The Fifth Croatia Stuttering Symposium: Part III. Mental Health and Early Stuttering

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Abstract

Purpose: The Fifth Croatia Stuttering Symposium of 2022 continued the Fourth Croatia Stuttering Symposium 2019 theme of the connection between research and clinical practice. At the 2022 Symposium, there were 145 delegates from 21 countries. This paper documents the contents of the third of three Symposium modules.

Methods: The module topic was mental health and early stuttering, and that pre-schoolers who stutter are at risk of developing mental health issues. A clinical situation was considered where a parent of a 3-year-old child asked a clinician what the early signs of mental health issues might be for a child who stutters.

Results: A distinguished scholar presented a 5-minute video interpretation of research about this topic. Three master clinicians then each presented a 2-minute video demonstration of how that research might be applied in a clinical situation. Following that, the convenors moderated a discussion between the distinguished scholar, master clinicians, and delegates regarding the research and how it applies to clinical practice.

Keywords: stuttering; symposium; treatment; issues

1. Background

The Fifth Croatia Stuttering Symposium was held entirely online in October, 2022. As with all prior Croatia Stuttering Symposia, an overarching theme was the connection between research and clinical practice. The format of the event was a weekly 2-hour module for 3 weeks. There were 145 delegates from 21 countries. As with all prior Symposia, the purpose was to unite researchers and clinicians in a discussion of how the research evidence base of our discipline informs clinical practices.

For each module, a distinguished scholar presented a 5-minute video overview of research focused on a contemporary clinical issue with early stuttering. Then, for each module, three master clinicians presented a 2-minute video demonstration of how that research finding might be applied to a clinical situation. Finally, the Symposium Convenors (Robyn Lowe, Suzana Jelčić Jakšić, and Mark Onslow) moderated a discussion between the distinguished scholar, master clinicians, and delegates regarding the research and how it applies to clinical practice. Details of the third and final module are presented in Table 1.

Table 1. Details of Module Three

Module Topic	Clinical Situation	Distinguished Scholar	Master Clinicians
Pre-schoolers who stutter are at risk of developing mental health issues	Parents of a 3-year-old child asks what the early signs of mental health issues might be for their child who stutters	Marie-Christine Franken (Netherlands)	Anna Hearne (New Zealand) Irma Uijterlinden (Netherlands) Kurt Eggers (Belgium)

This report of the third module of the Symposium provides transcripts of the distinguished scholar presentation and the three master clinician videos. Each transcript includes a brief exchange with the convenors. Finally, there are some concluding comments by the convenors and the scholars and clinicians. As with our documentation of the Fourth Croatia Symposium (Lowe et al. 2021), our intention here is to document as closely as possible the content, tone, and spirit of the third of the three modules presented.

2. Module Topic: Pre-schoolers who stutter are at risk of developing mental health issues

2.1 Transcript of presentation distinguished scholar Marie-Christine Franken

The first study I have selected is Kefalianos, Onslow, Ukoumunne, Block, & Reilly (2014.) It measured several temperament characteristics of 183 children and 1,261 control children, studied in the Early Language in Victoria Study [Reilly et al., 2013], a community cohort study. At ages 2, 3, and 4 four years, data on the temperament measures "approach" and "easy-difficult temperament" were collected, which are considered precursors of anxiety. The authors concluded that pre-schoolers who stutter did not have innately different temperaments from control children. Results suggested, at most, that behaviours influence temperament somehow during the period after stuttering onset.

Study number two. Recently, Koenraads, Jansen, Baatenburg de Jong, van der Schroeff, & Franken (2021) analysed temperament and behaviour data starting at age 6 months until age 9 years in "Generation R", also a community cohort: 145 children had a history of stuttering, 118 recovered from stuttering, and 27 persisted; 3,276 children did not have such a history. Three significant results were found. First, children with a history of stuttering showed more negative affectivity at 6 years of age than children without such a history. Second, 6-month–old infants who were less able to recover from distress (indicating poor self-regulation) were more likely to persist in stuttering. Third, stuttering persistence at age 9 was associated with higher emotional reactivity and increased internalising behaviours at age five and age nine compared with controls.

Study number three. Park et al. (2021) presented psychological characteristics of almost 400 pre-school children whose parents were seeking treatment. Therefore, this is a clinical cohort of pre-school children who stutter. The authors concluded that the population of pre-schoolers who stutter have no unusual psychological profiles. Their results suggested that the well-known association between mental health and stuttering later in life is a consequence of the disorder rather than being a part of its cause. In addition, the study found that 53% of parents were at a moderate to very high

risk of stress. Interestingly, it was also found that about half of the 336 parents failed the screening for obsessive compulsive personality disorder.

Study number four. Ambrose, Yairi, Loucks, Seery, & Throneburg (2015) measured extroversion, negative activity and effortful control, in a study with 58 two to four-year-old children who stutter and 40 controls. Thirty-nine children recovered and 19 persisted in stuttering. The children had been identified through a recruiting campaign. Therefore, it was not a community-based cohort, but neither a clinical cohort. The sample only included children within 12 months of stuttering onset before the first visit. It was found that children who persisted in stuttering had been judged by their mothers to be more negative in temperament at visit one, closest to the onset of stuttering. Can we translate this to treatment? RESTART-DCM treatment supported by a randomized clinical trial addresses emotional reactivity and regulation.

As study number five, I have selected a recent experimental study published by Druker, Mazzucchelli, & Beilby (2019). It explored the effects of addressing self-regulation as a component of pre-school stuttering treatment. A parent-administered resilience component in conjunction with stuttering therapy was compared with stuttering therapy only. Twenty-eight children who stuttered were randomly allocated to one of the two treatment groups. Results showed that stuttered speech severity decreased in both treatment groups. However, a reduction in behavioural and emotional problems, and increased resilience, was only observed in the treatment arm in which parents had received the additional resilience component of therapy. Parenting practices had shifted and behavioural resilience in children who stutter had increased.

My take home messages, based on the previous five research studies are: (a) Pre-schoolers who stutter with higher negative affectivity and lower self-regulation appear at risk for persistent stuttering, (b) pre-schoolers who persist in stuttering are at risk of developing mental health issues, and (c) negative affectivity and self-regulation ability warrant attention in treatment, especially if a pre-school child does not respond to early intervention.

2.2 Moderator discussion with Marie-Christine

Moderators: Is it true to say then that, based on your reviewed studies, there are no signs of mental health issues before stuttering onset?

Marie-Christine: Yes, and no. I agree that I did not find any evidence that stuttering onset is related to emotional or behavioural problems at infant or toddler age (before the onset of stuttering). However, one research finding suggested a relationship between the ability to self-regulate at infant age and persistency of stuttering.

Moderators: So, that seems straightforward, at least based on the research you reviewed. Mental health issues are not involved in stuttering causality in the sense that they are there before onset. But personality can influence the disorder after onset. Do we have that right?

Marie-Christine: Before I answer this question, how do you define personality?

Moderators: In short, the interaction between temperament and environmental experiences.

Marie-Christine: I think that both temperament and personality can influence the frequency and severity of stuttering after onset. In addition, the experience of stuttering can influence personality.

Moderators: So, obviously a working model of stuttering involves temperament and personality after onset. But a causal model of stuttering would include neither temperament nor personality. Is that correct?

Marie-Christine: Yes. Based on the current evidence, I think that is correct.

Moderators: So how would you summarize the application of that information to clinical practice with early stuttering?

Marie-Christine: The child's temperament is a relevant factor in clinical practice with early stuttering: (a) the child's temperament may be related to stuttering severity, and this needs to be assessed; (b) if a child shows high negative affectivity and low self-regulation, this needs be taken into account as a risk factor for persistent stuttering when deciding to postpone treatment or not, (c)

during treatment, temporarily adapting the environment to the child's temperament may be needed to decrease stuttering, and (d), if a pre-schooler does not respond favourably to treatment, it is essential for that child and parents to learn to tolerate stuttering. It is essential for these children to develop a positive communicative attitude and satisfactory participation in communication to prevent development of mental health issues as a teen or an adult.

3. Clinical situation: Parents of a 3-year-old child ask what the early signs of mental health issues might be for their child who stutters

3.1 Transcript of video demonstration by master clinician Anna Hearne

Father: I have read about it and found that adults who stutter can develop mental health issues. What are the early signs of that with 3-year-olds like my child?

Anna: That's a really great question, and it's so important for us to spot those early signs of children reacting to their stuttering because if they go undetected, it does have the potential to make the stuttering worse. Sometimes the signs are really easy to spot. Some kids will talk about it, and they will say "Daddy, I can't say that". Or you might notice physical tension, like clenching their fists or stomping their feet to get the words out.

Those things are not necessarily signs of anxiety as such, but they do show a reaction to the stuttering. The great thing, though, is that as a parent, you're in the best position to spot even the really subtle signs that there's a reaction going on, such as her avoiding eye contact or avoiding certain situations that she used to talk in happily, especially maybe with unfamiliar people. You might also notice that the way she talks changes, and she says shorter sentences than she used to or is capable of. And those are the signs that we need to keep track of if those signs are there. We need to have a conversation with her about her stuttering to make sure she's not worried about it. And that is a really simple conversation to start with. Something like "Did you know that really clever kids, when they have a lot to say and lots of words in their mind, sometimes those words get stuck on the way out. Does that sometimes happen to you?", and then take it from there. The last thing I

would say about spotting these early signs in kids is that kids are very, very perceptive. And so, if you're feeling at all worried about her talking, those feelings can sometimes spill over onto her. So, it's a really good thing that you've come to see me today.

3.2 Moderator discussion with master clinician Anna Hearne

Moderators: You dealt with watching out for signs about fear conditioning emerging. But how would you deal with the process of fear conditioning that might be occurring that can't be observed?

Anna: No one can detect a process that can't be observed. However, given that I know it might be happening, the best thing I can do is sensitize the parent and other adults, such as educators, carers, and teachers, to its possible consequences. I want to make sure that parents trust their sense of whether their children are worried and feel they can talk about it.

Moderators: What would you say to a parent about preventing negative fear conditioning occurring with early stuttering?

Anna: The best chance to prevent fear conditioning is to ensure that the adults who are interacting with the child know how to respond to a child who stutters and are keeping an eye on any reactions from peers. Also, the child themselves needs an age appropriate explanation of what is happening to their talking.

Moderators: This seems to imply that you would take a monitoring approach and deal with fear when it emerges. Are there any direct preventative measures that you would use to prevent fear developing in the first instance?

Anna: No, I disagree with that implication. I am doing my best to prevent fear by ensuring all important adults are well informed about how to respond to the child. It is impossible to control all of the child's peers. And sensitizing the child to others' reactions and how to ignore them, or react to them, may in itself cause fear.

Moderators: We had in mind that a treatment to stop stuttering, if successful, would prevent fear conditioning.

Anna: Yes. I agree. It would prevent the fear conditioning in relation to stuttering. However, while the treatment is happening, and the stutters are still present, the other measures still need to be in place.

Moderators: And do you think it is a realistic prospect that a treatment could stop early stuttering?

Anna: Yes. This is what the research tells us. Natural recovery is probably happening in the background as well, but treatment has been shown to speed the process up for many children. In addition, it is worthwhile to engage in early intervention for all the education about stuttering that it provides to parents.

3.3 Transcript of demonstration by master clinician Irma Uijterlinde

Mother: I have read about it, and I found that adults who stutter can develop mental health problems. What are the early signs of them with 3-year-olds like my child?

Irma: That's a good question. We know that some adults who stutter have mental health issues. And we also know that young children don't have issues like that. I'll tell you more about that later. Let's talk about Jason, your son. You're told that he was talking to his grandmother. He was shocked by his stuttering, and he stopped talking, and. . . well, it's logical. That could be a very small sign of early mental health problems. It's logical that he was shocked by his stuttering, and we would like him to keep on talking. We would give him the message “Hey, it's okay. Stuttering happens sometimes, but it's no big deal. We keep on listening and just try again.”

So, it's very important to look at these early signs of mental health issues. And those signs can be things like withdraw from the communication and avoid certain words that gave some trouble in the past or forwards to talk to some people or and some children do have some clownish behaviour or use voices to divert your attention from their stuttering. And also, some children have physical signs

like stomach ache when they have to go into a situation that they have to talk, or even toilet problems, or sleeping problems. And some children may experience that. Other children don't have the patience to wait, to keep on listening. And then sometimes the child can say “Mommy, I don't want to go to day care anymore because Katherine doesn't listen to me” or even something like “I mean, I don't want to go because I can't talk.” So, yeah, those are the signs that we really have to be aware of.

3.4 Moderator discussion with master clinician Irma Uijterlinde

Moderators: You said that these “could be a very small sign of early mental health problems”, “shocked by his stuttering and stopped talking”, “stomach ache”, and “toilet problems or sleeping problems”. They seem more than that.

Irma: Those problems are a small minority. In the two children I saw this year with stuttering and sleeping/toilet problems, I believe that their constitution of being very sensitive and anxious was underlying. In one of the children, the parents told that the onset of his stuttering and his constipation were at the same time as his toilet training.

Moderators: Is there any empirical reason you know of to link temperament, physiology, and stuttering onset?

Irma: To date, this year, I assessed 32 children, 2–6 years old with stuttering. For eight of them, the parents reported a physical issue: three with constipation; one with a serious gastrointestinal problem, revealed with endoscopy; two with sleeping problems; and two with asthma. Four of these eight children continued to stutter until now. They also show negative affectivity and emotion-regulation problems. So, I would say *yes* there is an empirical reason to link temperament, physiology, and stuttering onset in this minority of the total number of children with stuttering. The stuttering did not cause the physical problems, I think, but somehow the presence of predisposition for stuttering, temperament, and the physical problems lead to the onset of stuttering.

Moderators: So, to bring it back to risks of developing mental health issues during early stuttering, what clinical advice would you give to junior clinicians about how temperament and constitution would fit into clinical practice?

Irma: Look carefully at every particular child and every family. Ask the parents how their child reacts to its stuttering and to other things in life that are difficult for the child. Does the child struggle? Is the child scared by stuttering, tending to hold back, stopping talking? Is there a family history of mental health problems or high sensitivity? Whatever kind of stuttering treatment you choose, your basic task as a clinician is to teach the child and family to deal with things in life that are difficult. How to handle this loss of control. We want the child to grow up as a mentally healthy individual, and we want to empower parents in their role.

Moderators: So, if the treatment you chose for a child brought stuttering under effective clinical control, would a clinician still need to teach the child and family to deal with things in life that are difficult?

Irma: No. Unless you are also a life coach. When the stuttering is at acceptable levels (zero or almost zero stuttering, or the best level we can reach for), we empower the parents to keep the stuttering at that level. By then, the parents know how to handle things that are difficult, like relapses in stuttering, so they can support their child in a helpful way. And in case of doubt, they can always contact us.

Moderators: And what would you say the chance is of attaining no stuttering or nearly no stuttering for the average pre-schooler who stutters?

Irma: For the average pre-schooler who stutters (with no comorbidity) I would say that the chance of attaining no stuttering or nearly no stuttering is 70–80%. In the remaining group of 20–30%, most of the children reach a low level of stuttering, which does not bother them or their families. Only in a few cases, the stuttering remains high. These children receive therapy during

primary school, and the therapy goal is managing the stuttering in a way that the child can develop itself in the best way with his stuttering.

3.5 Transcript of video demonstration by master clinician Kurt Eggers

Parent: So, I have read about it and found that adults who stutter develop mental health issues. So, what are the early signs in 3-year-olds like my child?

Kurt: And what exactly do you mean by mental health issues?

Parent: Well, anxiety, depression, and low self-esteem I think are the major impacts.

Kurt: Well, there's not that much research that follows up children into adulthood. But we see that some children react very strongly to their moments of stuttering or to the listener reactions they're getting. So, they may become easily frustrated or annoyed. Other kids might stop talking. Still we have some children who do not react at all to their moments of stuttering. So, there is a difference in their reactions.

Parent: Okay. And when you say listeners' reactions, what do you exactly mean?

Kurt: Yes. I mean, reactions of the direct environment. So that's you, father, grandparents. When a child becomes older, it's his peers, or his teachers, for instance. Remember the questions I was asking: “How do you react when he stutters? What do you do to help him? How do his grandparents react?” Give's me some idea about listener reactions. But I also ask things like “Do you like talking to your son?” because it gives me some idea about his speaking attitude.

Parent: OK. And are there other aspects that are important?

Kurt: Well, it's how a child reacts that is actually quite, quite important. Some kids have short moments of stuttering and react very strongly. Others have short moments of stuttering and hardly react, or vice versa. So, it's actually how much attention a child puts towards his moments of stuttering, how much he focuses on it, or how easily he gets frustrated in certain situations. So, it's about how easily he gets conditioned. And it's not the pattern just related to stuttering. Remember

the question I was asking when he's building a tower with the Lego blocks, and it falls down: “How does he react?” So, it gives me some idea about his temperamental pattern.

Parent: So, do you think that child's temperament plays a role in this?

Kurt: We do know that temperament is basically how we're programmed, how to react in certain situations. And we know from studies in older children that children who are more easily frustrated, who are less extroverted, or what we call have somewhat less self-regulation, have a higher likelihood of developing anxiety or depression related symptoms, or a stronger impact of stuttering on the day-to-day life.

Parent: OK, that's clear. Thank you.

3.6 Moderator discussion with master clinician Kurt Eggers

Moderators: What were you planning to do with information about the child’s temperament?

Kurt: Temperament is how we are programmed to react in certain situations. Some children have only short or few moments of stuttering and react very strongly to them, while others have many but react less. This is related to how much a child focuses or puts attention on his moments of stuttering, or how easily he reacts fearfully or becomes frustrated. We know from studies in older children that children who are more easily frustrated, less extrovert, and who are less able to—what we call—“self-regulate” can experience more anxiety, depression-related symptoms, and a greater impact of stuttering.

Moderators: How does this information inform how you manage a child in your clinic who stutters?

Kurt: During the assessment, we try to gain insight into which factors (child-related or environmental) play a possible triggering role for each child. For some children, this is easier than for others. If interviews, parent questionnaires, and/or observations show that children react strongly to their stuttering or certain communicative situations (in other words, these get more negatively conditioned), this is one of the aspects that can be addressed in therapy. Decreasing this

reactivity can be achieved by providing children insight into their stuttering, desensitizing them to the moments of stuttering and triggers, and working with the parents to co-regulate children's reactions.

Moderators: For the strategies involving helping a child to gain insight about their stuttering and desensitization, can you describe what this entails and for what age would you use this approach?

Kurt: With younger pre-schoolers, we educate parents about the aetiology and development of stuttering, and the role of environmental factors. We train parents to recognize and address stuttering-triggering situations and co-regulate their child's responses to those situations. With older pre-schoolers, we discuss stuttering: different moments of stuttering, what happens during a moment of stuttering, and how to react. We desensitize children toward stuttering by modeling voluntary stuttering in games and spontaneous speech. The goal is to decrease or prevent the development of negative reactions and work towards, and maintain, a positive communication attitude.

Moderators: So that seems to be a treatment additional to those for which there is randomized trial evidence. Do you favour such a treatment because you are apprehensive about the existing clinical trial evidence for RESTART-DCM, the Lidcombe Program, and the Westmead Program?

Kurt: Theory-driven approaches, required for complex interventions, are more likely to be effective, sustainable, and scalable. The discussed principles such as cognitive restructuring, desensitization, and parental co-regulation (a) tap into well-researched aetiological models of stuttering, (b) have proven efficiency in related domains, and (c) have a fair amount of practice-based evidence in stuttering treatment. Moreover, they are embedded in several evidence-based programs for which they are likely the common mechanisms for change (e.g., Palin PCI, RESTART-DCM).

Moderators: Are you able to give an indication of the efficacy of the method you outline compared to that of RESTART-DCM, the Lidcombe Program, and the Westmead Program?

Kurt: It is not a specific method but rather the application of well-established cognitive behavioural principles to stuttering intervention. Based on our own clinical experience and that of many colleagues, this approach results in a considerable decrease in stuttering severity (i.e., physical concomitants, duration, and frequency) and functional impact, as well as improved communication attitude, in a similar frame as the cited programs. Moreover, because it is not a fixed program, it allows the treatment to be tailored to specific client/family values, needs, and preferences.

Moderators: Is a treatment manual currently available?

Kurt: There is no single comprehensive manual regarding the application of these principles to stuttering. Cognitive restructuring and desensitization have been described extensively in the psychological literature, as well as the application to stuttering (see various articles and book chapters [references not included]). Working with parents to address children's emotion regulation, described in detail in the temperament literature, was, for instance, the topic of recently developed videos for the Stuttering Foundation.

4. Concluding comments

4.1 Concluding comments from the Moderators

Clinical translation of the evidence for the topics of Symposium Modules One (Onslow et al., 2023a) and Two (Onslow et al., 2023b) were influenced by limitations about the quality of the research concerned: randomized trials of early stuttering and natural recovery from early stuttering. In this case, the issue appears to be conflicting research results. Four of the five empirical reports selected by our scholar do not at all provide a consistent picture. One report (Park et al., 2021) reported no unusual psychological features of children with early stuttering, and another (Kefalianos et al., 2014) found no differences in temperament between stuttering and control pre-schoolers. Yet another report (Koenraads et al., 2021) conveyed contrary information: stuttering 6-year-olds showed temperament differences from controls, and those temperament differences were

associated with persistent stuttering and recovery from stuttering. Another report by Ambrose et al. (2015) reported temperament to be associated with persistent stuttering. It seems reasonable to assert that our scholar's selection of papers conveys a research field that is in its nascent stages and, as such, is difficult to translate clinically as yet.

Two clinicians were completely pragmatic in their clinical responses, and perhaps this was underpinned by an inconclusive data base about the psychology of early stuttering. One clinician pointed out that it was not surprising that a child might have a severe emotional response to stuttering, and they stressed the need to empathize with and support a child during such experiences. In outlining to a parent what might occur, that clinician (presumably) drew on an extensive body of research documenting children's responses to early stuttering. A second clinician also outlined the need for empathy with, and support for, the child, making the important point that any anxiety parents might feel about their child's stuttering could impact on the child. That clinician also made the important point that regardless of whether early intervention can stop moments of stuttering from occurring—a contentious matter dealt with during Module One—all children with early stuttering will experience them for some time and need support accordingly.

A third clinician focused immediately on temperament when responding to the parent and, during our discussions, indicated that standard treatment would be cognitive behaviour therapy (CBT), incorporating established components of that treatment method: psychoeducation, responses to stuttering moments that might trigger anxiety, and exposure (using voluntary stuttering). The clinician argued correctly that there was a comprehensive body of evidence in favour of those strategies that is more compelling than existing randomized trials of early stuttering intervention with RESTART-DCM, the Lidcombe Program, and the Westmead Program. This clinician's position is consistent with our scholar's view that "negative affectivity and self-regulation ability warrant attention in treatment". It is also consistent with one of our clinician's views expressed during Module Two (Onslow et al., 2023b).

We venture, though, that this clinical stance has some professional implications. It revisits an issue that emerged during the Fourth Croatia Stuttering Symposium (Lowe et al., 2021): should speech-language pathologists attempt CBT? On the face of it, that treatment lies in the domain of clinical psychology rather than speech-language pathology. The consensus with the Fourth Symposium was that, yes, speech-language pathologists should learn basic CBT techniques and implement them for stuttering adults as needed. That conclusion was buttressed with reference to safety standards provided by newly developing, standalone internet CBT treatments for adults who stutter. However, CBT for pre-schoolers seems to be a different matter altogether. Surely, it is not a simple matter of once you learn the basics of CBT for adults you have learned them for pre-schoolers. As was made clear during the Fourth Symposium in the case of adults, speech pathologists need basic training in anxiety management for pre-school children and have a responsibility to refer families to a clinical psychologist if needed. Considering the risk of lasting mental health issues associated with stuttering, this is a pressing professional issue for our discipline, to say the least.

Based on the assumption that early stuttering moments contribute to the lasting psychological problems associated with stuttering, it is of interest that two of our clinicians ventured during discussion that it is a realistic evidence-based prospect that early intervention could stop or nearly stop early stuttering, even if the mechanism involves interaction with natural recovery, as considered during Module One (Onslow et al., 2023a). One clinician even went as far as suggesting that the success rate could be somewhere close to 100%. Naturally, based on the content of Module One, that seems to be a controversial position. And perhaps even more controversial is the prospect that, if it is true that early intervention controls early stuttering, that doing so would obviate any fear conditioning that might be responsible for the chronic mental health problems associated with stuttering. One clinician seemed open to that possibility.

Perhaps a fundamental issue underlying this Module Three exchange is whether psychological features of early stuttering, including temperament, might be included as necessary factors in a

causal model of stuttering, or whether they are simply an epiphenomenon: a consequence of stuttering. In the long term, the development and testing of causal models provides basic understanding of the disorder that informs communication with parents who come to clinics with stuttering pre-schoolers, and it provides a credible framework for proposed interventions. The discussion with our scholars elicited a view that a viable causal model of stuttering would not involve temperament and personality, which of course is one possibility. But another possibility is that anxiety proneness, including features of temperament, may be involved in a causal model, being one of the necessary and sufficient factors that, together, account for a potential lifetime of stuttering. Ten years ago, this issue was presented as one requiring empirical resolution (Kefalianos, Onslow, Block, Menzies, & Reilly, 2012), but that resolution still seems to be distant. For surely, such a viable causal model of early stuttering is needed for clinicians to be able to properly conceptualize, plan, and execute early stuttering treatment.

4.2 Concluding comments from Marie-Christine Franken

An up-to-date causal model of stuttering onset does not involve anxiety proneness, temperament, or personality. No evidence of these factors existing before stuttering onset has emerged so far. However, the number of studies addressing this topic are few, so we cannot yet be conclusive about this. But it does seem from other research that there is some connection between early stuttering and temperament. Moreover, parents and clinicians—including our current three master clinicians—commonly report a relationship between children's emotionality and stuttering severity: excitement, anger, frustration, and fear. So, although more research is needed about mental health and temperament in stuttering causality, available evidence warrants addressing the child's temperament in assessment and treatment of pre-school children who stutter to prevent mental health problems. In particular, temperament should be recognized as relevant in making decisions whether or not to delay early intervention, and in cases where a child does not respond adequately to treatment during the pre-school years.

4.3 Concluding comments from Anna Hearne

It is likely that a fully formed causal model of stuttering onset is many years away, while researchers determine whether temperament and anxiety proneness are part of this model. I would say, though, that it is universally accepted that in our clinics we see many children and their families for whom anxiety, fear, and avoidance are part of their experience of stuttering. The transcripts and dialogs between the clinicians and moderators at this Symposium show that each of us deals with this aspect of stuttering, regardless of any other treatment we use. For some of the clinicians, it is a standard part of treatment, and for others it is dealt with as needed. Ideally, a treatment for young children will lead to little or no stuttering. However, it is clear that clinicians, while they are treating stuttering, need to be mindful of early signs of anxiety in children and their parents so that they can counsel parents and implement strategies to target anxiety. Those strategies may include a referral to a clinical psychologist. Regardless of whether the stuttering resolves or not, it is crucial that the child establishes a positive attitude to communication.

4.4 Concluding comments from Kurt Eggers

Currently available data have documented that increased reactivity and decreased self-regulation are associated with stuttering, and these can play a crucial role, at least in some children, in the development and exacerbation of stuttering. I concur with Marie-Christine Franken that more studies are needed to increase our insights into the exact role of these processes, as well as their clinical applications (Jones, Eggers, & Zengin-Bolatkale, 2022).

What I believe to be important for the psychological impact of early stuttering is how children react to their moments of stuttering and to listener reactions: in other words, how easily negative conditioning takes place. Working with parents to address their worries and to support the child, encouraging openness in the family, and fostering a positive attitude to stuttering, will be key in any treatment trying to avoid or minimize long-term psychological impact (Eggers, Millard, & Yaruss, 2023).

Regarding the earlier statement about speech therapists attempting CBT. Speech therapy is an applied behavioural science focusing on interpersonal communication behaviour. Therefore, it seems logical that speech therapists should have a thorough knowledge of the underlying principles of behaviour change, including cognitive, affective, and behavioural aspects. Speech therapists should be able to adequately address incipient classical and operant conditioning processes in young stuttering children and should not have to refer to a psychologist for this purpose.

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