



Psychological Health and Coping Strategies of Adolescents with Chronic Stuttering

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Abstract

Objective: To assess the psychological health and coping strategies of 35 male adolescents with chronic stuttering and 35 male adolescents who do not stutter using standardized instruments. The study will also identify any relationships between psychological health and coping strategies and make recommendations to improve therapy outcomes for adolescents with chronic stuttering.

Methods: Adolescents with chronic stuttering were diagnosed through case history, stuttering history, qualitative and quantitative overt speech behaviors and attitudinal measures. Participants who do not stutter were matched on age, race/ethnicity, grade level and SES. Standardized scales measuring coping strategies (The Coping Inventory for Stressful Situations-Adolescent, CISS-A) and psychological health (The Strengths and Difficulties Questionnaire, SDQ) were completed.

Results: Adolescents with chronic stuttering reported a higher number of peer relationship difficulties and a lower number of pro-social behaviors than adolescents who do not stutter. Adolescents with chronic stuttering reported significantly greater use of emotion-oriented coping strategies in dealing with general stressors compared with adolescents who do not stutter. Significant relationships were found between emotion-oriented coping strategies, peer relationship difficulties and pro-social behaviors for adolescents with both groups of participants.

Conclusions: Adolescents with chronic stuttering may be vulnerable to peer relationships difficulties and poor pro-social behaviors. The results may reflect adolescents with chronic stuttering responses' to reported negative biases and stereotypes by multiple conversation partners and the general public view of their social communication disability. Adolescents with chronic stuttering were more likely to use emotional-based coping strategies in dealing with general stressors in their lives. The data provide additional evidence for the need to address emotional and social assessment and treatment concerns for some adolescents who stutter.

Keywords: Coping; Psychological health; Adolescents; Stuttering; Treatment implications

Introduction

Stuttering is a systemic problem. It involves the speech, thoughts and feelings of the speaker, but may also affect communication partners, other respondents, unknowing and knowing audiences, and bystanders [1-4]. According to Shapiro [3] stuttering is defined as the "individualized and involuntary interruptions in the forward flow of speech and learned reactions thereto interacting with and generating associated thoughts and feelings about one's speech, oneself as a communicator and the communicative world in which one lives" (p. 12). In adults, it is a social communication disturbance which is chronic in nature. One of its major components is the individual's response to the "loss of control" during the stuttering event. As such, individuals who stutter often require assistance on fluency increasing strategies and techniques, as well as, attitudes and feelings about living with a chronic communication disability. The onset of stuttering usually occurs around three years of age [1-4]. For children who stutter, the transition from childhood to adolescence may place them at a higher risk for the development of anxiety issues and

psychological distress due to the psychosocial effects of the disorder [5-9]. They may also be at a high-risk for psychological stress during this time because the likelihood of "recovering" from developmental stuttering decreases. During adolescence, the awareness of stuttering converting to a chronic disability becomes a reality for one of every five children who exhibit stuttering behaviors [10]. As adolescents begin to feel greater pressure to communicate effectively in social situations, they may elect to avoid communication completely, hide their stuttering with word or phrase substitutions, attempt to find functional solutions for their social communication disorder, or establish strong social support networks [11].

Stuttering and possible increased risk of psychological distress

The variable and unpredictable disruptions in daily communication interactions at the core of stuttering can negatively impact interpersonal relationships, quality of life, and result in psychological distress for adults with chronic stuttering [12-15]. Knowledge of the psychosocial distress related to stuttering is important in determining optimal assessments and treatments. Craig and Tran [16] reported the results of a meta-analysis of 19 studies using standardized

psychological scales including nearly 1300 adults with chronic stuttering. The analyses confirmed a majority of adults with chronic stuttering had at least moderately elevated trait anxiety and substantially elevated social anxiety. Iverach et al. [17] reported a high co-occurrence of one or more Personality Disorders (PD) for 92 adults who stutter. Manning and Beck [18] questioned the results of the Iverach et al. study on the use of reported screening procedures. They also refuted the conclusions of PD and cautioned that psychological problems associated with stuttering may be expected as a typical outcome from continued negative reactions of listeners and social and communication partners' distancing. In contrast, Manning and Beck [19] recently reported on 50 adults with chronic stuttering using the 94-item self-report questionnaire, Assessment of DSM-IV Personality Disorders, for identifying personality disorders (PD). They reported that only 4 participants were classified as displaying one PD, one participant was classified as displaying two PDs and the remaining 45 (90%) adults with chronic stuttering were classified as having no PD. These conflicting results may be explained by sampling procedures, testing instruments selected to identify psychological distress, participants' former therapy interventions or lack of therapy interventions, perceived stress of stuttering or coping mechanisms. It may also be that the problems reported surfaced at an earlier developmental period and that sampling procedures did not account for the potential differences.

Coping processes and psychological health

The classic definition of coping defined by Lazarus and Folkman [20] is "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p.141). The definition includes the skills and capacities an individual develops and uses throughout their life as an outcome of their unique experiences with managing differing stressors. The stressor of living with a chronic disability requires multiple coping strategies. Specific strategies selected by an individual contribute to either healthy adjustment or psychological distress. Selected coping strategies contribute to the individual's adaptation to stressful life events and general well-being. Coping has been discussed in the context of the person and the environment, in terms of problem-oriented and emotion-oriented skills, approach and avoidance techniques and situational or dispositional coping strategies among others [21,22].

Adolescence is a developmental stage where diverse coping resources are discovered and multiple coping strategies are tested. In a review of coping methods and strategies used during adolescence Garcia [23] confirmed that coping processes are an important protective factor for developing and maintaining the psychological health of adolescents. She reaffirmed the need to address and evaluate coping strategies in this age group and concluded "Coping is an important construct in understanding how adolescents react to the stressors and adjustments they experience in their lives" (p.182). Research has also shown that major and minor stressors may be tempered by the selection of specific approach coping strategies (e.g., logical analysis, seeking guidance, problem solving, peer support) while avoidance coping strategies (e.g., resignation, submission, emotional outburst, hopelessness) are often related to greater health problems and engaging in risky behaviors.

Recently Merikangas et al. [24] examined the lifetime prevalence of DSM-IV mental distress with and without severe impairment in adolescents. The authors used The National Comorbidity Survey-

Adolescent Supplement, a face-to-face survey, with 10,123 adolescents between 13 and 18 years in the United States. They reported that 31.9% of adolescents met the criteria for anxiety disorders, 19.1% met the criteria for behavior disorders and 14.3% for mood disorders. They concluded approximately one of every four to five youth met the criteria for a lifetime mental disorder that is associated with severe impairment and/or distress. This study did not control for adolescents with health-related conditions or chronic disabilities. The potential additional stressors associated with those health-related conditions and disabilities could raise these estimates. The data suggest that psychosocial distress and mental health problems impact the lives of millions of school-age children and adolescents. During a time where adolescents are establishing their self-identity and autonomy, navigating peer groups and social comparison, they are experimenting with multiple coping techniques [25-29]. The choices of effective and ineffective coping strategies during adolescence in reducing common daily stressors may lead to their continued lifelong usage. These choices are not only important for the millions of adolescents who do not exhibit clinical psychological problems and distress but also for adolescents with reported clinical problems of depression, anxiety, anger, phobias, and poor adjustment and self-esteem, regardless of the cause.

Coping in children and adolescents with chronic disorders

Children and adolescents with chronic conditions are at higher risk for mental health problems and psychological distress [30-33]. Fortunately, many adolescents learn to use effective coping strategies to deal with the minor and major stressors in their lives [15,17,19]. The research shows that they deal with minor hassles and irritation differently than stressors which are perceived as uncontrollable, unpredictable and chronic in nature [25]. Coping strategies depend on individuals' subjective interpretation of events. A specific coping strategy may mediate or reduce the influence of the chronic stressor [25-27]. Summarizing data from more than 63 studies of coping in children, Compas et al. [28] concluded that problem solving and information seeking were related with better psychological adjustment while the use of emotion-oriented coping and avoidance strategies by children and adolescents were associated with poorer overall adjustment. Zimmer-Gembeck and Skinner [29] reported problem solving, seeking social support, distraction (cognitive and behavioral), and accommodations coping strategies were specifically identified by adolescents as more effective and productive coping strategies than escape, worry, resignation, and aggression. Zimmer-Gembeck and Skinner reported that the majority of adolescents preferred to use more productive and adaptive strategies to deal with stressors in their lives compared with escape, worry, resignation, and aggression strategies.

Coping with stuttering as a chronic stressor

Because stuttering is a social communication disorder, knowledge of the psychological distress and mental health issues related to stuttering is important in determining the most effective behavioral and cognitive therapies. Coping skills are necessary to deal with negative stereotypes and stigma associated with chronic disabilities. It has been clearly documented that stuttering elicits negative stereotypes and stigma in children, youth and adults who stutter [1-4]. Specific coping strategies selected for dealing with the associated stigma and listeners' negative responses may result in one individual joining a support group, another person speaking at a rally about disability bias

and another person avoiding all social gathering and jobs where fluent communication is perceived as beneficial.

Studies reporting the identification of anxiety and psychosocial distress as a consequence of stuttering have also been reported in adolescents [5-8,34-37]. Findings show stuttering has a negative impact on the quality of life of adolescents who stutter including: heightened anxiety, greater communication apprehension, greater likelihood of bullying and greater emotional distress. Smith, Iverach, O'Brian et al. [9] completed a critical review of the research examining anxiety reported in adolescents who stutter. They concluded that anxiety related to stuttering increases over time and could explain higher than normal levels reported in adults.

For adolescents who stutter, the chronicity of stuttering may add another daily stressor during a period marked with intense growth, struggle, transition and development. Typical daily stressors, peer and academic pressures, bullying, issues of self-identity and self-image, physical or sexual issues, spirituality decisions, risky behavior choices, and "pushing away" from parental/caregiver involvement are hallmarks of adolescence [25-29,38-40]. Effective treatments with all adolescents are a challenge, in part, because adolescents are daily making their "best" choices based on inconsistent and wavering beliefs, feelings and attitudes. Assessment and treatment decisions for adolescents, especially those with chronic disabilities, ideally should address the adolescents' preferred choice of coping resources and strategies.

According to Compas et al. [41] when reviewing coping with chronic illness in childhood and adolescence, "The effectiveness of coping strategies depends on the match between characteristics of the stressor, especially perceived controllability, and the individual's coping responses" (p.476). The use of unsuitable or mismatched coping strategies may place the adolescent with a chronic disorder at higher risk for psychosocial distress. For adolescents with chronic stuttering the perceived and/or actual "loss of control" in producing fluent speech can occur dozens of times in a single day or even a single hour. The variable and unpredictable manageability in producing fluent speech leads to the development and use of specific coping skills. The chronic confrontation of random adversity from a disorder like stuttering may lead some adolescents to develop and use skills which cause short-term or long-term subjective psychological distress.

In light of the conflicting findings about psychological distress in adults with chronic stuttering it is important to understand which adults with chronic stuttering develop effective coping strategies resulting in healthy adjustment and a positive quality of life and which adults develop less effective strategies resulting in less positive psychological outcomes. The literature suggests that coping strategies developed during adolescence often serve as the anchors for transition into adulthood [25-29].

Current Study

This research was undertaken to provide an explanation for the conflicting results reported on the subjective psychological distress in adults with chronic stuttering by examining the general psychological health and coping strategies used by adolescents with chronic stuttering and adolescents who do not stutter. The study examined self-reported general difficulties and coping strategies using two standardized, commercially available scales. The Strengths and Difficulties Questionnaire-SDQ [42,43] and the Coping Inventory for Stressful Situations-Adolescent-CISS-A [44] have been used with

adolescents. This research will add to the current knowledge on how adolescents deal with chronic stuttering during the transition to adulthood and suggest ways to enhance the role of general counselors, speech-language pathologists (SLPs), and general education personnel in the effective management of stuttering behaviors, attitudes and feelings.

The following questions were examined:

- Do adolescents with chronic stuttering report the same psychological health attributes (i.e., emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship and pro-social behaviors) as adolescents who do not stutter?
- Do adolescents with chronic stuttering report using similar coping strategies (i.e., task-oriented, emotion-oriented and avoidance-oriented) as adolescents who do not stutter?
- Are there significant associations between specific coping strategies and psychological health attributes in adolescents with chronic stuttering and adolescents who do not stutter?

Method

Participants

Participants were 35 males with chronic stuttering and 35 males who do not stutter. These recruitment procedures paralleled those reported in earlier studies [5-7,34]. Speech-language pathologists (SLPs) were contacted regarding potential participants. SLPs communicated with potential participants and their parents who directly contacted the authors. After an explanation of the study and invitation to participate, appointments were scheduled. The diagnosis of stuttering was confirmed using: a) standardized procedures to evaluate stuttering behaviors including part-word repetitions, tense pauses, and prolongations, b) participants' history of stuttering (i.e., onset, duration, familial report, developmental data.), c) 200-word monologues, reading samples, and conversational speech samples, d) severity of stuttering ratings using the Stuttering Severity Instrument-3 [45] and scales measuring attitudes and feelings toward stuttering. The severity of stuttering of participants varied: 11.4% (4) of the participants' stuttering was in the mild category, 48.6% (17) rated in the moderate category, 22.9% (8) was in the severe category, and 17.1% (6) of the participants' stuttering was rated in the very severe category.

The 35 males who do not stutter were matched by grade level, race, ethnicity, and age, and recruited from local school districts. Participants ranged in age from 14 to 17 years ($M=15.1$, $SD=1.2$) and met the following criteria: male, no repetition of a grade, monolingual native speakers of English, absence of a history of chronic physical or psychological disabilities (e.g., diabetes, hearing loss, asthma, neurological, learning, reading, or mental disabilities). Participants included 82.9% (58) white, non-Hispanic and 11.4% (8) African-American and 5.7% (4) Hispanic-Americans. Socioeconomic status was estimated using Hollingshead's Four Factor Index [46] which utilizes parents' educational levels and employment positions. Analyses suggested that the participants were middle to upper class. There was no significant difference between the mean Four Factor Index scores for the two groups.

Measurement Scales

Psychological health

Psychological health problems were classified by a score in the clinical range of the Strengths and Difficulties Questionnaire (SDQ) [42,43]. The SDQ is a valid and reliable screening instrument assessing psychological health (i.e. social distress, psychosocial adjustment and positive attributes) in children and adolescents from 11 to 17 years. This version of the SDQ, self-reported by the adolescents, consists of 25 items with five scales including: emotional scale (e.g., "I get a lot of headaches, stomach-aches, or sickness", "I am often unhappy, depressed or tearful"), conduct scale (e.g., "I get very angry and often lose my temper"; "I am often accused of lying or cheating"), hyperactivity/inattention scale (e.g., "I am restless, I cannot stay still for long"; "I am easily distracted, I find it difficult to concentrate"), peer relationship scale (e.g., "Other children or young people pick on me or bully me"; "I would rather be alone than with people of my own age") and pro-social behavior scale (e.g., "I am helpful if someone is hurt, upset or feeling ill"; "I am kind to younger children"). Items are scored using a 3-point scale (0-2) consisting of "not true", "somewhat true" or "certainly true".

The sum of the four scales (without the prosocial scale) yields a SDQ total score. The scoring procedure uses the three category system for the "self-report" SDQ responses. Using the three band scoring system for self-report SDQ response cut-off points, categories of "normal" (80% of the reported normative sample), "borderline" (10% of the normative sample) and "high risk" (10% of the normative sample) were used for interpretation [47]. Higher scores for the emotional scale, conduct scale, hyperactivity/inattention scale, peer relationship scale and SDQ total score indicate greater difficulties and psychological distress. The pro-social behavior scale uses a reversed scoring rubric where higher scores indicate better pro-social behavior. The scale has good reliability and validity [43].

Coping strategies

The Coping Inventory for Stressful Situations-Adolescent (CISS-A) [44] is a 48-item self-report inventory that describes activities/strategies used in stressful situations. The inventory measures three primary coping styles with 16 items for each category: Task-oriented (e.g., "Schedule my time better", "Focus on the problem and see how I can solve it"), emotion-oriented (e.g. "Blame myself for having gotten into this situation", "Feel anxious about not being able to cope"), and avoidance-oriented (e.g., "Think about the good times I've had", "Try to be with other people"). The 16 avoidance-oriented coping items are divided into two subscales: distraction consisting of eight of the 16 items (avoiding via substitute activities or situations, e.g., "I watch TV") and social diversion consisting of five of the 16 (avoiding via other persons or social contacts, e.g. "I try to be with other people"). Participants use a 5-point rating scale, from 1 – not at all to 5 – very much.

Normative data for adults and adolescents is provided [44]. Interpretative guidelines are provided for T-scores with scores below 30 (very much below average) to above 70 (very much above average). Interpretative guidelines are provided for seven categories including: very below average, much below average, slightly below average, average, slightly above average, much above average and very above average. Percentile conversions based on the normative sample are provided. Scores within 45-55 (31st to 69th percentile conversions) are interpreted as falling in the "average" range. The mean T-scores were

used for the analyses with higher T-scores on each scale indicating greater use of the coping strategies. Psychometric properties and good reliability are reported [44].

Procedures

Participants in this study were part of a larger project examining the psychosocial aspects and impact of chronic stuttering. This study was approved by the University's Institutional Review Board. The procedures paralleled those reported in earlier studies [5-7,34]. After acquiring demographic data on all participants, completing the assessment and confirming a diagnosis of stuttering for adolescents with chronic stuttering, participants were requested to complete the two scales. The order of presentation of the two instruments was randomized for all participants. Participants were tested individually and received standardized instructions. The following written instructions were provided for the SDQ: "For each item, please mark the box for "Not True", "Somewhat True" or "Certainly True". It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of how things have been for you over the last six months."

The written instructions for the CISS-A for general stressors included: "The following are ways people react to various difficult, stressful, or upsetting situations. Please circle a number from 1 to 5 for each item. Indicate how much you engage in these types of activities when you encounter a difficult, stressful or upsetting situation."

Data analyses

All data were submitted for descriptive analysis including percentages, ranges, means and standard deviations. Cronbach's alpha was computed for each of the six scores of the SDQ (i.e., emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship, pro-social behaviors and total score) with $\alpha=0.86, 0.80, 0.81, 0.84, 0.83$ and 0.85 , respectively. A second series of Cronbach's alpha was computed for the CISS-A (i.e., task-oriented, emotion-oriented, avoidance-oriented, distraction and social diversion subscale scores) revealing $\alpha=0.88; 0.83; .084, 0.78$ and 0.80 , respectively.

A series of Chi-Square tests were computed to determine significant differences among the three classifications for the SDQ. One-way analysis of variance (ANOVA) with repeated measures were computed between group mean scores (adolescents with chronic stuttering and adolescents who do not stutter) on the six scores of the SDQ (i.e., emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship, pro-social behaviors and total score). A second ANOVA with repeated measures was computed on mean scores of the CISS-A (i.e., task-oriented, emotion-oriented, avoidance-oriented, distraction and social diversion subscale scores) between the two groups. Effects sizes (eta squared η^2) were also calculated. Interpretation suggestions of η^2 were those suggested by Cohen [48] including: small ($\eta^2=0.01$), medium ($\eta^2=0.06$), and large ($\eta^2=0.14$) effects. Pearson product-moment correlations were computed to determine significant associations among the six SDQ scale scores and the five CISS-A scores for the two groups.

Results

Question 1: Performance on the SDQ for groups

Table 1 presents the number and percentage of all participants classified using the three band scoring system of "normal",

“borderline” and “high risk”. Inspection of the Table reveals large differences between percentages of participants in the “normal” category for peer relationships with 48.6% for adolescents with chronic stuttering compared with 85.7% for adolescents who do not stutter. Similarly, large differences were seen in the pro-social subscale scores in the “normal” category with 65.7% for adolescents with chronic stuttering compared with 80% for adolescents who do not stutter. Other total number and percentages for the two groups appeared similar. A series of chi-square tests were performed to determine significant differences. The percentage of adolescents with chronic stuttering was significantly different from those adolescents who do not stutter on only the peer relationships category ($\chi^2(2, N=70)=10.9, p<0.01$). No other significant differences were found between the two groups.

SDQ Score Category	Normal	Borderline	High Risk
Emotional problems score			
Adolescents with Chronic Stuttering	31 (88.6%)	2 (5.7%)	2 (5.7%)
Adolescents who do not Stutter	33 (94.2%)	1 (2.9%)	1 (2.9%)
Conduct problems score			
Adolescents with Chronic Stuttering	32 (91.4%)	3 (8.6%)	0 (0%)
Adolescents who do not Stutter	33 (94.2%)	1 (2.9%)	1 (2.9%)
Hyperactivity score			
Adolescents with Chronic Stuttering	35 (100%)	0 (0%)	0 (0%)
Adolescents who do not Stutter	34 (97.1%)	1 (2.9%)	0 (0%)
Peer relationship score *			
Adolescents with Chronic Stuttering	17 (48.6%)	14 (40%)	4 (11.4%)
Adolescents who do not Stutter	30 (85.7%)	4 (11.4%)	1 (2.9%)
Total difficulties score			
Adolescents with Chronic Stuttering	29 (82.9%)	4 (11.4%)	2 (5.7%)
Adolescents who do not Stutter	33 (94.2%)	2 (5.7%)	0 (0%)
Pro-social behavior score			
Adolescents with Chronic Stuttering	23 (65.7%)	8 (22.9%)	4 (11.4%)
Adolescents who do not Stutter	28 (80%)	6 (17.1%)	1 (2.9%)

Asterisk indicates significant differences between group percentages.

Table 1: Number and percentages of 35 adolescents with chronic stuttering compared with 35 adolescents who do not stutter scores' in the “normal”, “borderline” and “high risk” categories for emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship total difficulties and pro-social behavior SDQ subscale scores.

Table 2 presents the means and standard deviations of the five SDQ scores and the total SDQ for both groups. The mean scores for

adolescents who do not stutter were within the normal range for all scales and total SDQ score. In contrast, adolescents with chronic stuttering had similar mean scores within in the normal range for the emotional symptoms, conduct problems, hyperactivity/inattention, and total SDQ scores but poorer scores on the peer relationship and pro-social behaviors indicating a higher vulnerability for psychological symptoms and distress.

The specific ranges for “normal”, “borderline”, and “high risk” were examined for each set of mean scores for adolescents. The mean score of 3.8 (S.D.=2.0) for participants with chronic stuttering for the peer relationship subscale was outside the normal range of 3.0. This was the only subscale mean score outside the normal range. A review of Table 2 showed all other SDQ mean subscales scores for both groups were in the normative range suggesting typical psychological adjustment compared with the reference group.

Measures/Scale	Adolescent Group				
	Chronic Stuttering (n=35)		No Stuttering (n=35)		
SDQ Raw Scores					
	Normative Range	M	SD	M	SD
Emotional Symptoms	0-5	3.7	1.3	3.8	1.7
Conduct problems	0-3	1.8	0.9	2.1	1.0
Hyperactivity/inattention	0-5	3.5	1.6	3.6	1.4
Peer relationship*	0-3	3.8*	2.0	2.1*	1.4
Total SDQ Score	0-15	12.8	3.4	11.6	2.9
Pro-social behaviors*	6-10	6.2*	1.6	7.5*	1.5
CISS-A T-scores					
	45-55 (average range)				
Task-focused		48.1	4.2	49.3	3.7
Emotion-focused*	45-55 (average range)	54.1*	8.6	48.1*	3.4
Avoidance-focused	45-55 (average range)	48.1	3.8	47.6	5.2
Distraction	45-55 (average range)	48.5	3.9	48.4	4.9
Social Diversion	45-55 (average range)	45.7	4.1	47.1	5.1

Asterisk indicates significant differences between group means.

Table 2: Means, standard deviations and normative ranges of scores for the SDQ scores and CISS-A T-scores for 35 adolescents with chronic stuttering and 35 adolescents who do not stutter.

ANOVA indicated significant differences between the groups in the mean scores for peer relationship ($F_{1,69}=18.55, p<.001, \eta^2=0.21$, large effect size) and pro-social behavior ($F_{1,69}=11.45, p<.001, \eta^2=0.14$, large effect size). This suggested that adolescents with chronic

stuttering, as a group, scored more poorly on peer relationship and prosocial behaviors. ANOVA revealed no significant differences between the group mean scores for the emotional symptoms ($F_{1,69}=0.27$, $p=0.60$), conduct problems ($F_{1,69}=0.40$, $p=0.53$), hyperactivity/inattention ($F_{1,69}=0.11$, $p=0.74$) and the total difficulties scale ($F_{1,69}=2.73$, $p=0.10$).

Question 2: Performance on the CISS-A for groups

Table 2 also presents the means and standard deviations of the CISS-A T-scores for the five coping categories for both groups. T-scores for adolescents with chronic stuttering were 48.1 for task-oriented, 54.1 for emotion-oriented, 48.1 for avoidance-oriented, 48.5 for distraction and 45.7 for social diversion. All T-scores were in the normative range from 45-55. The emotion-oriented mean T-Scores were on high end of the average range, while the social diversion were on the lower end of the average range.

Means T-scores for adolescents who do not stutter were 49.3 for task-oriented, 48.1 for emotion-oriented, 47.6 for avoidance-oriented, 48.4 for distraction and 47.1 for social diversion. All these scores were in the normative range for T-scores from 45-55. Inspection of the Table shows that the largest difference between the T-scores scores was on the emotion-oriented coping subscale with 54.1 (S.D.=8.6) for adolescents with chronic stuttering and 48.1 (S.D.=3.8) for adolescents who do not stutter.

ANOVA indicated significant differences in the mean t-scores for the emotion-oriented coping strategy between the groups ($F_{1,69}=14.81$, $p<.001$, $\eta^2=0.18$, large effect size). ANOVA revealed no significant differences between the group mean T-scores for the task-oriented coping strategies ($F_{1,69}=1.85$, $p=0.18$), avoidance-oriented ($F_{1,69}=0.23$, $p=0.64$), distraction ($F_{1,69}=0.01$, $p=0.92$) and social diversion ($F_{1,69}=1.27$, $p=0.26$) coping strategies. Participants with chronic stuttering reported a significantly higher use of emotion-oriented coping strategies for general stressors when compared with adolescents who do not stutter. The findings also suggested that adolescents with chronic stuttering report using similar task-oriented, avoidance-oriented, distraction and social diversion coping strategies when compared with adolescents who do not stutter.

Question 3: Relationships between SDQ scores and CISS-A

Pearson product moment correlations were computed for the CISS-A T-scores and the SDQ scores. Significant positive relationships were found between the CISS-A emotion-oriented T-scores and the SDQ-personal relations scores ($r=.62$, $p<.001$) for participants with chronic stuttering and for participants who do not stutter ($r=.56$, $p<.001$). Significant negative correlations were found between the CISS-A emotion-oriented T-scores and the SDQ-prosocial behavior scores (scale uses reverse scoring) ($r=-.53$, $p<.001$ scores) for participants with chronic stuttering and for participants who do not stutter ($r=-.48$, $p<.003$). There were no other significant correlations between the SDQ and the CISS-A scores for either group. Participants, regardless of group, who performed poorly on the CISS-A emotion-oriented coping were more likely to perform poorly the SDQ-personal relations and pro-social behaviors scales.

Discussion

The first conclusion of this study is that adolescents with chronic stuttering, as a group, reported scores in the high end of "average" range. This suggests that the majority of adolescents with chronic

stuttering did not experience psychological health distress. A second important finding was significant differences were found between the two group mean subscale scores for the SDQ. Adolescents with chronic stuttering scored outside the "normal band" for peer relationships when compared with adolescents who do not stutter. Nearly 89% (peer relationship) of adolescents who do not stutter had scores within the "normal band" for peer relationships, while only 49% of adolescents with chronic stuttering had scores that fell within the "normal band". In some ways this is not unexpected as this subscale of the SDQ addresses social issues. Stuttering is a social communication disorder. Although there were observable differences in the percentages between the two groups for the pro-social behaviors subscale, no significant differences were found. This may be the result of the scores hovering toward the low end of normal (score range of 6 to 10) when the group data was analyzed. The other subscales of emotional symptoms, conduct problems and hyperactivity/inattentiveness subscales address emotion and behavior issues and also showed no significant differences between the groups. The results suggest that some adolescents may face greater difficulties with peer relationships and this may be due to their stuttering. These data are supported by earlier studies suggesting that peer relationships might be perceived more fragile in adolescents with chronic stuttering. Researchers have found some adolescents with chronic stuttering self-report that their stuttering affected their relationships and whether people wanted to be their friend [35-38,51]. The stress associated with peer relationships may be either an inaccurately perceived problem by adolescents with chronic stuttering or a very real stereotypical negative response during multiple social and communicative interactions. In either case, the need for assessment and intervention is warranted. Additionally, a significant group of adolescents with chronic stuttering are using emotion-based coping strategies which had been reported to be less productive and functional in dealing with stress [23, 25-28]. It appears that in some adolescents with chronic stuttering a double vulnerability may exist. Not only are they reporting difficulty with peer relationships and pro-social behaviors but they are reporting using ineffective coping strategies to deal with these daily stressors which may perpetuate these problems into adulthood. Collaborative teams of adolescents, counselors, educators, speech-language pathologists and families are needed to find constructive solutions to these issues.

The poorer performance on the SDQ-peer relations and pro-social behaviors subscales by adolescents with chronic stuttering may also be explained by earlier data reporting an increased risk for bullying and victimization, increased social anxiety and poorer social acceptance in some adolescents with chronic stuttering [35-37,49]. Children and adolescents who are victimized are more likely to become withdrawn, reduce social interactions and adopt solitary profiles which are not pro-social in nature. Reducing pro-social behaviors could be a protective device developed by some adolescents with chronic stuttering as an attempt to reduce daily bullying and victimization. It is also possible that it may be a denial technique based on the adolescent's own psychological interpretations of events. The literature suggests that some adolescents who stutter are reported to have greater anxiety problems when compared with adolescent who do not stutter. Adolescents with chronic stuttering and co-occurring anxiety disorders may be more likely to reduce their social behaviors to hide their anxiety from peers or simply use their quiet, withdrawn or unsocial behaviors as a strategy to deal with the anxiety problem. Although speculative in nature, adolescents who are daily subjected to negative stereotypes and stigma may not want to invest in evaluative peer relationships as a way to deal with rejection and stigma associated

with chronic stuttering [52,53]. Future studies could examine reasons for poorer performance (although at the higher end of the normal range) on both peer relationships and pro-social behavior.

It should also be noted that adolescent with chronic stuttering did not perform more poorly on the SDQ-Emotional Symptoms subscale which is sensitive to anxiety problems. The literature suggests that some adolescents with chronic stuttering display anxiety disorders [5-9]. It is possible these results show the positive effects of previous speech therapy. Traditional treatments often include desensitization, cognitive behavioral approaches and confrontation tasks which may reduce anxiety and communication apprehension [1-4].

The results provide preliminary evidence for screening for these types of problems with adolescents with chronic stuttering. These initial findings suggest that teams of adolescents, counselors, speech-language pathologists, psychologists, parents and school personnel appear to be the optimal way to assess and treat any potential problems. Counselors and psychologists may need to play a more critical role in assessing adolescents with chronic stuttering who may be at higher risk for self-reported peer relation problems, anxiety, and bullying. It is also important that speech-language pathologists working on stuttering behaviors evaluate the attitudes and feelings of adolescents with chronic stuttering based on these results. Dealing with these issues during adolescence may assist individuals who stutter with the skills and strategies necessary to cope effectively in later life.

Another significant conclusion of this study was the higher reported use of emotion-oriented coping strategies for adolescents with chronic stuttering to deal with general stressors. The groups did not differ significantly in their use of task-oriented, avoidance oriented, distraction or social diversion coping strategies. This is similar to adolescents with other chronic health and psychological disorders [28,41]. The literature suggests that emotion-oriented coping strategies may be appropriate for some short-term problems to maintain an emotional equilibrium during stressful episodes. However, task-oriented, active, problem solving coping strategies which try to moderate the situation and reduce the negative effect of general stressors are more productive for long-term outcomes [19-21,49,51]. During adolescence, the exploration and use of multiple strategies is expected [25-29] and reported in this study. The study did not address the perceived productive nature of the effectiveness or the rationale for their use with participants. Future studies, using longitudinal and mixed methods designs could expand on the meaningfulness of these findings. It may be that adolescents with chronic stuttering are satisfied using these strategies or they have simply become accustomed to using them in their daily routines for dealing with stress or that their choices may be influenced by their social and communication difficulties. Some adolescents who stutter may benefit from using more task and problem-focused coping strategies which might result in more productive and psychologically healthy outcomes for dealing with stressors in adulthood [25-29,50]. Although all the scores fell within the normal range, it can be seen that adolescents with chronic stuttering had higher T-scores and were closer to the outer boundaries of the average range, especially for emotion-oriented coping. Future research could examine if individuals who stutter use similar coping strategies for general stressors and situational communication stressors associated with chronic stuttering.

Finally, significant relationships were found between emotion-oriented coping and poorer peer relationships and pro-social behaviors for both groups. This study used cross-sectional criteria and longitudinal studies are needed to determine any causality for this

relationship. It would be interesting to determine the direction of the relationship between these factors. Are individuals who use more emotion-oriented coping responses perceived as less social and more likely to have difficulties in developing and maintaining peer relationships? Or do adolescents who are stereotyped and stigmatized by their peers, due to their chronic stuttering, begin to use more emotion-oriented coping strategies to try to immediately reduce the feelings of rejection, criticism, disapproval, bullying and victimization. Future studies should examine these variables in children and adolescents with chronic stuttering and other chronic health conditions.

The discussion of these findings should be taken in the context of the small number of male, homogeneous participants, from middle to upper middle socio economic strata who demonstrated varying degrees of stuttering severity. Other limitations of this study include that limited age range of the participants and the use of screening measures. These data suggest that most adolescents who report or experience social communication difficulties may not suffer negative mental health outcomes. Future research should continue to examine psychosocial factors determining what makes some adolescents with chronic stuttering vulnerable to negative psychological health outcomes and what attributes make them more resilient to harmful psychological consequences.

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