow, 2011), and that overall quality of life can be compromised for people who stutter (Yaruss, 2001; Craig, Blumgart, & Tran, 2009). Therefore, it is imperative that services for individuals who stutter are available.

For some time in Australia, access to services for adolescents and adults who stutter (AAWS) has been somewhat problematic due to the specialist nature of the disorder and the lack of local expertise in many parts of the country. However, the last decade has seen an even greater decline in services due to reductions in public funding, a pattern which has led to increased access through private practice or university clinics. Services for AAWS remain limited, despite recurring and continuing strong evidence of the efficacy of speech restructuring treatment programs (e.g., Andrews et al., 1983; Bernstein Ratner, 2010; Boethe, Davidow, Bramlett, & Ingham, 2006; Craig, 1998; O'Brian, Onslow, Cream, & Packman, 2003; Onslow, 2000). Lack of services has resulted in limited clinical placements for speech pathology students in the area of adolescent and adult stuttering, with some universities developing in-house placements to accommodate this need.

Research has shown that the level of student confidence in areas of practice has strong links to the areas in which they seek to practise upon graduation (Yaruss, 1999). Unfortunately, research also has shown that many speech pathologists are uncomfortable treating adults who stutter (Yaruss, 1999; Yaruss & Quesal, 2002) and that this discomfort relates to their clinical experiences as a student. Fewer practitioners who are confident in their ability to manage stuttering leads to fewer opportunities for students to gain clinical experience, resulting in fewer future clinicians who are competent in the area. The cycle continues, leading to diminishing services and fewer advocates for services when funding cuts are imminent or have occurred.

To address issues related to professional preparation for stuttering management and delivery of best-practise treatments for people who stutter, Block, Onslow, Packman, Gray, and Ducakis (2005) reported a student-led model for intensive treatment for AAWS using the evidence-based speech restructuring technique of smooth speech. Smooth speech generally incorporates programmed instruction to modify some or all of the parameters of breathing, phonation, articulation, and prosody in order to promote continuous speech flow and airflow and eliminate muscle tension (Cardell, 2012). The cumulative outcomes from Block and colleagues' (2005) research at La Trobe University demonstrate that the student-driven model has comparable efficacy outcomes to clinician-run programs, as measured by reduction in stuttering behaviours. However, while this program has reported general success in up-skilling speech pathology students, specific short-term and longer term student outcomes (including their confidence and interest) have not yet been reported in

the literature. It could be argued that students' improved confidence, knowledge and skills in stuttering management may have positive effects on their seeking employment and/or advocating for services for people who stutter, and thus build capacity in an area of practice that is currently lacking in many communities.

The current study aimed to evaluate students' confidence and perceived competence, and interest in managing AAWS pre- and post-participation in an intensive smooth speech program. It is acknowledged that longitudinal investigation is important to fully determine the impact that such student training models have on the workforce. The present investigators have undertaken this enquiry as part of a larger study. However, this paper will focus on and present data from the first round of this study. Specifically, the present investigation aimed to:

1. determine students' perception of their confidence across generic skills (e.g., rapport, interviewing) and stuttering-specific skills (e.g., measurement, using smooth speech), and knowledge about stuttering (e.g., behaviours, management)
2. determine students' perceived level of anxiety about interacting with AAWS
3. ascertain students' interest with working with AAWS after graduation.

Method

Ethical clearance was obtained through the University of Queensland Human Research Ethics Committee. In total, data has been collected from five 5-day intensive fluency programs (2009–12). Four of these programs implemented the La Trobe University Smooth Speech Program (S. Block, personal communication, 21 July 2008), and one program followed the intensive smooth speech program model developed by the Mater Health Services, Brisbane, based on the Prince Henry Smooth Speech Program (Ingham & Andrews, 1973; also see Craig et al., 1996).

Participants

Fifty students from The University of Queensland, Division of Speech Pathology, volunteered to participate in five intensive fluency programs. All students consented to participate in this phase of the study. All students were in the final year of their undergraduate or Masters speech pathology program, and had completed the academic course in fluency disorders which included practical clinical skills development in stuttering identification, speech rating, and treatment planning. All participants were female.

In order for their data to be included, the students must have attended four or five days of the intensive smooth speech program, which ran for five consecutive days from 8.30am to 6.00pm. In addition, students must have completed pre- and post-clinic questionnaires. Twelve students were subsequently excluded from this study because they did not meet these criteria. There were 38 final participants. Participation in the intensive smooth speech program was voluntary and students' performance was not formally assessed, although extensive clinical feedback was provided. Students were invited to participate in the research study but were informed that non-participation would not limit their involvement in the intensive program. In addition, students were advised that they were free to withdraw from the research at any time.

Procedure

The intensive smooth speech program comprised two stages which facilitated students' development of clinical

skills in fluency management. In the week prior to the start of the program, students attended a half-day briefing session with two staff in order to review theoretical and practical requirements for the program. The structure of the program and their roles as students were clearly outlined, along with expectations of their preparation for the program, such as reviewing theoretical perspectives in stuttering management. Within this session, students also engaged in practical activities – observing videos of clients to identify stuttering behaviour, practising their measurement skills (e.g., fluent and stuttered syllable counting at different speech rates), and practising smooth speech skills. Students were instructed to practise their measurement and smooth speech and skills from audio exemplars provided in the days leading up to the program.

Students attended and delivered the 5-day intensive smooth speech program under the supervision of experienced speech pathologists. The main formats of the two intensive programs are summarised, as follows:

1. The La Trobe program generally takes AAWS who have had no previous treatment and systematically trains their smooth speech using criterion-driven progression across 10 stages (Block et al., 2005). Stages I to III teach smooth speech constructs across consonants, syllables, words, phrases, and short sentences. Stages IV to X comprise structured measurement sessions. Starting at 60 syllables per minute (SPM) clients engage in reading, conversation, and monologue tasks. From 60 SPM, clients advance to 80, 80–100, and 120 SPM where a 0 to 9 point naturalness rating scale is introduced. From there, 150 and 170 SPM are targeted, with Stage X representing the client's "comfort rate", that is, the speech rate at which the client is 100% fluent with natural sounding speech, while using all smooth speech parameters. In this study, we followed the La Trobe Intensive Smooth Speech Student Manual and program. Clients received this treatment with two student clinicians who rotated around the clients but still had a key responsibility for one client. Importantly, too, group activities were conducted each day, starting as clinical educator-led sessions and moving to student-led sessions as the week progressed. Transfer of fluency skills began on day 1, with transfer activities (including home-based activities) increasing as the week progressed.
2. The Mater Health Services intensive fluency program has its origins in the original Prince Henry Smooth Speech Program (Ingham & Andrews, 1973; also see Craig et al., 1996). Prior to participating in an intensive program, the AAWS will have received around 15 to 20 hours of therapy to instate the fundamentals of smooth speech. As such, clients enter the intensive program with some mastery of smooth speech skills at 50, 100, and 150 SPM. Therefore, the intensive program is part of a management continuum, and its goal is to consolidate smooth speech skills and enable transfer. Most of the sessions are conducted in large or small groups, with some individual treatment for specific problem-solving and transfer activities. In the group sessions, structured smooth speech measurement sessions, using a variety of activities, promote conversation and monologue at 50 and 100 SPM on day 1. Faster speech rates are targeted from day 2. While transfer activities are incorporated from day 1, these assume a large focus in days 3 to 5. In addition, formal self-evaluation,

relaxation, and cognitive restructuring sessions are undertaken on a daily basis. In this program, the students participated largely in an observational capacity on the first day. Over the week, the students gradually assumed greater responsibility for running the group sessions, overseeing individual sessions, and mentoring transfer tasks. Student pair mentors were assigned to specific clients and maintained a support relationship with them for all transfer and home-based tasks and problem-solving.

Under both intensive program formats, students were supervised in their practice at all times by clinical educators with specialist fluency skills and, as previously stated, students had the opportunity to engage with all clients across the week, both in individual and group sessions, in order to gain a breadth of skills in fluency management and to facilitate transfer for the clients.

Data collection tools

Two questionnaires were used to determine the students' confidence in clinical skills and perceptions when managing AAWS, along with their perceived anxiety and interest pertaining to working with AAWS. Students completed the first questionnaire at the start of the briefing session. The second questionnaire was completed at the end of the final day of the smooth speech program.

The two questionnaires were developed by the authors and were based on Kirkpatrick's (1994) learning and training evaluation theory to target aspects of student skills and knowledge in managing people who stutter. The first questionnaire (pre-clinic) contained 21 items, all rated using 5-point Likert-type scales. One item sought students' perceptions of their level of anxiety in working with clients with fluency difficulties, with another item seeking students' level of interest in working in this area following graduation. In these items, a rating of 0 represented *not anxious/interested* and a rating of 4 indicated *extremely anxious/interested*. Students' reported levels of confidence in their clinical skills were evaluated by asking students to rate their extent of agreement with 13 statements, where 1 indicated *strongly disagree* and 5 indicated *strongly agree*. Three items were focused on generic clinical skills such as establishing rapport and interacting with clients and 10 items were specifically related to skills in working with clients who stutter, for example, calculating stuttering frequency and providing smooth speech treatment. In addition, the questionnaire evaluated student' perceptions of their level of knowledge about stuttering as a disorder and its impact. The second questionnaire (post-clinic) contained the same 21 items as the first questionnaire, plus four open-ended questions specifically related to students' views of operational aspects of the intensive program.

Data analysis

Descriptive statistics were used to determine means and standard deviations of students' self-ratings pre-and post-clinic. The Wilcoxon Signed Rank test was used to determine whether changes observed in ratings were significant. This non-parametric test is considered appropriate for investigating the difference between data from distribution-free matched samples (Howell, 2010). All statistical analyses were carried out using the Statistical Package for the Social Sciences (SPSS) version 19. Responses to open-ended questions in the post-clinic questionnaire were not analysed in this phase of the study.

Results

Confidence

In line with Kirkpatrick (1994) and our interest in questions related to students' perceptions of competency development, separate analysis was undertaken for generic skills, specific skills, and knowledge areas. Confidence in all skills increased from pre- to post-clinic to a significant level. Table 1 details students' reported confidence levels in the generic clinical skills. Mean pre-clinic ratings ranged from 3.421 (interviewing skills) to 4.237 (professional interaction) on the 5 point rating scale, while post-clinic ratings ranged from 4.579 to 4.684. These changes represented significant increases for rapport development ($z = -4.894, p = .000$), interviewing skills ($z = -4.454, p = .000$), and professional interaction ($z = -3.441, p = .001$).

Students' reported confidence levels in skills specifically related to the disorder of stuttering are shown in Table 2. Mean pre-clinic ratings ranged from 2.132 (mentoring others inexperienced in fluency management) to 3.132 (identifying and classifying stuttering behaviours) on the 5-point scale, while post-clinic measures ranged from 3.342 (reporting management for a client who stutters) to 4.447 (providing smooth speech treatment). Significant increases in confidence post-clinic were noted for the skills of assessment ($z = -5.316, p = .000$), identifying and classifying stuttering behaviours ($z = -4.743, p = .000$), measurement and calculating stuttering frequency ($z = -4.880, p = .000$), selecting a suitable fluency treatment ($z = -4.725, p = .000$), using smooth speech ($z = -5.417, p = .000$), providing smooth speech treatment ($z = -5.376, p = .000$), teaching on error ($z = -5.295, p = .000$), and mentoring others ($z = -5.256, p = .000$). An increase approaching significance (with "significant" conservatively defined by the authors as $p < .01$ due to the use of nonparametric statistics) was noted for the skill of reporting management for a client who stutters ($z = -2.429, p = .015$).

The pre- and post-clinic confidence levels perceived by students in relation to knowledge are reported in Table 3. Mean pre-clinic ratings ranged from 2.421 (smooth speech technique) to 3.61 (impact of stuttering) on the 5-point scale, while post-clinic measures ranged from 3.947 (service delivery formats for stuttering intervention) to 4.632 (impact of stuttering).

Statistically-significant increases were reported by students in relation to their knowledge of the disorder of stuttering ($z = -4.068, p = .000$), assessment ($z = -5.062, p = .000$) and treatment ($z = -4.888, p = .000$) practices, the impact of stuttering ($z = -54.572, p = .000$), the technique of smooth speech ($z = -5.396, p = .000$), and service delivery formats for stuttering intervention ($z = -5.054, p = .000$).

Anxiety

Students' self-reported level of anxiety about working with AAWS was evaluated on a scale from 0 to 4 where 0 represented *not anxious* and 4 indicated *extremely anxious*. Significant decreases ($z = -4.932, p = .000$) from pre-clinic ratings ($M = 2, SD = 0.52$) to post-clinic ratings ($M = 0.21, SD = 0.49$) were found.

Interest

Students reported their interest in working with AAWS following graduation on a scale from 0 to 4 where 0 represented *not interested* and 4 indicated *extremely interested*. Their interest significantly increased from pre-clinic ratings ($M = 2.74, SD = 0.08$) to post-clinic ratings ($M = 3.42, SD = .07$) ($z = -4.32, p = .000$).

Table 1. Students' (n = 38) mean pre-post ratings of generic skill levels in working with clients who stutter

Questionnaire statements	Pre-clinic ratings*		Post-clinic ratings*		Wilcoxon Signed Rank Test values
	Mean	SD	Mean	SD	
"I feel confident in my ability to"					
Establish rapport with a client who stutters	3.921	0.428	4.684	0.471	$z = -4.894, p = .000^{**}$
Interview a client who stutters about personal information	3.421	0.889	4.579	0.5	$z = -4.454, p = .000^{**}$
Interact in a professional manner with a client who stutters	4.237	0.59	4.632	0.489	$z = -3.441, p = .001^{**}$

* Responses were obtained on an ordinal scale of 1 to 5 where 1 = *strongly disagree* and 5 = *strongly agree*.

** = statistically significant result $p < .01$. p values are two-tailed.

Table 2. Students' (n = 38) mean pre-post ratings of stuttering-specific skill levels in working with clients who stutter

Questionnaire statements	Pre-clinic ratings*		Post-clinic ratings*		Wilcoxon Signed Rank Test values
	Mean	SD	Mean	SD	
"I feel confident in my ability to"					
Conduct an assessment with a client who stutters	2.395	0.679	4.342	0.534	$z = -5.316, p = .000^{**}$
Identify and classify stuttering behaviours	3.132	0.811	4.290	0.460	$z = -4.743, p = .000^{**}$
Calculate stuttering frequency	2.684	0.775	4.108	0.567	$z = -4.880, p = .000^{**}$
Accurately rate the speech of a client who stutters	2.368	0.675	4.316	0.620	$z = -5.380, p = .000^{**}$
Select the appropriate treatment programme for a client who stutters	2.658	0.745	3.919	0.759	$z = -4.725, p = .000^{**}$
Use smooth speech skills effectively to assist treatment	2.316	0.62	4.421	0.500	$z = -5.417, p = .000^{**}$
Provide smooth speech treatment to a client who stutters	2.316	0.612	4.447	0.555	$z = -5.376, p = .000^{**}$
Teach on error when smooth speech is incorrect	2.474	0.762	4.395	0.595	$z = -5.295, p = .000^{**}$
Write a report outlining assessment and treatment for a client who stutters	2.892	0.966	3.342	0.669	$z = -2.429, p = .015$
Mentor other clinicians who are inexperienced in stuttering management	2.132	0.811	4.000	0.771	$z = -5.256, p = .000^{**}$

* Responses were obtained on an ordinal scale of 1 to 5 where 1 = *strongly disagree* and 5 = *strongly agree*.

** = statistically significant result $p < .01$. p values are two-tailed.

Table 3. Students' (n = 38) mean pre-post ratings of level of knowledge

Areas of knowledge	Pre-clinic ratings*		Post-clinic ratings*		Wilcoxon Signed Rank Test values
	Mean	SD	Mean	SD	
The disorder of stuttering	3.395	0.718	4.053	0.517	$z = -4.068, p = .000^{**}$
The assessment of stuttering behaviours	2.79	0.664	4.132	0.578	$z = -5.062, p = .000^{**}$
The treatment of stuttering	2.79	0.704	4.132	0.529	$z = -4.888, p = .000^{**}$
The impact that stuttering has on a person	3.61	0.823	4.632	0.541	$z = -4.572, p = .000^{**}$
The technique of smooth speech	2.421	0.642	4.421	0.642	$z = -5.396, p = .000^{**}$
The service delivery formats for stuttering intervention	2.447	0.686	3.947	0.655	$z = -5.054, p = .000^{**}$

* Responses were obtained on an ordinal scale from 1 to 5 where 1 = *limited knowledge* and 5 = *very good knowledge*.

** = statistically significant result $p < .01$. p values are two-tailed.

Discussion

The results from the study indicated that student-delivered intensive smooth speech programs increased students' perceptions of confidence when managing AAWS across generic and stuttering-specific competencies and knowledge. Furthermore, participation in the clinics significantly reduced students' anxiety about the caseload and fostered greater interest in working with AAWS. While these results were not unexpected, they nonetheless reinforce the proposition that the student-delivered intensive smooth speech clinical education model seems to be providing appropriate experiences for students that are difficult to gain in the current workforce.

Pre-testing of students' confidence in generic skills such as establishing rapport, interviewing, and professional interaction revealed levels well above the neutral 3 rating. This result suggested successful, cumulative development of these skills from prior clinical and academic experiences.

Even so, immediately following the program, confidence significantly increased to yield mean ratings above 4.5. Not surprisingly, students' confidence about specific skills related to stuttering was lower than for the generic skills prior to the program. Here, most ratings were below 3, which is indicative of less-than-neutral confidence. That all except one area averaged 4 or above post-clinic, illustrates that the clinical experience was a powerful facilitator for developing stuttering-specific skill sets in which students reported confidence. The area of report writing did not show the same increase as other stuttering-specific areas, and it must be noted that students did not write an evaluation report as part of their placement. Clearly, report writing needs to be incorporated in future programs. Of note, the largest increases in confidence were seen for (a) conducting stuttering assessment, (b) measurement, (c) using smooth speech, (d) teaching smooth speech to AAWS, (e) teaching on error, and (f)

mentoring inexperienced clinicians. If students' perceptions of confidence translate to *actual* clinical competencies, the present results are very encouraging. However, an important consideration in relation to students' perceived increase in confidence levels is that such perceptions are not always justified (Eva & Regehr, 2005), nor do they automatically lead to or correlate with increases in competence (Schunk, 1995). In consideration of this possibility, some data have been collected on actual competence change as part of our larger study, in order to look at relationship between perception and ability.

Gains in students' reported knowledge about stuttering were also significant. Pleasingly, our students entered the clinic with "some" to "quite a bit" of knowledge about assessment, treatment, the smooth speech technique, and service delivery, along with "quite a bit" to "good" knowledge of the disorder of stuttering and the impact of stuttering in the individual. Therefore, it appears that the academic program had been successful in providing students with a solid foundation of specific theoretical and practical knowledge in the areas of stuttering. However, participating in the intensive clinic boosted students' knowledge significantly across all areas, such that all ratings were around or above "good". The value of intensive clinical models for developing perceptions of competence and their confidence, particularly in needed practice areas, seems to be considerable.

Students demonstrated moderate levels of anxiety about working with AAWS prior to the clinic, but these decreased significantly to a very low level which was slightly above "not anxious", post-clinic. Chan, Carter, and McAllister (1994) stated that anxiety affects the nature and quality of clinical education experiences for speech pathology students. Our finding that anxiety levels related to the stuttering caseload decreased markedly by the end of the clinic suggest that the intensive clinical environment was conducive to student learning. Factors that may have contributed to a reduction in anxiety included that students worked in pairs, had readily available clinical supervision and clinical demonstrations, had clear timetables, therapy programs and clinical expectations, and engaged in regular briefing and debriefing sessions. In combination, these factors created a scaffolded learning environment that facilitated performance along with a sense of being in control, which has been found to be critical to performance success (Hanton & Connaughton, 2002). Indeed, it is well known in the stress research literature that feeling in control of a situation is related to lower levels of stress and/or anxiety (Barlow, 2002). The intensive programs were structured to engender this sense of control in our students. Perhaps too, the students' reports of reduction in anxiety were related to the positive increases that students showed in their confidence and knowledge, such that students believed that they knew more and could do more by the end of the clinic. Further investigation of the complex relationships surrounding students' confidence, sense of control, and knowledge in clinical settings is warranted.

Lastly, the students' interest in working with AAWS started with relatively high pre-clinic levels (i.e., 2.74 on a 4-point scale) indicating that the students were "quite" to "very" interested. As the program was a volunteer clinic, this initial figure was expected. Nonetheless, post-clinic interest levels were significantly raised, with the students' mean response falling between "very interested" and "extremely interested". This measure of interest was important as it not only validates the intensive smooth speech program as a model that appears to be positively enhancing

clinical learning, but suggests that these students might contemplate being future practitioners in the area now that they are equipped with knowledge and skills that they feel very confident about (Yaruss & Quesal, 2002). Hence, the intensive programs are currently building capacity in the profession by providing future practitioners with clinical competencies in the much-needed area of stuttering. Hopefully, this endeavour will translate to future increases in services for AAWS. Already, we have seen positive impact from the intensive clinics in building more stuttering services through some graduating students. The complete results from this longitudinal phase of our study will be reported in the near future.

In conclusion, the student-delivered intensive smooth speech programs provided students with valuable clinical experiences that otherwise would have been difficult to attain. The results of this study suggest that tracking of competencies through evaluating students' perceptions of confidence and skill demonstrated the value of this type of enquiry, irrespective of the area of practice, and we feel that the questionnaires were sensitive to key areas and change. It is acknowledged that a limitation of the data reported in this study is that students' perceptions of confidence and knowledge may differ from actuality. This provides an avenue for further investigation through application of behavioural and competency measures. Nonetheless, that the outcomes were overwhelmingly positive across all areas in this study indicates that intensive clinical student models cannot be underestimated in terms of the multi-layered experiences that they provide students in preparing them to be confident practitioners.

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