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Family communication patterns and adolescent social anxiety:
cross-sectional and longitudinal connections

Faculty of Social Sciences
Master's Thesis in Psychology
October 2022

ABSTRACT

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Master's thesis, 31 pages, 1 appendix page
Tampere University
Psychology degree program
October 2022

Social anxiety (SA) is the fear of negative evaluation, criticism or humiliation in social contexts. In its severe, clinical form of Social Anxiety Disorder (SAD), this fear and its compensatory maladaptive avoidance and safety behaviors often lead to drastically impaired academic and occupational performance, psychiatric comorbidity, and lower quality of life. With adolescence bringing significant increases in SA symptoms and thus SAD diagnoses, particular focus on childhood and adolescence to understand the origins of the disorder is essential. Existing reserch literature implicates many parenting behaviors, such as overcontrol and low emotional warmth, as contributing factors to the development and maintenance of SA and SAD.

The present thesis expanded on this literature by examining cross-sectional and longitudinal associations between adolescent SA and the two family communication pattern (FCP) variables of conversation orientation (CvO) and conformity orientation (CfO) included in the Revised Family Communication Patterns instrument (RFCP).

A population representative sample of suburban southwestern Finnish adolescents was longitudinally studied between the 7th and 9th grades in the lower secondary school (n = 393). The adolescents filled questionnaires assessing SA via the Social Anxiety Scale for Adolescents (SAS-A) and assessing FCP via the RFCP.

Adolescent RFCP–SAS-A connections were tested cross-sectionally via t-tests between upper and lower adolescent SAS-A quartiles' CvO and CfO means, and longitudinally via regression analysis with SAS-A, CvO and CfO predicting the next grade's SAS-A.

In cross-sectional adolescent self-reports, higher CvO was linked to less SA and higher CfO was linked to more SA. Longitudinal analyses also partially supported a link between higher current CfO and higher next grade SA, but not current CvO and next grade's SA.

Results support the conclusion of parenting behaviors generally and FCP specifically being linked to SA. Higher CfO being longitudinally linked to later higher SA tentatively supports a potential causal connection. Further research is recommended to investigate the specifics of FCP variables' potential role in the etiology of SAD.

Keywords: Adolescent, social anxiety, revised family communication patterns, family environment, longitudinal study, regression analysis

Contents

1. INTRODUCTION

1.1. Social Anxiety

1.1.1. Defining Social Anxiety and Related Phenomena

Social anxiety (SA) is the fear of being subjected to critical evaluation in social contexts (Wong & Rapee, 2015). The spectrum of SA can range in severity from minor or situational anxiety (e.g. performance anxiety) to a pervasive and extreme feeling of inadequacy (i.e. avoidant personality disorder). Specific social situational fears are limited to situations such as public speaking and typically don't cause pervasive problems in general functioning (Wittchen, Stein & Kessler, 1999). Another phenomenon at the less severe end of the SA-spectrum is shyness (Heiser et al., 2008), which involves fewer social fears, fewer cognitive and somatic symptoms, and less social avoidance than the clinical SA-manifestation at the higher end of the SA-spectrum, known as Social Anxiety Disorder (SAD; Knappe et al., 2010; American Psychiatric Association, 2013).

Central SAD diagnostic criteria are threat-disproportionate anxiety in one or several social situations, fear of negative evaluation related to one's behavior or characteristics in these situations, and a tendency to either avoid the situations or to forcibly withstand them with intense anxiety (American Psychiatric Association, 2013; Rapee & Heimberg, 1997). SAD has also been referred to as social phobia (American Psychiatric Association, 1994), though that term has been criticized as potentially presenting a distorted picture of SAD as one form of specific phobia and thus may understate the severity and complexity of SAD (Knappe et al., 2010). While mild and occasional (i.e. subclinical) social anxiety in at least some situations is a very common experience, when social fears, associated anxiety, and behavioural change (e.g. social avoidance) cause significant suffering or impairment of functioning, a diagnosis of SAD is appropriate (Wong & Rapee, 2015; American Psychiatric Association, 2013).

Avoidant personality disorder is often seen as the highest end of the SA spectrum, as it involves an inflexible, pervasive and extreme feeling of personal inadequacy, hypersensitivity to negative evaluation and rejection, and a distorted view of the self as unlikable and of others as uncaring, with significant ensuing distress and functional impairment, (American Psychiatric Association, 2013; Tillfors et al., 2004).

1.1.2. Epidemiology of Social Anxiety Disorder

SAD typically first appears in adolescence or early adulthood. Retrospective studies among adults with SAD mostly report the first onset of clinically significant symptoms as closer to late adolescence or early adulthood (Keller, 2006; Wittchen & Fehm, 2001). However, studies reveal that adults with SAD typically report that they do not remember any period of their lives during which they did not suffer from SAD-related symptoms (Wittchen & Fehm, 2001). These reports may refer to experiences associated with childhood shyness or temperamental behavioral inhibition, which are known to be risk factors for SAD (Tsui & Schmidt, 2016; Beesdo et al., 2007). In contrast to results from these retrospective clinical studies, in adolescent epidemiological studies that likely better represent the general population, the estimated onset of SAD occurs earlier, between the ages of 10 and 16 (Wittchen & Fehm, 2001). Therefore, the retrospective self-assessments of SAD onset obtained from clinical studies may refer more to the age at which the problems associated with, or created by, severe social anxiety typically begin to significantly disrupt life, leading to the need for treatment during which the SAD diagnosis is made, rather than the age at which SAD diagnostic criteria are met (and the disorder would be diagnosed if one were to seek clinical help and thus be subjected to SAD evaluation).

It is estimated that approximately 11 – 36% of the general population meet the diagnostic criteria for SAD at some point in their lives (Beesdo et al. 2007; Jefferies & Ungar, 2020; Kessler et al. 1994). In adolescence, the corresponding estimates range from 1.4 – 15% (Burstein et al., 2011; Heimberg et al., 2000; Lewinsohn et al., 1993; Merikangas et al., 2010). The prevalence of SAD in the general population is approximately twice as high in women as in men (e.g., Wittchen et al., 1999), but in clinical samples, the proportion of men is typically roughly equivalent to that of women (Rapee, Sanderson, & Barlow, 1988; Solyom, Ledwidge, & Solyom, 1986; Heimberg & Juster, 1995).

In children and adolescents, SAD causes problems in various life domains, including academic performance, social skills and relationships (e.g., Katzelnick et al., 2001; Khalid-Khan, Santibanez, McMicken, & Rynn 2007). However, compared to childhood SAD, adolescent SAD seems to be associated with more social avoidance and thus more isolation, more cognitive symptoms (e.g. worrying about what others think of you), and deeper functional impairment (Rao et al., 2007).

Without treatment, SAD often continues from adolescence to adulthood (Khalid-Khan et al., 2007) lasting on average up to more than 20 years (Wittchen & Fehm, 2001), although

the severity of symptoms typically ebbs and rises during this time (e.g., Wittchen, Lieb, Pfister, & Schuster, 2000). Continuation of SAD also predisposes those afflicted to other mental health disorders, most notably depression and alcohol abuse (e.g., Beesdo et al., 2007; Wittchen & Fehm, 2001), and significantly reduces quality of life, as well as the ability to function in social relationships and working life (e.g., Keller, 2006; Davidson, Hughes, George, & Blazer, 1993; Alonso et al., 2004).

Some studies have suggested SAD may have greater negative impacts on the lives of men than women, which may explain men's overrepresentation in clinical samples. For example, men who have been shy in childhood and adolescence tended to marry and have children later than non-shy men, whereas no such effect was found for women (Caspi, Elder, & Bem, 1988; Kerr, Lambert, & Bem, 1996). Men who were shy in their childhood also ended up in a stable career later than other men (Caspi et al., 1988). Finally, men and women with SAD did not differ in the prevalence of comorbid mood or anxiety disorders in a study by Turk et al. (1998), despite these disorders generally being more common in women, meaning that SAD may increase men's risk for such disorders even more so than for women (Nolen-Hoeksema, 1987; Rapee et al., 1988).

The likelihood of long-term SAD remission is lower than in other anxiety disorders, especially when the social anxiety is generalized, meaning it affects several or most social situations, as opposed to SAD presenting only in a few more specific situations, most commonly speech or performance tasks (Rapee & Spence, 2004). Remission is also more unlikely when the individual has comorbid mental health disorders (Rapee & Spence, 2004). Remission is most likely to occur during the first years after the onset of SAD, before concomitant comorbid disorders and life-limiting consequences of SAD arise (Yonkers, Dyck, & Keller, 2001). For these reasons, it is important to identify the causes of SA and SAD in childhood and adolescence, and to intervene in the development of the disorder as early as possible.

1.1.3. Etiology of Social Anxiety Disorder

Suggested reasons for the development of SAD include various biological, psychological, and social risk factors. Of these, the most studied are direct hereditary factors (i.e., genetics), temperament (e.g. behavioral inhibition), neurobiology (e.g. normative adolescent prefrontal cortex development; neurotransmitter and neuroanatomical anomalies), cognive disotortions (e.g. seeing oneself as unlikeable and others as overly critical), parental

child-rearing practices (e.g. hostility and overprotection), traumatic and other negative life-events, negative peer experiences, lack of social skills, learning and conditioning mechanisms, and cultural factors (for an overview, see Wong, & Rapee, 2015). However, so far much of the study on these risk factors' effects on the development of SAD has been cross-sectional and non-experimental, limiting strong conclusions about cause-and-effect relationships. In addition, the combined effects of these factors and mechanisms, and the relevant developmental periods for when they affect a person's chances of becoming afflicted with SAD are not well understood.

For example, parental child-rearing practices can theoretically be assumed to have a stronger etiological effect in childhood than in adolescence, as adolescence normatively involves increased distancing of oneself from one's parents. However, negative or dysfunctional child-rearing paractices, such as overprotective or overcontrolling parenting styles could shape a child's social-interactional behavioural patterns in a way that lingers in adolescence and increases risk for negative experiences in adolescent peer relationships. Thus, some factors associated with the development of SAD in an earlier age may at least partially be mediated by occurrences at a later age.

Male gender may also increase the negative effects of SA on quality of life, as outlined above, and may thus increase the chance of meeting SAD diagnostic criteria (e.g. Caspi, Elder, & Bem, 1988). Similarly, cultural factors (e.g. shyness being less strongly linked to expectations of social likability and career success in East Asian than Western countries; Rapee et al., 2011) may affect the social acceptability of socially avoidant behavior and therefore its deleterious effects on overall quality of life and functioning, potentially leading to cultural differences in how "diagnosable" the same (socially anxious) behavior is.

The contribution of genetic factors to the occurrence of anxiety disorders is generally considered moderate (Kendler, Karkowski, & Prescott, 1999). For SAD, heritability estimates range from about .1 to .5 (Kendler et al., 1999; Skre, Onstad, Torgersen, Lygren, & Kringlen, 1993, 2000). Further support for a significant genetic contribution to SAD comes from its association with hereditary anxiety-related temperament or personality traits, such as behavioral inhibition (BI) and neuroticism (e.g., Clauss & Blackford, 2012; Rosenbaum et al., 1991; Bienvenu, Hettema, Neale, Prescott, & Kendler, 2007). For instance, BI in children was associated with a sevenfold risk for a SAD diagnosis many years later in a meta-analysis by Clauss and Blackford (2012).

Despite much of the genetic contribution appearing to be shared between different anxiety disorders (e.g., Kendler et al., 1987), it has typically been found that specific anxiety

disorders accumulate in the same family (e.g., Fyer, Mannuzza, Chapman, Martin, & Klein, 1995), which is also true for SAD (Fyer, Mannuzza, Chapman, Liebowitz, & Klein, 1993; Fyer et al., 1995; Reich & Yates, 1988). Based on these findings, Rapee and Heimberg (1997) suggest in their model of SAD development that genetic factors likely produce a higher general propensity for anxiety, as in directing one's attention toward threats, which manifests as traits like behavioral inhibition. However, they further propose that environmental factors such as family child-rearing practices significantly influence *which* threats this anxiety propensity is turned towards (e.g., parental emphasis of the importance of others' evaluations of oneself could increase the risk for offspring SAD development). In line with this proposition, much research has focused on examining the role of parent factors and parenting styles as risk factors for child and adolescent SAD.

1.1.4. The associations of Parenting Behaviors and Parent-Child Interaction with Social Anxiety and Social Anxiety Disorder

While general parent characteristics such as parental psychopathology (e.g. depression, SAD, other anxiety disorders, and alcohol abuse) have emerged as independent risk factors for child and adolescent SAD (Knappe, Beesdo, Fehm, Lieb, & Wittchen, 2009; Knappe et al., 2010; Lieb et al., 2000), such connections do not by themselves adequately explain how parent variables affect offspring SAD development. Partly for that reason, much research has examined various more specific parenting behaviors and parent-child interaction variables that may better clarify which child and adolescent SAD development processes are affected by parenting, and how.

These parenting behaviors and parent-child interaction variables include parental overprotectiveness (i.e. forbidding activities other children are typically allowed to do due to excessive parental worry; Arrindell et al., 1989; Bögels, van Oosten, Muris, & Smulders, 2001; Knappe, Beesdo, Fehm, Lieb, & Wittchen, 2009; Knappe, Beesdo-Baum, Fehm, Lieb, & Wittchen, 2012; Lieb et al., 2000; Taylor and Alden 2006), social isolation (i.e. allowing or promoting less socialization with others; Bruch & Heimberg, 1994), overcontrol (Hudson & Rapee, 2001; Rapee & Melville 1997; Greco & Morris 2002), limiting child psychological autonomy (e.g. disregarding, failing to solicit or disrespecting the child's own views; Moore, Whaley, & Sigman, 2004), parental rejection (Arrindell et al., 1989; Knappe et al., 2009, 2012; Lieb et al., 2000), parental criticism (Crosby Budinger, Drazdowski, & Ginsburg, 2012; Antony, Purdon, Huta, & Swinson, 1998; Juster et al., 1996), low parental emotional warmth

(e.g. expressing little affection or positive regard for the child; Crosby Budinger et al., 2012; Moore, Whaley, & Sigman, 2004; Arrindell et al., 1989; Knappe et al., 2009, 2012). An insecure child attachment style (i.e. an emotional bond and interactional relationship toward the parent characterized by the child's lack of trust in the parent's ability to adequately take care of the child's physical and emotional needs; e.g. Lyons-Ruth, 1996) has also been linked to SAD development (Brumariu & Kerns, 2008, 2010; Bar-Haim, Dan, Eshel, & Sagi-Schwartz, 2007; Bohlin, Hagekull, & Rydell, 2000).

Further complicating the picture, some of these factors may be more relevant to the development, and others to the persistence of SA and SAD. For example, in a study by Knappe and colleagues (2009), the only variables directly linked to adolescent SAD persistence were parental low emotional warmth and certain aspects of family dysfunction (specifically, dysfunctional communication, affective responsiveness, and affective overinvolvement), while the variables linked to SAD development in the same adolescent sample were parental psychopathology and parenting that's overprotecting, rejecting, or low in emotional warmth. The extent to which and why such variables have differing roles in SA and SAD development and persistence is unknown. The following sections focus on a more detailed evaluation of the literature on parenting and other childhood environment factors linked to SA and SAD.

A commonly utilized method of exploring childhood environment's associations with SAD has been asking adults with SAD about their childhood. Such retrospective studies suggest the disorder is associated with at least the following childhood parenting factors: their parents were more controlling over their childhood social situations (Bruch, Heimberg, Berger, & Collins, 1989), encouraged the family less toward socialization with others (Bruch & Heimberg, 1994), were themselves less social (Bruch & Heimberg, 1994; Bruch et al., 1989; Rapee & Melville, 1997), used shame to discipline (Bruch & Heimberg, 1994), emphasized the importance of others' opinions and negative evaluation (Bruch & Heimberg 1994; Bruch et al., 1989), and were rejecting (Bruch & Heimberg, 1994), less emotionally warm and overprotective toward the child (Arrindell, Emmelkamp, Monsma, & Brilman, 1983; Arrindell et al., 1989). There is some evidence mothers' and fathers' impacts may differ somewhat. For example, Knappe and colleagues' (2012) study found that the only variables associated with SAD specifically (and not other anxiety disorders as well) were the father's rejection and low emotional warmth, and the mother's overprotection. In addition, Chartier, Walker, and Stein (2001) found that SAD is associated with general childhood risk factors, such as lack of a close relationship with an adult, being non-firstborn (for males only), parental marital conflict, parental psychopathology, repeated childhood moves, involvement with the legal system or

child protective services in adolescence, running away from home, childhood physical and sexual abuse, failing a grade in school, needing special education before age nine, and dropping out of high school.

A limitation of these retrospective studies is the possibility of cognitive biases hampering accurate recall and interpretation of past events. Such skewed information processing styles have been emphasized in theoretical models of SAD (e.g., Clark & Wells 1995; Rapee & Heimberg 1997). Two central proposed biases are the tendency of anxious individuals to pay closer attention to threat-related cues and to interpret ambiguous situations as threatening. Child studies have tentatively supported the role of such biases in the onset of SAD. For example, in two studies by Creswell and colleagues (2008, 2011), infants of mothers with SAD (and therefore infants at higher risk for future SAD themselves) showed a bias away from fearful facial stimuli. In addition, anxious negativity in play with dolls in 4–5-year-olds predicted subsequent problems of anxiety, depression, and social worries reported by the teacher after the first school period (Pass et al., 2012). In a study related to memory functioning, Gómez-Ariza and colleagues (2012) found adolescents with SAD to have lower ability to intentionally forget information than controls, which could be a result of worrying (i.e. having anticipatory anxiety) about whether one will be able to do so and how this potential failure will make one seem to others, resulting in increased processing and thus reinforced memory coding of said information. In other words, this putative memory functioning impairment may stem from anxiety tendencies. In any case, the potential SAD-related cognitive biases listed here mean that SAD-patients' retrospective self-reports of childhood or adolescent family environments may be distorted by anxiety driven attentional biases and thus may not indicate actual differences between their childhood environments and those of non-anxious peers.

A way around these uncertainties left by self-report methodology is using an external observer to evaluate parent-child interactions as objectively as possible. In one such longitudinal observational study, maternal challenging behavior (i.e. playfully challenging the child to go out of their comfort zone, e.g. “show me if you can do that”, while taking into account the child’s limits) predicted more, but paternal challenging behavior predicted less child SA (Majdandžić, Möller, de Vente, Bögels, & van den Boom, 2014). In another longitudinal observational study by Lewis-Morrarty and colleagues (2012) maternal over-control observed during childhood was associated with SA and SAD in adolescence and, as a moderator, the maternal over-control also strengthened the association between temperamental behavioral inhibition and SA. Observationally assessed parental high expressed emotion (EE), which consists of emotional overinvolvement, hostility, and criticism, has also been found to

be negatively associated with the effectiveness of treatment for adolescent SAD (Garcia-Lopez, del Mar Díaz-Castela, Muela-Martinez, & Espinosa-Fernandez, 2014; Garcia-Lopez, Muela, Espinosa-Fernandez, & Diaz-Castela, 2009). Additionally, Barrett, Rapee, Dadds and Ryan (1996) found not only that anxious children were more likely to interpret an ambiguous situation as threatening and to favor avoidant responses to it, but that their parents were more likely to openly support such avoidant strategies to their anxious children and that the children were thereafter more likely to employ avoidant strategies than before the discussion with their parents. There is also experimental evidence that anxiety expressed by the mother in interaction with a stranger predicts infants' avoidance of the stranger (de Rosnay, Cooper, Tsigaras, & Murray, 2006), and is linked to such avoidance increasing over time (Murray et al., 2008). Therefore it appears the link between parental (or at least maternal) overprotection and SAD could be mediated by providing the child with overt and covert social cues encouraging avoidant strategies for coping with social threats. It is possible that similar finer mechanisms (i.e. mediators) will be discovered regarding other SAD risk factors.

To summarize, observational studies (i.e. the most objective methodology available) support many of the findings of SAD-affected persons' childhood environment self-reports, for example regarding parental over-control, negative or critical behavior toward the child, and socially learned avoidance of others, further highlighting the importance of studying such variables in relation to SA and SAD etiology.

1.2. Family Communication Patterns

As demonstrated by the literature covered above, family interactions are a vital piece of the puzzle when it comes to understanding SAD etiology. One aspect of such interactions are family communication patterns (FCP; McLeod & Chaffee, 1972), which is a construct in mass communication research in which the family is seen as a communication environment containing parent-child communication norms that prioritize either the development of autonomous ideas and opinions by active engagement and debate (concept-orientation) or harmony by conforming to parent authority (socio-orientation). Upon critical conceptual and empirical review, Ritchie and Fitzpatrick (1990) reformulated the FCP model, reconceptualizing and renaming concept-orientation to conversation orientation (CvO) and socio-orientation to conformity orientation (CfO). This led to creating the questionnaire called the Revised Family Communication Patterns (RFCP; for full scale and instructions, see

Koerner & Fitzpatrick, 2002a). The RFCP questionnaire measures children's and parents' views of their family's communication norms and styles along the CvO and CfO dimensions.

CvO refers to the degree to which the family environment encourages all members toward unrestrained interaction (Koerner & Fitzpatrick, 2002b). For example, in high CvO families, parents encourage children to challenge parental ideas (even on controversial issues like politics), explore all sides of an issue, and express their opinions and feelings openly, resulting in an enjoyable interaction atmosphere.

CfO refers to the degree to which the family environment emphasizes the importance of shared beliefs and values, and conflict avoidance via obedience to parents (Koerner & Fitzpatrick, 2002b).

Psychometrically, the RFCP has demonstrated good internal consistency. The Cronbach's alphas have averaged .89 (.84–.92) for the CvO scale and.79 (.73–.87) for the CfO scale (Koerner & Fitzpatrick, 2002b). The scales tend to correlate negatively with each other, with Pearson correlation coefficients typically being between -.2 and -.3 (Schrodt, Ledbetter, & Ohrt, 2007). This correlation suggests the two orientation scales are not entirely independent, but the nature of the connection remains unclear (e.g. does high CvO cause low CfO, or vice versa, or does a third variable affect both orientations).

One prior piece of cross-sectional RFCP research indicates children and parents see the family environment differently. Ritchie and Fitzpatrick (1990; for a more detailed report of the same study see also Koerner and Fitzpatrick, 2002b) compared RFCP estimates between 168 family triads of mothers and fathers, and their male or female child from 7th, 9th and 11th grades. They found that average mother-estimated CvO (3.92) was higher than any other family triad member's average estimate, as in fathers (3.65) or boys (3.57) or girls (3.68), with Cohen's *d* effect sizes for the differences lying between .47 and .73 ($p < .001$). Family CfO was on average judged highest by boys (3.03), followed by girls (2.85), then fathers (2.68) and finally, mothers (2.62), with Cohen's *d*s between .31 and .79 ($p = < .01 – < .001$). The child-parent correlations in this sample ranged between .20 and .49 for CvO, and between .18 and .48 for CfO. These relatively low correlations indicate there is a great deal of discrepancy between parent and child estimates of RFCP family environment variables.

1.3. Family Communication Patterns and Social Anxiety

The RFCP family communication environment dimensions of CvO and CfO (Koerner & Fitzpatrick, 2002a) bear similarities to many parenting behaviors and parent-child interaction variables identified as SAD-development risk factors for children and adolescents. For example, high CfO could overlap with parental criticism (e.g. Crosby Budinger et al., 2012), overcontrol (e.g. Hudson & Rapee, 2001), and limiting of psychological autonomy (e.g. Moore et al., 2004), while low CvO could overlap with low emotional warmth (e.g. Crosby Budinger et al., 2012), rejection (e.g. Arrindell et al. 1989), and the hostility aspect of expressed emotion (e.g. Garcia-Lopez et al., 2009).

However, the RFCP dimensions are also sufficiently different from the constructs linked to SA and SAD in prior research to make studying their links to SA worthwhile in terms of potential new insights. For instance, CvO's various items tap into qualitatively very different types of communicative sharing (e.g. feelings, opinions, life events), and thus have potential for shedding light on what types of topics are more or less linked to offspring SA. Likewise, CfO's items cover different types of obedience and conformity related expectations, beliefs and behaviors in the family. Furthermore, the RFCP offers the important ability to simultaneously measure both children and parents' views. Despite all this, the RFCP's potential links to SA and SAD have not been researched, perhaps due to the origins of the RFCP theory and measure coming from a field somewhat distant from psychiatry and clinical psychology (i.e. communication studies, see e.g. Ritchie & Fitzpatrick, 1990).

However, some studies do exist that examine RFCP's links to phenomena conceptually close to SA and more general mental wellbeing. Such phenomena positively associated with higher CvO include lower communication apprehension (i.e. "*an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons*", McCroskey 1977, p.78); less avoidance of communication and less fear of interpersonal encounters (Avtgis, 1999); lower shyness (Huang, 1999); lower reticence (i.e. *"[people] avoid[ing] communication because they believe it is better to remain silent than to risk appearing foolish*", Keaten, Kelly, & Finch, 2000, p. 168; Kelly et al., 2002); seeing conversation as more rewarding (Avtgis, 1999); more self-disclosure of personal information (Huang, 1999); more desire for control (which notably contains several leadership and thus SA-relevant items, Huang, 1999); better self-esteem (Farahati, 2011; Huang, 1999; Rangarajan & Kelly, 2006); higher sociability (Huang, 1999); more use of integrating and compromising conflict resolution strategies (i.e. strategies valuing both self-concerns and other-concerns

equally, Shearman & Dumlao, 2008); better interpersonal skills (Koesten, 2004); feeling less lonely, family communication satisfaction, communication competence (to achieve interpersonal goals) and social control (e.g. comfort and ease of expression in social settings and leadership skills; Segrin, Nevarez, Arroyo, & Harwood, 2012); an internal locus of control (Farahati, 2011); better communication skills (Farahati, 2011); higher self-efficacy (Anvari, Kajbaf, Montazeri, & Sajjadian, 2014); and better mental well-being (i.e. a composite of measures regarding self-esteem, stress, and general mental health symptoms including depression and anxiety related items; Schrodt & Ledbetter, 2007).

Higher CfO tends to instead be connected to less desirable outcomes conceptually close to SA and general mental wellbeing (including many of the outcomes listed above with a negative connection to CvO), including more communication apprehension (Hsu, 1998); lower communication rewardingness (Avtgis, 1999); more self-monitoring (meaning monitoring and control of behavior to maintain social approval, Huang, 1999); higher shyness (Farahati, 2011; Huang, 1999); lower self-esteem (Huang, 1999); more use of avoiding and obliging conflict resolution strategies (i.e. strategies emphasizing low self-concern, and in the latter case, high other-concern) and lower satisfaction in family communication (Shearman & Dumlao, 2008); an external locus of control (Farahati, 2011); lower self-efficacy (Anvari et al., 2014); and lower mental well-being (Schrodt & Ledbetter, 2007).

To summarize these studies, both CvO and CfO have been consistently found to correlate with various psycho-social outcomes, though the effect sizes and directions differ. Specifically, in a meta-analysis by Schrodt, Witt and Messersmith (2008), CvO's positive link to those better psychosocial outcomes that are conceptually close to SA (error corrected *r*s between .297 and .473) was stronger than CfO's negative link to such outcomes (error corrected *r*s between -.124 and -.350). For all psychosocial outcomes measured, the average error corrected *r* for CvO was .46, and for CfO -.28.

1.4. Research Question and Hypotheses

The present thesis expands existing literature on parenting behaviors, parent-child interaction and adolescent SA development by using a population representative sample of Finnish 7th to 9th grade adolescents to measure CvO's and CfO's potential cross-sectional and longitudinal connections to adolescent social anxiety with a validated measure for this purpose, the Social Anxiety Scale for Adolescents (SAS-A). The research question (RQ) and hypotheses (H) are:

RQ: Are adolescent reported RFCP conversation and conformity orientations cross-sectionally or longitudinally linked to adolescent social anxiety symptoms as measured by the SAS-A?

Based on the connections between CvO and CfO and contructs conceptually close to SA reported in past research, the following hypotheses were formed:

H1: High-SA adolescents will cross-sectionally judge their family CvO as lower than low-SA adolescents.
H2: High-SA adolescents will cross-sectionally judge their family CfO as higher than low-SA adolescents.
H3: Higher current adolescent reported CvO will be linked to lower future adolescent SAS-A scores.
H4: Higher current adolescent reported CfO will be linked to higher future adolescent SAS-A scores.
H5: Adolescent reported CvO's link to adolescent SAS-A is stronger than adolescent reported CfO's link to adolescent SAS-A.

2. METHODS

2.1. Participants

The sample consisted of the adolescent students from school grades 7, 8 and 9 (typically aged 13 - 16) from two schools located in the Finnish municipality of Lieto (n = 393, 51.3% male, participation rate 82.3%). The sample forms a demographically representative cluster sampling of the Southwestern Finnish suburban population, as almost all Finnish children and adolescents attend public schools. Measurements were performed twice per year, once per school semester, for a total of six measurements.

2.2. Procedure

The data was gathered between 2006 and 2009 as part of the longitudinal research project "Social and Emotional Learning and Well-Being in Lower Secondary School". Adolescent

participants filled questionnaires in the classroom during a school day under researcher supervision and were informed the data would be accessible only to the research team. Written informed consent was acquired from adolescent and parent participants, and the study was approved by the Hospital District of Southwest Finland ethics committee.

2.3. Measures

The Social Anxiety Scale for Adolescents (SAS-A):

The SAS-A self-report questionnaire (La Greca & Lopez, 1998) measures adolescents' social anxiety with 18 actual and 4 filler items on a Likert scale from 1 ("*not at all*") to 5 ("*all the time*") according to how often they experience the symptoms described. The questionnaire contains three subscales: (1) fear of negative evaluation (FNE, 8 items), (2) social avoidance and distress in new situations (SAD-New, 6), and (3) generalized social avoidance and distress (SAD-Gen, 4). A cut-off of 50 points out of the full scale's range of 18 – 90 points has been suggested as likely indicative of clinically significant SA (La Greca, 1999). The questionnaire was translated to Finnish using translation-back-translation by relevant experts in consultation with the original SAS-A author (for more details see Ranta et al., 2012; for a broader SAS-A psychometric review see Tulbure, Szentagotai, Dobrean, & David, 2012)

Revised Family Communication Patterns (RFCP):

The RFCP (Ritchie & Fitzpatrick, 1990) self-report questionnaire measures family communication patterns and norms on two dimensions: conversation orientation (CvO, 15 items) and conformity orientation (CfO, 11 items), with separate, appropriately worded versions for children and their parents. Example RFCP CvO items include "*I really enjoy talking with my parents, even when we disagree* [child version of item 10]"; "*I think my child really enjoys talking with me, even when we disagree* [parent version of item 10]" and "*in our family we often talk about topics like politics and religion where some persons disagree with others* [parent/child shared item 1]". Example RFCP CfO items include "*my parents sometimes become irritated with my views if they are different from theirs* [child version of item 4]"; "*I sometimes become irritated with my child's views if they are different from mine* [parent version of item 4]" and "*my parents feel that it is important to be the boss* [child version of item 3]"; "*I feel that it is important for the parents to be the boss* [parent version of item 3]". The present thesis used a shorter Finnish version with only 5 items per dimension (selected based on

optimal confirmatory factor analysis factor loadings) measured on a Likert scale with answers ranging from 1 ("*never*") to 4 ("*often*").

2.4. Statistical Analysis

Three respondents were eliminated from the dataset entirely due to extensive missing data. Only responses with no missing items were included when calculating SAS-A and RFCP scores. Adolescent RFCP long version measure scores were calculated and presented for informative value, but all correlation and regression analyses used the short version for maximum comparability, as long RFCP version data exists only for the 7th grade. Measure reliability was estimated via Cronbach's alpha coefficients. Pearson correlation coefficients were calculated between all study variables. SAS-A lower and upper quartiles were calculated to identify low and high SA adolescents, and independent samples t-tests were run between these groups to test for differences in average CvO and CfO between them. Linear ordinary least squares regression analysis (OLS) was utilized to explore RFCP and SAS-A longitudinal connections using the previous school grade's RFCP dimensions and SAS-A as independent variables to predict the next grade's SAS-A scores. OLS requirements were verified for each each regression model, including lack of multi-outliers, lack of multicollinearity, residual normality and residual linearity. For the 7th to 8th grade regression model, one respondent was eliminated from analysis as a multi-outlier (Mahalanobis distance 20.52 > 16.27, df 3). As an additional exploratory analysis (i.e. not part of the main research question and hypotheses), an independent samples t-test was performed on differences in adolescent-parent RFCP estimate differentials between low and high SA adolescent groups, in order to test whether adolescent-parent RFCP estimate discrepancy varied as a function of adolescent SA severity. Analyses were done using IBM SPSS Statistics software version 28.

3. RESULTS

3.1. Descriptive Statistics, Reliabilities and Correlations

Descriptive statistics for SAS-A and RFCP scores are presented in Table 1. Pearson correlation coefficients between study variables are reported in Tables 2–4 for each grade.

The SAS-A had excellent reliability (α = .899–.933; for all Cronbach's alpha coefficients, see Tables 2–4). Adolescents' CvO (α = .786–.845) and CfO (α = .731–.781) demonstrated moderate to good reliability. Parent versions of the CvO (α = .706) and CfO (α = .638) were less reliable but still adequate.

3.2. Cross-sectional and longitudinal RFCP and SAS-A connections

CvO means were significantly different in the predicted direction between low and high SA groups (lower CvO predicting higher SA) in the 8th and 9th grade, but not the 7th grade. For CfO, the 7th and 9th grade, but not the 8th grade means were significantly different in the predicted direction (higher CfO predicting higher SA). Thus H1 and H2 were supported for most grades (see Table 9).

In the regression analysis with 7th grade CvO, CfO and SAS-A predicting 8th grade SAS-A, only 7th grade SAS-A attained significance (see Table 5). As quadratic and cubic regression lines fit the data marginally better than a linear one (i.e. their coefficients of determination were higher, see Graph 1), an additional model including quadratic and cubic terms of all original model predictor variables was calculated (see Table 6), but due to only marginal coefficient of determination improvement (i.e. R^2 increasing from .261 to .270), no changes in independent variables attaining significance, and no meaningful interpretive value added, the original model was accepted.

The 8th to 9th grade longitudinal regression model mirrored the 7th to 8th grade model in that only the previous grade's SAS-A significantly predicted the following grade's SAS-A, while CvO and CfO did not (see Table 7). A second model including quadratic and cubic terms of all predictors was again explored due to better data fits (see Graph 2). Coefficient of determination rose slightly (from .341 to .372) and both the first (p = .002) and third order CfO coefficients (p = .017) reached significance (see Table 8). Thus the polynomial model was accepted, indicating that in addition to 8th grade SAS-A, 8th grade CfO predicted 9th grade SAS-A in a double-curved fashion. To explore this connection further, a third regression model with only the 8th grade first order CfO predicting 9th grade SAS-A was calculated (model R^2 = .009; CfO β = .093, p = .085, n = 343). Visualizing this model with first and third order model fit lines (i.e. the significant terms from the second model above) demonstrates that while higher CfO is generally linked to higher SAS-A, at very low and very high CfO values this connection

is reversed, i.e. very low CfO produces higher and very high CfO produces lower SAS-A scores than a linear model would predict (see Graph 3).

Thus regression analyses indicated no support for H3, as no longitudinal connection was found between CvO and future SAS-A scores. Partial support was found for H4, with 8th grade first and third order CfO terms predicting 9th grade SAS-A scores, but no such connections existed between 7th grade CfO and 8th grade SAS-A. Hypothesis 5 was not supported, as CfO but not CvO was longitudinally connected to SAS-A, and cross-sectional correlations between the RFCP variables and SAS-A were not statistically significantly different.

The question of whether adolescent SA-severity predicted the amount of adolescent-parent dicrepancy between their RFCP estimates was explored with an additional analysis. An independent samples t-test was performed on adolecent-parent CvO and CfO mean differentials between adolescent-parent dyads from the upper and lower adolescent SAS-A-quartiles. No significant differences between low and high SA group adolescent-parent mean differentials were found for CvO (t = .733, p = .465) or CfO (t = -.221, p = .826; see Table 10).

TABLE 1. Mean scores for study variables (standard deviation and *n* in parentheses)

	Grade 7 autumn	Grade 7 spring	Grade 8 autumn	Grade 8 spring	Grade 9 autumn	Grade 9 spring
FNE	17.48 (5.32; *n* = 363)	18.11 (5.61; *n* = 370)	17.92 (5.41; *n* =370)	18.01 (5.34; *n* = 370)	17.45 (5.31; *n* = 369)	18.21 (5.36; *n* = 359)
SAD-New	12.23 (3.15; *n* = 367)	12.63 (3.45; *n* = 373)	12.47 (3.36; *n* = 371)	12.34 (3.46; *n* = 370)	12.24 (3.42; *n* = 369)	12.14 (3.50; *n* =363)
SAD-Gen	7.43 (2.13; *n* = 372)	7.56 (2.55; *n* = 377)	7.52 (2.54; *n* = 374)	7.47 (2.45; *n* = 376)	7.45 (2.34; *n* = 372)	7.81 (2.67; *n* = 362)
SAS-A Total	37.03 (8.93; *n* = 348)	38.33 (10.02; *n* = 363)	37.92 (9.60; *n* = 364)	37.86 (9.73; *n* = 365)	37.24 (9.49; *n* = 362)	38.07 (9.90; *n* = 354)
Adolescent RFCP CvO long	43.84 (7.66; *n* = 347)					
Adolescent RFCP CvO short	15.21 (2.98; *n* = 364)			15.86 (2.97; *n* = 367)	15.81 (3.02; *n* = 363)	
Adolescent RFCP CfO long	25.77 (5.83; *n* = 349)					
Adolescent RFCP CfO short	12.51 (3.02; *n* = 357)			12.98 (3.09; *n* = 366)	12.99 (3.28; *n* = 359)	
Parent RFCP CvO short		17.71 (2.01; *n* = 257)				
Parent RFCP CfO short		15.30 (2.13; *n* = 234)				

FNE: SAS-A Fear of negative evaluation subscale; SAD-New: SAS-A Social avoidance and distress in new situations subscale; SAD-Gen: SAS-A General social avoidance and distress subscale; SAS-A Total: sum of SAS-A subscales; RFCP CvO: Revised Family Communication Patterns, Conversation Orientation scale; RFCP CfO: Revised Family Communication Patterns, Conformity Orientation scale; short/long: RFCP measure version.

TABLE 2. 7th grade study variable correlations and reliability (Cronbach's alpha coefficients italicized on the diagonal)

	FNE	SAD-New	SAD-Gen	SAS-A Total	Adolescent RFCP CvO short	Adolescent RFCP CfO short	Parent RFCP CvO short	Parent RFCP CfO short
FNE	*.885*							
SAD-New	.**511****	*.734*						
SAD-Gen	.**533****	.**513****	*.691*					
SAS-A Total	.**909****	.**780****	.**752****	*.899*				
Adolescent RFCP CvO short	-.059	.003	-.**127***	-.074	*.786*			
Adolescent RFCP CfO short	.**164****	.**126***	.**118***	.**151****	.051	*.731*		
Parent RFCP CvO short	-.023	-.019	-.017	-.008	.**304****	-.**134***	*.706*	
Parent RFCP CfO short	.080	-.026	-.060	.023	-.078	.117	-.**159***	*.638*

Correlation significance (two-sided): ** = p < .01; * = p < .05. Significant coefficients bolded. Parent measures are from the spring semester, others from autumn.
FNE: SAS-A Fear of negative evaluation subscale; SAD-New: SAS-A Social avoidance and distress in new situations subscale; SAD-Gen: SAS-A General social avoidance and distress subscale; SAS-A Total: sum of SAS-A subscales; RFCP CvO: Revised Family Communication Patterns, Conversation Orientation scale; RFCP CfO: Revised Family Communication Patterns Conformity Orientation scale; short: RFCP measure version.

TABLE 3. 8th grade study variable correlations and reliability (Cronbach's alpha coefficients italicized on the diagonal)

	FNE	SAD-New	SAD-Gen	SAS-A Total	Adolescent RFCP CvO short	Adolescent RFCP CfO short
FNE	*.908*					
SAD-New	**.501****	*.827*				
SAD-Gen	**.592****	**.655****	*.780*			
SAS-A Total	**.892****	**.805****	**.822****	*.924*		
Adolescent RFCP CvO short	-.101	-.102	**-.115***	**-.122***	*.845*	
Adolescent RFCP CfO short	.029	.043	.037	.042	-.096	*.753*

Correlation significance (two-sided): ** = p < .01; * = p < .05. Significant coefficients bolded.
RFCP measurements are from the spring semester, SAS-A measurements from the autumn semester. FNE: SAS-A Fear of negative evaluation subscale; SAD-New: SAS-A Social avoidance and distress in new situations subscale; SAD-Gen: SAS-A General social avoidance and distress subscale ; SAS-A Total: sum of SAS-A subscales; RFCP CvO: Revised Family Communication Patterns, Conversation Orientation scale; RFCP CfO: Revised Family Communication Patterns Conformity Orientation scale; short: RFCP measure version.

TABLE 4. 9th grade study variable correlations and reliability (Cronbach's alpha coefficients italicized on the diagonal)

	FNE	SAD-New	SAD-Gen	SAS-A Total	Adolescent RFCP CvO short	Adolescent RFCP CfO short
FNE	*.919*					
SAD-New	**.549****	*.846*				
SAD-Gen	**.648****	**.648****	*.758*			
SAS-A Total	**.905****	**.821****	**.835****	*.933*		
Adolescent RFCP CvO short	**-.121***	-.091	-.098	**-.129***	*.840*	
Adolescent RFCP CfO short	**.175****	.043	**.156****	**.154****	**-.111***	*.781*

Correlation significance (two-sided): ** = p < .01; * = p < .05. Significant coefficients bolded.
All measurements are from the autumn semester. FNE: SAS-A Fear of negative evaluation subscale; SAD-New: SAS-A Social avoidance and distress in new situations subscale; SAD-Gen: SAS-A General social avoidance and distress subscale ; SAS-A Total: sum of SAS-A subscales; RFCP CvO: Revised Family Communication Patterns, Conversation Orientation scale; RFCP CfO: Revised Family Communication Patterns Conformity Orientation scale; short: RFCP measure version.

TABLE 5. 7th to 8th grade regression analysis results (R^2 = .261; *n* = 301)

	Dependent variable: 8th grade SAS-A Total
Independent variables:	β
7th grade SAS-A Total	**.503*** ** (p < .001)
7th grade CvO short	-.078 (p = .125)
7th grade CfO short	-.057 (p = .263)

Significant standardized beta coefficients bolded (two-sided): *** = $p < .001$.
SAS-A Total: sum of SAS-A subscales; RFCP CvO: Revised Family Communication Patterns, Conversation Orientation scale; RFCP CfO: Revised Family Communication Patterns Conformity Orientation scale; short: RFCP measure version.

GRAPH 1. 7th to 8th grade longitudinal regression model.

TABLE 6. 7th to 8th grade polynomial regression analysis results (R^2 = .270; *n* = 301)

	Dependent variable: 8th grade SAS-A Total
Independent variables:	β
7th grade SAS-A Total	**.565*** ** (p < .001)
7th grade SAS-A Total ^2	.006 (p =.908)
7th grade SAS-A Total ^3	-.089 (p =.300)
7th grade CvO short	-.159 (p =.086)
7th grade CvO short ^2	.045 (p =.539)
7th grade CvO short ^3	.113 (p =.317)
7th grade CfO short	.012 (p =.896)
7th grade CfO short ^2	-.037 (p =.482)
7th grade CfO short ^3	-.081 (p =.354)

Significant standardized beta coefficients bolded (two-sided): *** = p < .001.
SAS-A Total: sum of SAS-A subscales; RFCP CvO: Revised Family Communication Patterns, Conversation Orientation scale; RFCP CfO: Revised Family Communication Patterns Conformity Orientation scale; short: RFCP measure version.

TABLE 7. 8th to 9th grade regression analysis results (R^2 = .341; *n* = 325)

	Dependent variable: 9th grade SAS-A Total
Independent variables:	β
8th grade SAS-A Total	**.571*** ** (p < .001)
8th grade CvO short	-.019 (p = .684)
8th grade CfO short	.075 (p = .099)

Significant standardized beta coefficients bolded (two-sided):
*** = p < .001.
SAS-A Total: sum of SAS-A subscales; RFCP CvO: Revised Family Communication Patterns, Conversation Orientation scale; RFCP CfO: Revised Family Communication Patterns Conformity Orientation scale; short: RFCP measure version.

GRAPH 2. 8th to 9th grade longitudinal regression model.

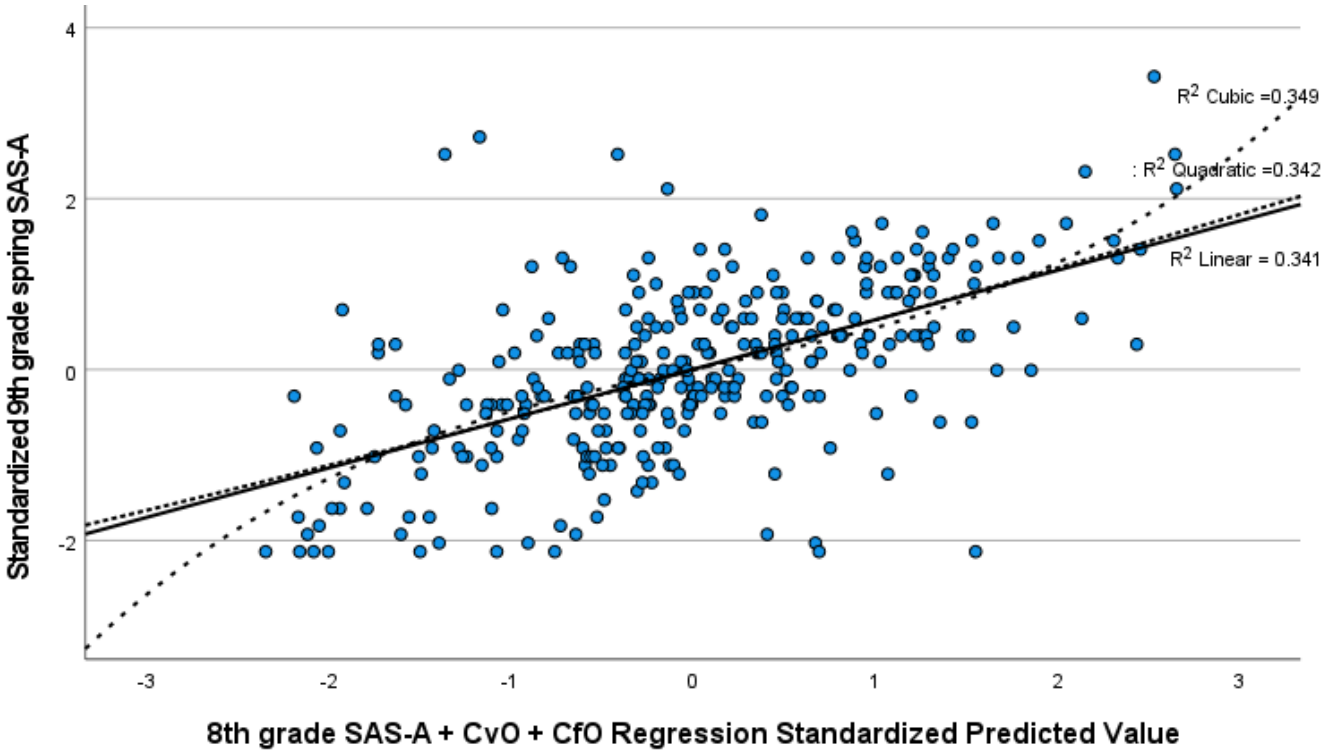

TABLE 8. 8th to 9th grade polynomial regression analysis results (R^2 = .372; *n* = 325)

	Dependent variable: 9th grade SAS-A Total
Independent variables:	β
8th grade SAS-A Total	**.439*** ** (p < .001)
8th grade SAS-A Total ^2	.007 (p = .886)
8th grade SAS-A Total ^3	.140 (p = .103)
8th grade CvO short	-.040 (p = .565)
8th grade CvO short ^2	-.156 (p = .082)
8th grade CvO short ^3	-.084 (p = .460)
8th grade CfO short	**.257** ** (p = .002)
8th grade CfO short ^2	-.032 (p = .501)
8th grade CfO short ^3	**.202*** (p = .017)

Significant standardized beta coefficients bolded (two-sided):
*** = p < .001; ** = p < .01; * = p < .05
SAS-A Total: sum of SAS-A subscales; RFCP CvO: Revised Family Communication Patterns, Conversation Orientation scale; RFCP CfO: Revised Family Communication Patterns Conformity Orientation scale; short: RFCP measure version.

GRAPH 3. 8th grade CfO to 9th grade SAS-A longitudinal regression model.

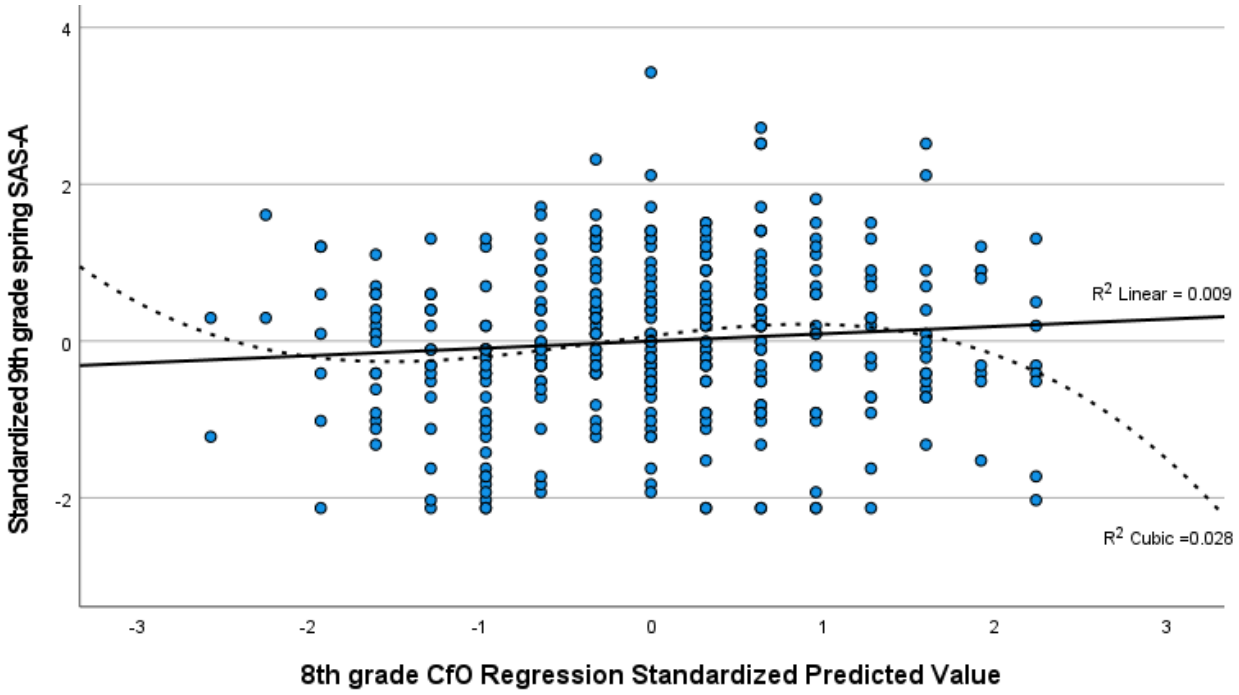

TABLE 9. RFCP CvO and CfO mean difference comparisons between lower and upper quartile SAS-A groups per school grade.

		Grade 7 parent	Grade 7 adolescent	Grade 8 adolescent	Grade 9 adolescent
	Lower quartile	17.90 (2.66; *n* = 49)	15.47 (3.13; *n* = 79)	16.40 (3.02; *n* = 90)	16.33 (3.04; *n* = 91)
RFCP CvO short mean (sd; *n*)	*t* (*p*)	-0.162 (*p* = .872)	-1.34 (*p* = .183)	**-2.22*** (*p* = .028)	**-2.508*** (*p* = .013)
	Upper quartile	17.83 (1.79; *n* = 58)	14.84 (2.94; *n* =87)	15.39 (3.08; *n* = 89)	15.22 (3.01; *n* = 96)
	Lower quartile	14.83 (2.69; *n* = 42)	11.79 (3.36; *n* = 77)	12.66 (3.25; *n* = 87)	12.55 (3.75; *n* = 88)
RFCP CfO short mean (sd; *n*)	*t* (*p*)	1.46 (*p* = .147)	**2.59*** (*p* = .010)	0.86 (*p* = .392)	**2.83**** (*p* = .005)
	Upper quartile	15.48 (1.75; *n* = 58)	13.07 (2.96; *n* = 87)	13.07 (3.12; *n* = 91)	13.98 (3.09; *n* = 96)

t-test significance (two-sided) between lower and upper quartile means:
** = p < .01; * = p < .05. Significant coefficients bolded. Adolescent measurements from autumn semester, parent measurements from spring semester. RFCP CvO: Revised Family Communication Patterns, Conversation Orientation scale; RFCP CfO: Revised Family Communication Patterns Conformity Orientation scale; short: RFCP measure version.

TABLE 10. 7th grade RFCP means for lower and upper quartile SAS-A adolescents and their parents, and adolescent-parent differentials.

	Lower quartile SAS adolescent		Upper quartile SAS adolescent	
	Adolescent	Parent	Adolescent	Parent
RFCP CvO short (sd; *n*)	15.47 (3.13; *n* = 79)	17.90 (2.66; *n* = 49)	14.84 (2.94; *n* = 87)	17.83 (1.79; *n* = 58)
Mean differential (Cohen's d)	-2.20 (.84)		-2.71 (1.23)	
t	.733 (*p* = .465)			
RFCP CfO short (sd; *n*)	11.79 (3.36; *n* = 77)	14.83 (2.69; *n* = 42)	13.07 (2.96; *n* = 87)	15.48 (1.75; *n* = 58)
Mean differential (Cohen's d)	-2.50 (1.00)		-2.33 (0.99)	
t	-.221 (*p* = .826)			

Adolescent SAS-A and RFCP measurements from autumn semester, parent RFCP measurement from autumn semester. RFCP CvO: Revised Family Communication Patterns, Conversation Orientation scale; RFCP CfO: Revised Family Communication Patterns, Conformity Orientation scale; short: RFCP measure version. *t* = independent samples *t*-test coefficient (with two-sided *p*) between differentials for adolescent-parent RFCP scores for lower and upper SAS-A quartile groups.

4. DISCUSSION

The present thesis examined whether 7th to 9th grade Finnish adolescents' estimates of family conversation orientation and conformity orientation are cross-sectionally and longitudinally linked to their SA symptoms.

Primary cross-sectional results revealed that higher family CvO was associated with lower SA in the 8th and 9th grade, but no statistically significant CvO – SA association was found in the 7th grade. Thus hypothesis 1 was mostly supported. Higher family CfO was associated with higher SA in the 7th and 9th grade, but no association was found in the 8th grade. Therefore hypothesis 2 was also largely supported.

Longitudinal regression analyses found no connection between current CvO and future SA, indicating no support for hypothesis 3. However, a longitudinal connection was found between higher 8th grade CfO and higher 9th grade SA, but not between 7th grade CfO and 8th grade SA, indicating partial support for hypothesis 4.

The cross-sectional effect sizes of connections between CvO and SAS-A were not statistically significantly different from the effects sizes of connections between CfO and SAS-A. Longitudinally, only CfO's connections to SAS-A reached significance while CvO's connections to SAS-A did not. Thus, cross-sectional results indicated no support for hypothesis 5, while longitudinal results indicated the reverse of it.

An additional exploratory analysis found no difference in adolescent-parent estimate discrepancy between adolescent-parent dyads with a high SA adolescent and those with a low-SA adolescent.

4.1. Family Communication Patterns and Social Anxiety

The most consistent evidence for RFCP – SAS-A links came from cross-sectional upper and lower quartile mean comparisons and intra-grade zero-order correlations. Most correlations and quartile group comparisons were significant, and even non-significant connections were all in the direction predicted by prior research of lower CvO and higher CfO being associated with higher levels of phenomena conceptually close to SA (Schrodt et al., 2008).

Unlike in prior research, where CvO has quite consistently been more strongly linked to SA-related phenomena than CfO (Schrodt et al., 2008), no statistically significant differences were found between CvO–SAS-A and CfO–SAS-A correlations. For example, Avtgis's (1999)

findings of RFCP's links to unwillingness to communicate (with CvO's links to it stronger than CfO's) used a measure called the Unwillingness to Communicate Scale (UTC; Burgoon, 1976) consisting of two dimensions: communication reward and approach-avoidance. The UTC communication reward dimension, despite its name, largely taps elements of how suspicious the respondent is of others' communication intentions (e.g. "*I don't think my friends are honest in their communication with me*") and frequency of communication (e.g. "*my friends and family listen to my ideas and suggestions*"), and is thus quite different from SAS-A items or indeed the core of what constitutes SA. Communication reward's correlation to CvO was $r = .50$, and to CfO $r = -.17$. The other UTC dimension, approach-avoidance, does include more SA-relevant items (e.g. "*I am afraid to express myself in a group*", "*I talk less because I'm shy*"), but doesn't cover the breadth of the SA phenomenon as widely as SAS-A's dimensions do (e.g. fear of negative evaluation). Approach-avoidance's correlation with CvO was $r = -.25$ (meaning less avoidance predicted higher CvO), and no significant correlation with CfO was found. Thus, present thesis results suggest that for SA specifically, in contrast to the variables merely conceptually close to SA studied earlier, connections to CvO and CfO are similar in terms of their effect size, though the directions of CvO being connected to lower SA and CfO to higher SA were as predicted by prior literature with variables conceptually close to SA. Differences in utilized measures' item specifics are a potential explanation for these result discrepancies between studies. Another possible explanation for CvO not attaining a larger connection to SA in the present thesis is cultural differences, as prior research has not explored this topic with Finnish samples. Finally, prior studies were largely performed on adults, so participant age differences may also explain differing results.

Longitudinal between-grades regression analysis provided less consistent results than cross-sectional examinations. Neither 7th grade CvO nor CfO significantly predicted 8th grade SAS-A. CvO did approach significance in the predicted direction in the polynomial model though (at $\beta = -.159$, $p = .086$), indicating the sample size may merely have been inadequate for this connection to reach significance, especially with the 7th to 8th grade SAS-A autocorrelation predictably accounting for much of the variance. For the 8th to 9th grade regression analysis however, CfO and its cubic term did predict 9th grade SAS-A with an overall positive trend (i.e. higher CfO indicating higher SA), but very low and very high CfO scores deviated from this pattern in the opposite direction (i.e. higher CfO indicated lower SA). The cause of this non-linear relationship is unclear, and may be spurious, potentially resulting from the data outliers visible in the upper left and lower right sections of Graph 3. Should this non-linear relationship reflect actual patterns between the variables, it could indicate that higher

parental expectations of conformity may not always be detrimental. This possibility bears some resemblance to findings regarding the parenting styles described by Maccoby and Martin (1983), in which some parental demandingness (a construct somewhat similar to CfO) is considered beneficial when combined with appropriate responsiveness to child needs. This parenting style combination of high demandingness and high responsiveness is called "authoritative" and was linked to positive child outcomes like assertiveness and self-reliance, whereas an "authoritarian" style, meaning high demandingness but low responsiveness, was linked to negative child outcomes like withdrawn behavior. In theory then, CvO and CfO could similarly interact with each other, but their interaction term was not significant or meaningfully change any results when added to the regression models predicting SA in the present thesis, and thus no support for such an interactive relationship between CvO and CfO was found. Furthermore, this explanation could only have potentially explained why high CfO scores may have been non-detrimental, and would not have elucidated the results for very low CfO lowering SA, nor would it have explained why CfO's linear relationship to SA was quite consistently positive. Thus this non-linear relationship should be considered highly tentative and be studied further.

To summarize FCP–SA association findings, the constructs appear linked as per the cross-sectional and longitudinal connections, mirroring prior studies of RFCP links to constructs conceptually close to SA (e.g. Schrodt et al., 2008). However, to the author's knowledge this thesis was the first study to examine RFCP links to a well validated SA-measure for clinical SAD research (the SAS-A; Tulbure et al., 2012) and thus provides important support for this relationship. Another contribution of the present thesis to existing SA and SAD-literature are the longitudinal regression analysis results that indicate higher current CfO is linked to higher future SA even when controlling current SA, which provides stronger support for the hypothesis of higher CfO causing higher SA than cross-sectional results do. However, due to the non-experimental design this conclusion should still be considered tentative. The same causal connection may be true for CvO, as it's link to SA approached significance. Potential alternative pathways, most notably the reverse causal direction of SA affecting CvO and CfO, remain a possibility.

4.2. Study Strengths, Limitations and Future Research Recommendations

The strengths of the present thesis include being the first study to examine FCP connections to SA using a validated SA measure, the SAS-A, and clarifying the cross-cultural generalizability of prior RFCP-related findings via a Finnish sample. The sample also represented the population of 7th to 9th grade adolescents well, enhancing external validity. Examining longitudinal connections provided important tentative data about potential causal connections. Including both adolescent and parent estimates revealed their differences and thus highlighted the importance of measuring family constructs from all involved. Finally, the sample size was large enough to test most hypotheses with reasonable precision.

Study limitations, which future studies should seek to remedy, also include the sample size, which became somewhat small for upper and lower SAS-A quadrant analyses, especially for parents due to their lower participation rate. This may also skew parent results, as tendency to respond could correlate with studied variables. Another limitation was using the shortened 10-item Finnish version of the RFCP, which makes direct comparison to prior study results using the longer scale somewhat less reliable, though the smaller scale's item selection was based on psychometric properties (i.e. maximal factor loadings). Some semantic flaws were also detected in the Finnish translation of the RFCP, (See appendix A; e.g. one item had shifted referent, with the original English stating "*I think my child really enjoys talking with me…*", while the Finnish [back translated] statement had become "*I really enjoy talking with my child…*"). Lacking an experimental design means the causal conclusions even from longitudinal RFCP–SAS-A results are tentative. Ideally, causality would be investigated with an intervention aimed at changing family FCP levels and using follow up measurements, assuming sufficient evidence arises regarding what desired communication patterns in the family look like (e.g. if the current picture of higher CvO and lower CfO being beneficial withstands scrutiny, both for SA and other important child and adolescent psychosocial outcomes). A fuller family-wide analysis of how both parents (as opposed to just one, as in the present thesis) and possible siblings of SAD-affected adolescents estimate FCP, with comparison to non-clinical families, could provide further insights into potential FCP perception biases. Study replication with younger children would also be valuable, as developmental period may influence which SAD risk factors are most salient. To better estimate RFCP variables' independent role in the larger context of SA and SAD development, statistical models simultaneously investigating RFCP and other suspected risk factors should be utilized.

4.3. Conclusions

The present thesis provided support for prior findings of FCP links to SA-related phenomena and confirmed the links remain when utilizing a validated SA instrument for adolescents. Specifically, lower CvO and higher CfO were cross-sectionally linked to higher SA. For CfO but not CvO, longitudinal examination tentatively supported the hypothesis FCP may be causally connected to SA, though further research is necessary for both CvO and CfO. Contrary to expectations from prior research, CvO was not more strongly connected to SA than CfO was.

More broadly, these results contribute to SA and SAD literature by extending earlier findings regarding SA's association with parental variables to family communication patterns between parents and offspring, i.e., the degree to which the family environment encourages all members toward unrestrained interaction (CvO) and the degree to which the family environment emphasizes the importance of shared beliefs and values, and conflict avoidance via obedience to parents (CfO). CfO bears most resemblance to the previously identified SAD-related parenting behaviors of overprotection, overcontrol, and limiting autonomy. CvO isn't quite as directly comparable to known SAD-related parenting factors, but the lack of open and positive sharing that low CvO signals could be connected to parenting styles containing parental rejection, criticism, or low emotional warmth, and could also indicate an insecure child attachment style. Further study of FCP in relation to SA and SAD development and persistence is thus warranted, particularly in conjunction with known risk factors.

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6. APPENDICES

APPENDIX A. Original English and translated Finnish wordings for the 10 RFCP parent and child items used in the present thesis.

CvO Adolescent Finnish	CvO Adolescent English	CvO Parent Finnish	CvO Parent English	CfO Adolescent Finnish	CfO Adolescent English	CfO Parent Finnish	CfO Parent English
Kerron vanhemmilleni, mitä mieltä olen asioista	I usually tell my parents what I am thinking about things.	Lapseni kertoo minulle avoimesti, mitä mieltä on asioista	My child usually tells me what s/he is thinking about things.	Vanhempani sanovat jotakin sellaista kuin " lasten ei tulisi väittää vastaan vanhemmilleen"	My parents often say things like “A child should not argue with adults.”	Minusta lasten ei tulisi väittää vastaan vanhemmilleen	I often say things like “A child should not argue with adults.”
Minulla on vanhempieni kanssa pitkiä ja mukavia keskusteluja, vaikkei mitään erityistä olisikaan	My parents and I often have long, relaxed conversations about nothing in particular.	Meillä on pitkiä ja mukavia keskusteluja, vaikkei mitään erityistä asiaa olisikaan	My child and I often have long, relaxed conversations about nothing in particular.	Kun kyse on jostakin tärkeästä, vanhempani olettavat minun tottelevan kyselemättä	When anything really important is involved, my parents expect me to obey without question.	Kun kyse on jostakin tärkeästä, oletan lapseni tottelevan kyselemättä	When anything really important is involved, I expect my child to obey me without question.
Minusta on todella mukava keskustella vanhempien kanssa vaikka olisimmekin asioista eri mieltä	I really enjoy talking with my parents, even when we disagree.	Minusta on todella mukavaa keskustella lapseni kanssa, vaikka olisimmekin asioista eri mieltä	I think my child really enjoys talking with me, even when we disagree.	Meillä kotona kanhempani saavat aina sanoa viimeisen sanan	In our home, my parents usually have the last word.	Minusta vanhempien tulee sanoa ”viimeinen sana”	In our home, the parents usually have the last word.
Puhumme perheen kesken asioista, joita päivän aikana on tapahtunut	We often talk as a family about things we have done during the day	Puhumme asioista, joita päivän aikana on tapahtunut	We often talk as a family about things we have done during the day	Vanhempieni mielestä on tärkeää, että he määräävät perheemme asioista	My parents feel that it is important to be the boss.	Minusta on tärkeää, että vanhemmat määräävät perheen asioista	I feel that it is important for the parents to be the boss
Puhumme perheen kesken tulevaisuuteen liittyvistä suunnitelmista ja toiveista	In our family, we often talk about our plans and hopes for the future.	Puhumme perheen kesken tulevaisuuteen liittyvistä suunnitelmista ja toiveista	In our family, we often talk about our plans and hopes for the future.	Vanhempani ärsyyntyvät siitä, etten ole heidän kanssaan samaa mieltä	My parents sometimes become irritated with my views if they are different from theirs.	Ärsyynnyn, ellei lapseni ole kanssani samaa mieltä	I sometimes become irritated with my child's views if they are different from mine.