

Research Report

Taking the Reins: an exploration of the impact of Therapeutic Horse-Riding programs on challenging behaviours and social engagement for riders with ASD and other developmental disorders.

Authors:

Dr Rwth Stuckey & Natasha Kinsman
Centre for Ergonomics & Human Factors
School of Psychology and Public Health
La Trobe University

January, 2020

This research was funded by: Riding for the Disabled Association of Victoria; Joan Tonge Therapeutic Riding Association; Sport and Recreation Victoria, Department of Jobs, Precincts and Regions.

Executive Summary

The prevalence of autism spectrum disorder (ASD) is reportedly growing faster than any other disability (Australian Autism Alliance, 2016). In 2015 support to increase social participation was identified as where the need for greatest support for people with ASD was required (ABS, 2017). Children with ASD have comparatively lower self-identity and levels of participation than their peers and although interested in others, many struggle to develop and sustain friendships because of their social limitations (Bauminger and Kasari, 2000; Greene, 2004). They may also lack opportunity to explore their psychosocial skills and are often isolated, teased and bullied by peers (Green, 2004; White et al., 2006). Previous research has shown that therapeutic horse riding (THR) improves self-regulation and planning (Gabriels, et al, 2016; Atun-Einy & Lotan, 2017). A strong culture of participation and achievement in sport is prevalent in Australia however children aged 5-17 years with a disability and profound/severe core activity limitations are less likely than other children to participate in physical activities for exercise or recreational purposes (ABS, 2012). As the number of Australians identified with a diagnosis of ASD increases there is clearly a need for effective interventions which assist to reduce the significant individual, family and community impacts of difficult behaviours and other psychosocial challenges.

This study examined the perspectives of coaches and parents on the psychosocial benefits of children with ASDs and other developmental disorders participating in THR at Victorian Riding for the Disabled Association (RDA) programs. It explored the impact of THR on the ability to develop psychosocial skills and participate in other occupations including in other social environments and settings. As many children with developmental disorders who participate in RDA programs are not verbally articulate, this research explored their coaches' and parents' perspectives.

The qualitative research was based on semi-structured, in-depth interviews and purposive sampling to recruit ten coaches and ten parent participants. Sixty percent of the coaches and parents attended metropolitan RDA centres, and 40% attended regional centres. Eighty percent of the coaches had more than 8 years coaching in RDA programs. Coaches and parents were asked a range of questions relating to their perceptions of the child's experience of attending RDA sessions. Most of the children had been riding for more than 2 years. All interviews were undertaken by the research assistant who had no familiarity with the programs and participants, riders and RDA Centres were de-identified for analysis. The de-identified interview transcripts were coded using categories developed by the researchers, using a 'bottom up' approach. Thematic analysis was undertaken iteratively by both researchers using the framework proposed by Braun and Clarke (2006).

Most of the 20 interviews were up to 45 minutes long providing an extensive and rich data set. Participants provided many anecdotes that illustrated the profound and positive impact that RDA had

on their lives, and on the children. Themes were developed from the data set to encapsulate the impact of the RDA program on the rider, as well as their family and others. The themes were: *being acknowledged as an individual; developing a sense of self and belonging; changes to social conduct; challenging limits; rider motivation/playing the game; multiple therapies, and broader advantages.* Coaches and parents were also asked if there were any negative aspects of the RDA program, their responses resulting in a further four themes: *adverse impact of environment; limited RDA funding and resources; limited skills of some staff, and NDIS approvals.*

The data evidenced impacts in numerous psychosocial skills which were underpinned by the program activities and interactions with the horses, coaches, other volunteers and the environment. Children with autism and other developmental challenges who are highly motivated to participate in therapeutic activities during RDA, often choose to engage in THR in preference to other health therapies, and their engagement resulted in positive physical and psychosocial outcomes. Horse riding was reported as an extremely positive experience for the riders, providing coaches with opportunities to incorporate activities that facilitated multiple therapeutic benefits. Although the focus of RDA sessions is to gain horse riding skills, the therapeutic benefits were numerous, including positive impacts on: core strength, motor skills, speech, social skills and general improvements in desirable behaviours. Of particular note was the reported calming effect that horses had on the riders. The RDA sessions were reported by the parents as a cost-effective therapy, given the multiple therapeutic activities addressed within the programs.

While this study provides an evidence base for the benefits of THR for children with developmental challenges the findings can also inform other recreational interventions in terms of the value of motivation and pleasure to promote positive and beneficial outcomes. Although the horses are fundamental to the THR programs other elements were found to be equally important. These included the supportive engagement of volunteers, the community atmosphere, providing a safe space for riders and their parents to share, and the outdoor natural environment. Further important elements identified which are also transferrable to other recreational activities for children with ASD or other developmental challenges, are ensuring that all those involved in the program understand what having a developmental challenge means in practical terms and how to safely support, manage and accept challenging behaviours while providing a space with appropriate boundaries. These strategies can underpin a non-judgemental environment for both parents and participants and facilitate healthy social interactions and engagement. This is especially so, as with the RDAV programs, when activities are provided by personnel who are interested, caring and passionate about their program's aims and activities, and share a common understanding of approach, goals and values.

Background

One-hundred and sixty-four thousand Australians were diagnosed as having autism in 2015 (ABS 2016), around 1 in 150 people, and in 2018 this had increased by 25.1% to 205,200 (ABS, 2019). The prevalence of autism spectrum disorder (ASD) is reportedly growing faster than any other disability (Australian Autism Alliance, 2016). Results of a recent AMAZE, (the peak body for autistic people in Victoria), survey identified that 84.1% of the survey respondents thought that people with ASD are discriminated against. Forty-six percent of respondents stated they did not know how to support a person with ASD whilst 25% were unsure of their ability to do so (AMAZE, 2018). Of the people with ASD, over half felt socially isolated; 81.4% felt that people stared at them, 61.3% said community members shook their heads at them, and 63.6% thought that people went out of their way to avoid them. In 2015 support to increase social participation was identified as where the need for greatest support for people with ASD was required (ABS, 2017). Children with ASD have comparatively lower self-identity and levels of participation than their peers. Participation is essential to development of identity and involves deliberate and ongoing engagement within occupations meaningful or necessary to well-being (Kielhofner, 2008). Although interested in others, children with developmental disorders struggle to develop and sustain friendships because of their social limitations (Bauminger and Kasari, 2000; Greene, 2004). They may also lack opportunity to explore their psychosocial skills and are often isolated, teased and bullied by peers (Green, 2004; White et al., 2006).

The use of animals can provide a stepping-stone to learning how to interpret more complex human social behaviours, supporting the notion that bonds established between children with ASD and animals can aid development of essential relationship skills (Martin and Farnum, 2002). Previous research has shown that therapeutic horse riding (THR) improves self-regulation and planning (Gabriels, et al, 2016; Atun-Einy & Lotan, 2017). A pilot study conducted into the benefits of THR at a single RDAV centre found significant psychosocial benefits in fields including communication, socialization, and development of both a sense of self and relationships with others, and anecdotally that parents noted improvements in behaviours and life skills after attending regular riding sessions (Stuckey et al, 2014, unpublished).

A strong culture of participation and achievement in sport is prevalent in Australia; however, an ABS survey identified that children aged 5-17 years with a disability and profound/severe core activity limitations were less likely than other children to participate in physical activities for exercise or recreational purposes (ABS, 2012). As the number of Australians identified with a diagnosis of ASD increases there is clearly a need for effective interventions which assist to reduce the significant individual, family and community impacts of difficult behaviours and other psychosocial challenges. A

systematic review of the efficacy of equine-assisted interventions on psychological outcomes (Kendal et al, 2015) found associations between horse riding and improved motivation, social functioning and confidence. Riding for the Disabled Australia (RDA) is a global organisation providing horse riding for people with disabilities which “encourages active participation by its members regardless of their disability” (RDAA, n.d.). In 2019, RDA Victoria (RDAV) had around 1,013 registered riders, around 40% with autism, and 16% with multiple diagnosis and other conditions related to developmental disorders.

The importance of giving children with a disability a ‘voice’, especially those frequently socially marginalised, has been highlighted by researchers (Carpenter & McConkey, 2012). This is particularly pertinent in the case of children who are non-verbal and cannot answer questions.

This study aims to examine the perspectives of coaches and parents on the psychosocial benefits of children with ASD and other developmental disorders participating in RDA programs in Victoria, and the impact of this activity on their ability to develop psychosocial skills and participate in other occupations including at home and in other social environments and settings. This aims to address the significant gap in the provision of appropriate recreational activities for children with challenging behaviours and assist in the development of essential psychosocial skills to facilitate participation in a range of activities

Method

This study aimed to explore the impact of the RDAV THR program on the challenging behaviour and social engagement of riders with ASD or other developmental disorders. As many children with developmental disorders who participate in RDAV programs are not verbally articulate and are potentially vulnerable, this research explored their coaches’ and parents’ perspectives in order to give the children a ‘voice’. Carpenter and McConkey (2012) noted the difficulty of reporting the experiences of children who cannot actually answer questions, and the subsequent reliance in data analysis on researchers’ interpretations of these interactions. This combination of factors led to the decision for this research to explore the coaches’ and their parents’ perspectives of the program, rather than that of the riders.

Participants

The inclusion criteria for coaches was that they coached at an RDAV Centre, were at least a level 1 qualified RDA coach, and had been coaching THR for participants with developmental challenges for at least one year. For inclusion the parent participants had to have a child who was a current (or recently past) rider regularly attending a therapeutic horse-riding program at an RDAV Centre.

Study Design

This study used a qualitative approach, based on semi-structured, in-depth interviews. Participants were interviewed, using the following research questions as a focus:

- What is the RDAV coaches' perception of THR impact on riders with ASD (or other developmental disorder)?
- What strategies do RDAV coaches use to manage unacceptable and/or unsafe behaviours during THR lessons?
- What strategies do RDAV coaches use to develop social engagement during THR lessons?
- What are the parents'/carers' perception of the impact of THR on the behaviour and social engagement of their children?
- What learnings from the coaches or parents/carers experience of THR and behaviours and social engagement of children with ASD (or other developmental disorder) can be generalised to other recreational activities or programs?

Ethics approval

Ethics approval for the research was obtained through the La Trobe University Human Ethics Research Committee, approval number HEC 19055. Participants were provided with the participant information and consent form and all provided informed consent before interview.

Recruitment strategy

Researchers wrote an introductory email which briefly explained the aim of the study, and role of the participants. The email also included contact details of the researchers and interested participants were asked to contact the research assistant (NK) directly via phone or email. This email was sent to RDAV who used a purposeful non-random sampling method to recruit participants to provide in-depth and insightful information relating to the research questions (Liamputtong, 2010). All RDAV coaches and parents of children with ASD or another developmental disorder, who were participating in an RDAV program, were eligible to participate. Recruitment occurred over the period of April - July 2019. Rider diagnosis was used to select eligible participants and the Centres they attended, and specific Centres were targeted from this potential pool to ensure exploration of both regional and metropolitan Centre experiences. RDAV staff forwarded the study information email to eligible riders and coaches at the selected Centres and interested participants then directly contacted the university researchers to organize their interviews. This process was continued until the appropriate number of participants from diverse Centres were recruited.

Data Collection

Qualitative data was collected via semi-structured interviews to provide an in-depth insight into participants' perspectives. All interviews were conducted by the research assistant (NK) who had no prior familiarity with the programs and participants. Parent interviews included questions about the child's experience of RDA, and whether there were any impacts that were observed either at the RDA session, or outside of the RDA session (e.g., home or school). Coaches interviews focussed on the structure of the RDA session and observations of the child during the RDA session. The majority of interviews were conducted face to face, and the remainder were conducted over the phone. The length of interviews ranged between 30 and 45 minutes. All interviews were audio recorded and transcribed with permission.

Data Analysis

All interview participants, riders and RDA Centres were de-identified for analysis. The identity of participants was known only to the research assistant (NK). The researchers analysed the de-identified interview transcriptions with the assistance of NVivo software. Transcripts were coded using categories developed by the researchers, using a 'bottom up' approach. Both researchers coded the initial two transcripts and the remainder were coded by one researcher. The thematic analysis was undertaken iteratively by both researchers using the framework proposed by Braun and Clarke (2006). Initial codes were generated and themes were determined, reviewed, agreed and defined. Additional categories were identified during the process and these were included after discussion and agreement between both researchers.

Results & Discussion

Participant Characteristics

Ten coaches and ten parents participated in the study. All the coaches were female, reflecting the demographics of the RDAV coaching population, and the majority of parents were female (there was one male parent). Sixty percent of coaches and parents attended metropolitan RDA centres, and 40% attended regional RDA centres. Most parents had one child attending RDA, although a small number had two children attending. Six parents had girls attending RDA, and four parents had boys attending RDA sessions. All coaches had considerable experience with 80% having more than 8 years with RDA programs. Most of the children had been riding for more than 2 years despite an RDA rule at some centres that riders only attend for 2 consecutive years to enable more people access to the programs. Some were having private or individual THR lessons at RDA centres or had returned to the program after

going back on the waiting list and/or attending RDA sessions during the week at less popular times (Table 1).

Table 1. Participant characteristics

Participants	Total	Participants	Total
Coaches	10	Parents	10
Regional	4	Regional	4
Metro	6	Metro	6
RDA coach experience (yrs)		Rider RDA experience (yrs)	
2-4	1	1-2	2
6-8	1	2-3	1
8-10	2	3-4	4
>10	6	>5	5

Interview Data

Coaches and parents were asked a range of questions relating to their perceptions of the child’s experience of attending RDA sessions. Most of the 20 interviews were 30-45 minutes in length and were conducted at the RDA centre. In this extensive data set participants provided many anecdotes that illustrated the profound and positive impact that RDA had on their lives, and on the children. Themes were developed from the data set to encapsulate the impact of the RDA program on the rider, as well as their family and others. The themes were: *being acknowledged as an individual; developing a sense of self and belonging; changes to social conduct; challenging limits; rider motivation/playing the game; multiple therapies; and, broader advantages* (including benefits to parents and volunteers). Coaches and parents were also asked if there were any negative impacts or aspects of the RDA program. These responses were categorised into the following themes: *adverse impact of environment; limited RDA funding and resources* (resulting in long waiting lists and reduced session times); *limited skills of some staff; and, NDIS approvals*. Each of these themes are discussed below.

Being acknowledged as an individual

All coaches and parents reported that the riders were treated as an individual, which often led to their increased social engagement. This included opportunities to participate in competitive riding events which provided them with individual recognition of their riding skills and further opportunities to socially engage.

...she went into Special Olympics ...and I thought that’s going to be a catastrophe, that she couldn’t care less about the medal thing at the end. I was totally wrong. They called

*her name out and she ran up. She went like this, hands in the air, and she put the gold medal on and she wouldn't take it off. **Parent***

Not only were sessions planned around the individual needs of the riders, but the riders themselves were not judged and instead acknowledged and treated as individuals with specific and unique skills and challenges, with coaches and volunteers forming relationships with the riders.

*If you accept what people are or what your kids are, as they are, and work with what you get without having unrealistic expectations...we had twins once who were about 11 or 12... who were non-verbal, not (speaking) with anybody at the beginning but after they'd been here probably months and became fully confident about where they were and who we were, there was a lot more experience of positive interactions with them. And they were two that started talking when they got home. **Coach***

Being in an environment where difficult behaviours are accepted and managed rather than judged provides an important opportunity for development of a sense of self and a 'safe' place for parents where they are not judged as responsible for their child's socially challenging behaviour.

*No-one judges what the kids, do so if their [the parents] kids have a meltdown no-one judges because that's what we're here for. The volunteers learn very quickly that there is no judgement here. If the kids are having a bad day they're having a bad day, we all have bad days. Theirs might be slightly more behavioural and not necessarily always socially acceptable but this is an RDA centre, we're here because we're here to operate for children and adults with a disability regardless of what that disability is and that simply may mean that they might be having issues with anxiety. So RDA has the unique ability to be able to accommodate a very large range and diverse population, which is good. **Coach***

Recognition as a unique being with individual interests is important in forming an understanding of who we are (Kielhofner, 2008). Hammell (2004) describes 'becoming' individuals as actively 'reflecting on values, selecting priorities, making choices and engaging in activities', thereby developing towards a capable worthwhile self, reflecting the acknowledgement of the riders as individuals able to appropriately function within this social group (p.303).

Developing sense of self and belonging

Elliot et al. (2008), found children with disabilities placed a high value on their ability to participate in desirable activities. Parents reported that their child had improved their sense of self and belonging. This was reiterated by the coaches who provided examples of riders who had developed a greater sense of self through their relationship with the horse/s and were incorporating 'horse rider' as part of their identity.

*...it's the social skills, their confidence, self-esteem is huge...it's something quite different to do and they probably get dragged around all their brothers' and sisters' activities, sports wise, and then they can turn around and say, hey, but I do horse riding. **Coach***

As well as something about which they could share with their families, participation in the program facilitated acknowledgment of individual interests and respect, assisting self-confidence.

*He said, "I feel like I am now on a level playing field with everybody else". Because he never fitted in at school. He said that "being on a horse, I can do - I can run as fast as everybody else. I can jump like everybody else. I can do dressage like everybody else. Maybe not as well, but I can do all of that type of thing". So his confidence built up and built up. And I'm sure it would have translated into his normal life. His parents have actually said that. **Coach***

For some riders, the familiarity of the RDA centre and regular contact with volunteers and coaches provided them with a sense of belonging and a safe place.

...if we were in a new place, they'd probably be a bit more shy, but because they know all the ladies...All the woman here are like aunties...we don't have our parents here, because my husband and I are from overseas. I think apart from the horses, it's just a beautiful relationship with a lot of - it's like a lot of grandmothers that they love.

Parent

(my daughter)...must spend 90% of her life walking in a world where she doesn't know who anyone is. So here is like a safe haven if that makes sense, where she does actually, for those lessons every week, not live in fear that she doesn't know people.

Parent

You have other people who come in and help to give them a sense of achievement, a sense of belonging. It's that community feel. Which I think is a very, very strong thing.

Coach

This sense of familiarity and safety enabled the introduction of some changes within the regular routine to further extend the riders' confidence in being able to manage difference and still feel they belong.

We try and alternate and change the horses so that the kids understand that sometimes it's just different and that different is okay and when you're here with the horses it's okay. And that you're still safe, you'll still have fun, your routine will still be the same, it's just the colour or the size of the horse that might be different and that's the only thing that you're going to have that's going to be different.....by the time they've been on for five minutes they've forgotten that the horse underneath them is different to what they're used to, because they're too busy doing the activities that they are familiar with.

Coach

Changes in social conduct

Interacting with and being able to consider the perspectives of others is important for children to experience social 'belonging', including reciprocity and functioning appropriately within a network of social support (Hammell, 2004, p.303). The familiar environment that allowed riders to develop a greater sense of self and belonging, underpinned and facilitated a change in social conduct for riders.

*... she listens to them a lot more now. She knows to focus on what they're supposed to be doing rather than talking about something different. Which she used to do.....really improved in those areas..... Just in the listening skills and she knows she's there to learn...confidence and listening skills, taking instructions..... I think it's continued outside (RDA) – even at school she's listening more. She's listening more to me. She says hello to the other girl that she does the lessons with. She always says hello to her and goodbye to her. Which is good because [she] mainly just talks with adults. So she's starting to talk a lot more with other kids. **Parent***

Improved social conduct has been demonstrated previously when children with ASD participate in THR (Bass et al., 2009; King, 2007). Coaches described a "special connection" often formed between a child and horse which may be fostered through what has been previously described as the gentle and accepting nature of horses (Bizub et al., 2003; Roberts et al, 2004). This relationship with the horse was often seen to assist to improve relationships with humans.

*The other really important thing with the whole horse thing is that (my child) prefers not to talk and the fact that horses don't communicate verbally has actually helped us have conversations and growth in the area of looking at a horse's behaviour, they are not talking but what are they trying to tell you? So, with autism, reading other people's body language and stuff like that, working with horses has helped us in that respect as well. So she will say to me she will now notice if a horse's ears go back. And she will know that, if a horse's ears go back, it means that they are feeling a little bit anxious. So, then we will talk about her behaviours and anxiety or other people's behaviours and actually just being on the lookout for what people do. So, even with her father, she has now realised the behaviours her father will show. They aren't the ears going back but they will be him suddenly getting very short-tempered and huffing and puffing, and she will then know that he is feeling anxious, (and she says) I need to change what I am doing, not to raise his anxiety even more. **Parent***

Through continued contact riders connect with and trust and appreciate their horses and these relatively less complex interactions between children and horses provide a stepping-stone to interpreting more intricate interactions between humans (Martin and Farnum, 2002). The program deliberately provides opportunity to explore socialising.

*They give them the opportunity to socialise with other children. I've seen kids here that come and - with autism, and at the start, where there's no contact with them, and after few weeks, you can start - they're looking at you and they start talking. They start talking to my kids. It's just incredible. It's like their soul wakes up here. **Parent***

Without pressuring the children, the program enables the riders to progress their social engagement through their motivation and provides an opportunity for recreation with their peers – something also experienced by the parents.

*He loves riding, he just loves the horses and the other kids that are there. So, they sort of don't really interact with each other, they're all sort of independent because of their autism and other special needs. So, the interaction between the kids is minimal. The parents get a lot more interaction with each other than the kids do. He really enjoys it. Even when we pull up in the car park, he's out of the car and he's straight into the shed to grab his boots and his helmet and get ready and stand there at the gate waiting to be called up the ramp to get on his horse. He can't wait. **Parent***

The RDA sessions all involved a level of social engagement throughout the different stages of the session: preparation to begin the session (interaction with volunteers and other riders), activities on the horse (interaction with coaches, horse/s, volunteers and other riders), and leaving the session (interaction with volunteers and other riders and parents). Coaches reported that they facilitate social interactions when appropriate and encourage riders to socially engage.

Well I think you build social skills, you build things like tolerating waiting, taking a turn, social things like interaction with the volunteers with talking, etc... We've had non-verbal kids go home and start talking about RDA and: "Is it Tuesday, can we – am I going to the horses today?". **Coach**

The social skills which were described included acknowledgement of others through greeting and thanking their horse and volunteers, and compliance with the safety-related rules, and turn taking.

We try to get them to just acknowledge the other riders, and that they're friends, and that they'll give them a clap if they do something, or we try to get it a bit more interactive. But then there's some riders that it's just not going to happen, and you just have to accept that that's not going to happen; and then just try and get the volunteers to get some sort of social interaction, which usually happens. **Coach**

All the riders had experienced an improvement in their social conduct and for some evidence of this improvement continued outside of the RDA environment.

... that has actually even affected day-to-day life. If we're out at a shop he's confident to go up and ask the person at the desk if something is in stock...If we're out at a restaurant he'll read the menu, he'll order his own things, he'll ask the person at the restaurant about things that he can get, or different meals...Like he'll actually ask questions now. It's definitely built his confidence. **Parent**

Understanding and managing emotions is often difficult for children with autism to comprehend and master (Bauminger et al., 2003, McConnell, 2002). Riders occasionally displayed unacceptable or disturbing behaviour towards volunteers or the horses, which would result in them being dismounted, a consequence which provided them with the incentive to control their emotional and behavioural outbursts.

...kids with anger management who are good at picking a fight...realise nobody's fighting back, that they might have offended somebody, the horse, and they start to,

*“oh dear I like riding Bobby”... And they start to maybe see the impact of what they’re saying on something around them. And their (school) teacher said, actually it’s been helping them reconsider how they react sometimes. **Coach***

Challenging limits

All coaches and parents reported that RDA provided opportunities for riders to challenge their limits and achieve success. The behavioural outbursts commonly displayed by children with ASD and other developmental delays when presented with novel situations, result in many not being allowed to be challenged with new situations (DeGrace, 2004). Bizub et al. (2003) described overcoming the challenge of fear as crucial in enabling increased confidence, something described as riders pushed through their apprehensions in order to ride.

*(He had) his aversion to tactile kind of things, you know hair and dirt, but (now) he doesn’t care you know. The motivation to get on the horse is so strong he can get past all of those kinds of dislikes. It’s not so much an aversion, it’s more like, oh I dislike that, oh whatever, I’m on the horse it’s worth it. **Coach***

One parent described the how during a competition “through no one’s fault” her daughter fell off the horse, a situation which could cause considerable anxiety. However, the rider reacted with unanticipated determination.

*(She) ended up falling off. And, within 10 minutes, she came to us and said, “I want to get back on and do it again.” Now that says to me that in past sessions leading up to that they have instilled in her a resilience to not give up and to direct her behaviours into positive outcomes... **Parent***

The facilitation of expanding interest through new opportunities in the programs assisted them to develop confidence and try new things.

*I think probably the most rewarding thing is taking people that think that they won’t be able to do something and then enabling them to do it...it just spirals from there. So, it’s something that they would think that they wouldn’t be able to do. They manage that and then from there, they get the confidence to go on and do other things. Not just in horse riding, but in life; it really does build people’s confidence. **Coach***

The motivation for horse riding provided the incentive to challenge limits and confront difficult situations. Knowing that they can succeed at something new can help children attempt new things in other

environments (Bizub et al., 2003). These experiences of overcoming challenges provided riders with confidence and skills that they can apply in settings outside of RDA.

Rider motivation/playing the game

All parents reported that their child really enjoyed attending RDA, often more so than their other health related therapy sessions (e.g., physio or occupational therapy), and that they were highly motivated to participate in riding without necessarily considering its therapeutic impact.

*But tied to that joy is she's working her core; she's improving her balance, her posture; she's having to concentrate; she's working on her sensory issues because she's out in the elements on a horse with an animal; she's engaging with other adults and building her social circle and her safety circle; she's engaging with peers - and it's something that just brings her great, great joy – she looks forward to it every week. **Parent***

Children need to control their behaviours and know they can be effective agents of their environment (Bracher, 2000). Those with developmental challenges often have little control over their lives since many activities are done for them by others. Providing them with an opportunity to be in charge of something can enhance confidence (Weisberg, 2007). At RDA the interactions with the horses, large animals, provides an opportunity for the riders to experience controlling, feel in control, and know they can be effective agents of their own environment.

*I don't know it's just the fact that they're up high, they feel stronger. There must be something psychologically there to them, make them feel more relaxed. They really love them [volunteers] and they love the horses....Maybe they feel more - they feel confident when they're able to ride. They're always smiling. There's never been one time where they don't want to come. **Parent***

Interestingly one parent raised the benefits they identified as related to control but in a very different way, describing the riding being a situation where the horse was in control, and the child was able to be calm but out of control.

There's something about the animal. I think they have an innate connection with the kids. They understand the kids. I don't know. There's some sort of magical thing there that the horse, they have a very calming effect on the kids. It's an interesting environment because the movement of the horse calms him but I also think that (he) probably also understands that when he's on the horse he's not really in control. And I

*think for a kid on the spectrum, losing control is a big thing. A lot of kids they always feel the need to be in control of their surroundings. That's why you get meltdowns and things like that. I just wonder whether he understands that when he's on the horse he's really not in control because that horse could do anything in any given moment and he's totally powerless..... The understanding that he's just got to give himself over to the horse and be compliant with the horse. **Parent***

The strong motivation of riders to participate in RDA sessions enabled coaches to implement strategies to ensure that they 'played the game' and complied with rules and instructions to maximise the benefits of the RDA sessions. For many riders the appeal of riding the horse and experiencing the movement of the horse was a strong incentive to overcome any inappropriate behaviours.

*I'm thinking 'oh, he won't wear other people's things', I could not believe, he does! There, with those staff, he will actually put those things (shared riding boots and helmet) on, because I guess he wants to be involved in the program that badly and really enjoys it that he will actually push past his OCD. **Parent***

The ability to overcome their adverse reactions to certain situations allowed some riders to participate in activities outside of RDA, which benefited them and their families.

*...he just refused, so no helmet no rides. It was nearly a whole term and he finally put his helmet on. And then he rode and he was fine. And then later his mum was telling us that for the first time ever he could go for a ride on his bike with his dad...because he wouldn't wear a helmet he hadn't been able to ride his bike. **Coach***

Riders were given very clear boundaries around what is acceptable behaviour and for the most part they were able to respect these boundaries. In situations where riders behaved in a manner that endangered horses or volunteers, and they did not respond to instructions to stop the behaviour, they were removed from the session.

*I think because, again (he accepted rules), he loved it, and he was really motivated, he knew that if he mucked up, then riding wouldn't happen. **Coach***

Children with ASD may have difficulties interpreting emotions making it challenging to recognise the impact of their actions (Bracher, 2000). The riders were able to reflect on their behavioural impact on the horses and adapt accordingly.

*So the kids learn very quickly that there's a cause and effect with – without even realising it, that when I'm rough the horses will go away and they don't want to be near me but when I'm gentle they'll do whatever I want. **Coach***

Coaches reported that they tailored the sessions to individual riders, consulting with school staff or parents before the beginning of each session to determine the needs of the rider for that day.

*A change in routine is enough to send them off here, so a heads up from the staff is a really good thing for me ...they rang me and said, "look, she's had a really bad morning with things going on at home, she hadn't slept the night before". She didn't sleep last night, thank you, so she just needs a quiet ride. So, I change what goes on because in the end, it boils down to they want the movement from the horse, that's just bottom line. The movement of the horse is calming, so once you've calmed them down and you move on... You've got to get to that point...they know they want the movement because it does calm them, so that's how it works. **Coach***

When riders exhibited behaviour that demonstrated they were distressed and not engaged with the session, coaches were often able to distract them with alternate activities to alleviate the tension. Enthusiasm has been shown to be pivotal to occupational participation (Kielhofner, 2008) and participation in occupations 'distinguished by pleasure, pure enjoyment and appreciation' to be fundamental to the concept of self-discovery (Hammell, 2004, p.301). Parents noted the challenge of understanding individual motivations when the children are non-verbal and the importance of finding therapies which the children experience as both useful and enjoyable.

*It's much easier with verbal, you can ask them, and they'll tell you what they think. With non-verbal, you can only go on body language and how they are. So, I think just on that, you can still get just as much information as if they said, "Yeah, I really like it."but it's good....it is absolutely worthwhile for him.....if they don't have the fear of horses or there's any reason why they can't ride, I think that's why they keep going back every week is because they are getting something out of it... I haven't seen many riders who aren't jumping out of the car and running in and really through the gate and on the horse and want to sort of do it. He loves it. Loves it. Just he smiles and gets on the horse and you can just see the movement of the horse and his whole body language is just – he's got a grin from ear to ear. So, there's no worries that he's not enjoying it. **Parent***

The understanding and acceptance of the riders within the program supported their engagement in social interactions enabling them to develop relationships without the negative consequences they often experienced such as social rejection.

Multiple therapies within RDA

Many coaches and parents reported that RDA offered riders multiple therapies in the one activity. For example, riders could gain physical benefits of core strengthening whilst riding and also participate in activities that encouraged speech and social engagement. The multi-therapeutic nature of the RDA sessions had particular appeal for some parents whose children struggled to engage in individual health therapy sessions.

*We learned early on in the piece that we were better off masking the therapies within activities she loved so that that way we got the benefit but without the bad behaviours that came with it. So the benefits of riding for us have been multi-pronged...meeting deadlines, developing her executive functioning skills with the competitions like she is doing now. She has to remember the track she has to guide the horse in and that has helped with her working memory... [she] has got very poor self-care skills so actually having to care for an animal has helped her improve her own self-care skills. **Parent***

*...it's definitely something that should be considered to get funding because it's really like a global therapy. It combines the muscle strength, the speech, the socialising, confidence. **Parent***

For some riders, the therapeutic benefits of the horse riding translated into improvements in other daily living skills.

*...he would sit on the floor and just rock and bang his head. That's all he would do. Through RDA he learnt touch sign language, he learnt how to ride, and he learnt how to steer, and he loves trotting. So because he learnt how to hold onto the reins he could hold onto a spoon and feed himself. **Coach***

We have a rider now who can sit up, can actually eat solid foods. So, he doesn't need to be PEG fed any more...this is probably his third year, but we probably kicked on eighteen months into that. Yep, so it's amazing for the parents because at home, then they (rider) can sit up in the bath, they can sit up in a chair, they can start to feed

themselves. All those scenarios and hold a cup, because he can actually sit up and do it.

Coach

Parents described the benefits of the RDA program as being both multifactorial but also interlinked with what they described as a 'jigsaw' of management strategies, including for physical benefits.

*.....that (treatment) has all come together like pieces of a jigsaw of which RDA is an important piece. I will give just an example is that, by helping her physical functioning skills, she can now work physically, survive the demands physically. For example, there is a set of stairs at one of the places she works. Now she would not be able to go up those stairs probably if her body degenerated to the point that she couldn't handle stairs. So, in her physical well-being in keeping her physically functional, the riding has been very, very important.....I have been told that she is a 100% certainty to get arthritis in all these joints later and this is I guess keeping that at bay. **Parent.***

The outdoor environment involving physical activities was preferred for learning by some riders and parents over more passive indoor therapies.

It's more physical, actually doing something while also taking instructions and listening and physically actually doing rather than just sitting there doing activities at a table, she's actually up there on the horse. I think horse-riding is her favourite therapy.

Parent

Parents also described how other practitioners encouraged RDA participations as the programs' multiple physical and psychosocial benefits reinforced and supported their other more specific therapies.

*Because of her dyspraxia and she has a little bit of scoliosis, just a little bit, we've been working on her core strength with her physiotherapist. And she (physio) has said to me, keep with the horse-riding. Because we've noticed her balance has really improved. Even in the (RDA) lessons, they sometimes get them (while) the horse is walking with their arms out, not holding on. And she's doing that. She's doing that now. She's not wobbly. And that's helped her with gymnastics. She's now on the beam. She's much better on the beam. She's just really been working on that core strength. So horse-riding and swimming and gymnastics and physiotherapy fortnightly. The horse-riding has really helped her in her core strength as well. **Parent***

And one parent described how the riding assists regular bowel movements, an important issue not often discussed in therapy programs. This rider attends a program which only has the resources to provide lessons for each rider every two weeks.

*(My son) has always been constipated and had trouble pooing.... and that was causing a lot of brain fog. And we would know his behaviour would change immediately after he would have a poo. He would be a lot clearer and a lot more coherent but then after two days he would be irritable and distant. Just like anyone who's got an upset stomach, they don't want to talk to anybody. We heard that the riding, just the rolling motion of the horse as it walks and the rolling motion of the rider's hips in the saddle, does a lot to nurse stimulation down in the lower region and stuff and get things moving. And we noticed that after he'd go horse riding, he'd be (poo) every day for three or four days. And then because there was a two week break, he would start to fall back into his every second or third day pattern. But then if we get back to riding again, and we'd go bang, bang, bang, three days in a row and then back to the old pattern. So, it was good for stimulating it but just not (frequent) enough to sustain it. **Parent***

For children who are involved in a number of therapeutic activities and programs, parents described the difficulty of isolating the impact of THR or other individual therapies.

*We're working really hard doing a lot of different therapies. I mean we're doing four different therapies at the moment. Along with other supplements and different treatments and diet. We're doing so much stuff at once, it's really hard to pinpoint what's working and what's not. Look it's hard for us to know what. We went to America and did three different treatments over there and we saw massive changes. Which one is doing it? Well we don't know, but we'll just take it as it is and it's an improvement. **Parent***

Broader advantages

Parents and coaches reported some broader advantages associated with the RDA sessions - not only for the riders but also for volunteers and parents. Rider benefits included in life skills (such as shopping skills and ability to commute on public transport), and opportunities for employment. One coach reported that a rider had been able to gain employment on a farm once he had left school.

Advantages for parents included the opportunity to share their experiences and be able to relax in an environment with other parents who understood their situation and have honest and open

conversations about issues important to them. Parents were also able to share advice about treatments and other interventions.

*We sort of chat about various things at different times, but it always tends to end up about what treatments and things we're doing. And they're giving referrals to go and try this and go and try that. **Parent***

This opportunity to share some informal time with people who understand the challenges of dealing with a child with a disability was widely appreciated by the parents.

*While the kids are riding, all of us parents, we all talk and chat. Because we've all been given the same; there's another autism mum there, there's another one with cerebral palsy and we talk about things and treatments and stuff that were doing. And we're talking about NDIS funding and blah, blah, blah, and all that sort of stuff. Bitching and moaning about the NDIS. That's just the topic of the day. **Parent***

Several coaches related anecdotes of the positive impacts of RDA sessions on volunteers, in terms of their confidence, job skill training and social engagement.

*A lot of volunteers come out of their shell. I've seen RDA really help some volunteer's lives, and I've seen a lot of volunteers helping each other, which is always really fulfilling. **Coach***

Challenges associated with RDA programs

Throughout the interviews, participants had the opportunity to express any negative experiences related to RDA. For example, the interview schedule included the following questions: '*was there any improvement or deterioration in the child's behaviour at RDA over time; were there any aspects of the RDA environment that impacted the behaviour or social engagement of the rider; do you have anything else you would like to share?*'

During the interviews there were several elements that were identified as negative in nature - some of these were explicitly raised by participants, and some were interpreted by researchers. Two parents and two coaches raised the issue of the environment having a sensory overload impact on their child at some point e.g., rain, cold weather and smells. However, none of the parents were overly concerned by this as the coaches were able to manage the resulting behaviours when this happened.

...we had one kid who would dry retch if he saw the horse having a poo. And he used to ride with an ice cream container, because of the sensory, it was just overload

*almost, from the visual and the smell. Even though it's not an offensive smell, it's still a smell... but over time he got used to it. **Coach***

Another parent described how for their child sensory overload management was linked with program activities and the horses movements, and that the coaches are able to identify and respond to these cues.

*The minute he gets off the horse and he stands there looking, he's back jumping up and down and flapping, doing his thing. But he's very calm when he's on the horse. His brain when he's overloaded, he just stops and stares up into space and collects his thoughts until his sensory bucket empties quietly. But on the (moving) horse, he'll sit there quietly, and you can see his eyes looking out, he's sort of always engaged in his surroundings and responsive to the instructions that the coach is giving him. But when the horse is stopped, it's not actually moving, you can see his focus start to drift again, he spaces out a bit. The sensory overload sort of kicks in and he's just a bit spacey and slow to respond to instructions. But when the horse is actually moving, he's just clear, and they can identify the point where they can give him the reins and get him to steer the horse. **Parent***

RDA programs are almost entirely dependent on volunteers both for coaches and all other support activities and functions, and the limited available funding and resources was an issue raised by several parents and coaches. The regular programs only run during school term weeks meaning there are long breaks during school holidays during which grounds and horses must be maintained. The lack of funding results in long waiting lists to access the program and extra limits on access to sessions at some centres e.g., fortnightly sessions, while parents want increased access.

*Once again, the biggest drawback is, he doesn't go every week. **Parent***

*In an ideal world if I could get him on a horse every two to three days, great. But resource wise, volunteer wise, it's just not that viable. **Parent***

Horse welfare and maintenance is fundamental to the program and again reliant on volunteers who manage all the feeding and other care required outside the actual riding programs. This was identified as a considerable demand on human and financial resources, and at times there are insufficient resources to fund employment of skilled staff. One parent and two coaches raised the issue of coaches needing more professional development and the difficulty of finding suitable volunteers.

*So you don't have the money so you can't get the expertise sometimes. So some of the people, the wonderful well-meaning people that come along to coach really don't have high enough skills to get the best out of the program... And so I find sometimes... like some of the people [volunteers] lovely well-meaning people, but they're just, they step wrong. **Coach***

Coaches and one parent also referred to the challenges of having enough suitable horses and having to find different horses for riders as they grew and experienced other physical changes. Some riders had to cease participation when there was no suitable horse available.

*Well, he's (rider) a big boy and we just didn't have a horse big enough. So that was when the horse that he was riding died; it's really hard to find good horses and that sort of thing. It just sort of – it would have been great, but we just didn't have a big enough horse. **Parent***

Three parents and one coach also raised the issue of the difficulty gaining approval for NDIS funding for RDA sessions despite the parents asking for it. One parent reported having NDIS approval however the majority of other parents could not get NDIS funding for THR but found the costs affordable.

*I pay per term for this service for her because I'm not getting this funded through NDIS – my plan manager wouldn't approve that. **Parent***

Clearly this research accessed those who were using RDAV programs, but it is likely that cost and lack of NDIS support is an inhibiting factor for access for others who want to participate and need the service.

One coach was concerned about the animal welfare issues in relation to horses carrying riders with autism which it was suggested may cause the horses to become chronically distressed. There has been little research into this aspect of horse welfare. The horses are clearly pivotal to RDAV programs. Coaches described how the selection of the horses both for inclusion in the program and for use by individual riders was an essential element of their responsibilities as it impacts on the safety and more general experience for all those involved, including the animals. Strategies to manage horse welfare during riding were identified as particular to each situation.

There was a man who was allegedly violent and so he had to come with two carers from the service. They followed him and the horse everywhere and we said, "No, you can't do this." They said, "We're legally responsible. We have to do it." We said, "If you

*have to do it he shouldn't be riding." He never did anything (concerning) on the horse and he actually tried (he was nonverbal) to say the horse's name. Sometimes if we know that they're liking it, but on the day they're just stressed, we just cut the session short, we just go back and let them go. **Coach***

While the welfare of the horses and their workload management within the THR programs is clearly a pivotal issue for RDA, it is an issue beyond the scope of this report.

Study Limitations

This study aimed to explore the impact of the RDAV THR programs on the challenging behaviour and social engagement of riders with ASD or other developmental disorders. The participants described how they perceived riders' benefits which raises questions of how much the findings are about the coaches/parents own experiences rather than that of the riders. However, as these riders are a potentially vulnerable group this was considered to be an ethical approach to capturing this information. Also, the participants are those who are responsible for and interacting with the children and therefore those who are managing these psychosocial aspects of the rider's experience, including for the parents, on a day to day basis.

Clearly the research did not include those who do not use the RDA THR programs, and therefore by definition, has not captured the experience of those parents who did not find RDA THR beneficial for their child, or who have not been able to have access to this experience. The research aim was to look at the impact, if any, on those who do participate. The fact that the findings were largely positive and very supportive of program participation suggests selection bias, but efforts were made to overcome this potential by inviting all participants and centres with riders with the appropriate diagnosis, the purposeful selection being aimed for specific geographical limits to increase diversity of program experience.

Participation was entirely voluntary so again self-selection may be another source of bias, however clearly this does not undermine the validity of the experiences of those who did chose to participate. The coaches' perspectives may be biased as they may have expected benefits within their coaching role.

The research was initiated by and funded through the RDAV Board and the Joan Tonge Therapeutic Riding Foundation, both organisations who have explicit interests in the support and delivery of THR programs. Their interest in supporting the research was based on years of positive anecdotal reports from many of those participating in RDAV programs and recognition of the need for formal research to assess their efficacy and explore the evidence base. The lead researcher had familiarity and experience with THR

prior to this study. To manage any perceived or real conflicts of interest from this prior knowledge the research was conducted by experienced researchers in an academic environment using a well validated and rigorous qualitative research protocol. The study design and strategy deliberately excluded any of these players including the lead researcher from involvement in the data collection process, and ethics was obtained which included addressing these potential biases before the research commenced.

Summary of findings

This study aimed to examine the impact of THR on the ability of participants to develop psychosocial skills and participate in other occupations including at home and in other social environments and settings. The data evidenced impacts in numerous psychosocial skills, underpinned by the program activities and interactions with the horses, coaches, other volunteers and the environment.

Children with autism and other developmental challenges who are highly motivated to participate in therapeutic activities during RDA, often choose to engage in THR in preference to other health therapies, and their engagement results in positive physical and psychosocial outcomes. Horse riding was reported as an extremely positive experience for the riders, providing coaches with opportunities to incorporate activities that facilitated multiple therapeutic benefits.

Although the focus of RDA sessions is to gain horse riding skills, the therapeutic benefits were numerous, including positive impacts on: core strength, motor skills, speech, social skills and general improvements in desirable behaviours. Of particular note was the reported calming effect that horses had on riders. Even those riders who had challenging behaviours at school and home exhibited much calmer behaviours in the RDA sessions. Parents were overwhelming supportive of RDA and reported that the RDA sessions were necessary for the management of their child's condition. The RDA sessions were reported as a cost-effective therapy, given the multiple therapeutic activities addressed within the programs, and that this participation was more engaging for many of the children than other health therapy sessions (e.g., speech therapy, physiotherapy and occupational therapy) because of its active nature.

This research provides an evidence base for the benefits of THR for children with developmental challenges. These findings can inform both future THR programs and other interventions in terms of the benefits of motivation and pleasure promoting positive and beneficial outcomes. As one parent summed up the impact of RDA THR:

*It does have this offshoot effect on other areas of their lives in putting their best foot forward and managing anxiety and managing mental health and feeling good about themselves... They got it right when they said riding makes you happy, and that is what I often think of, because I see kids on horses and riding makes them happy. And, when you are happy, you are more in a better position to, I think, learn and grow. **Parent***

Implications for other recreational activities

This research aimed to address the significant gap in the provision of appropriate recreational activities for children with challenging behaviours and assist understanding of the development of essential psychosocial skills to facilitate participation in a range of everyday activities.

The first five themes identified related directly to the riders developing their sense of who they are and gaining the confidence and skills to engage with others, including the horses, in an environment which encouraged and promoted this progress. Clearly the horses are pivotal to the RDA programs and their nature, size and movement were identified as providing particular influences. However, other elements of the program were equally important including the supportive engagement of volunteers, the community atmosphere, the safe space for riders and their parents to share, and the outdoor natural environment.

Despite RDA programs having some unique elements which would be difficult to emulate in other activities, many of the strategies used by the coaches and others in the programs are transferrable to other recreational pursuits.

These include:

- Ensuring that all those involved in the program, not just the leaders, understand what having a developmental challenge means in practical terms, and how to safely support, manage and accept challenging behaviours while providing a space for development with appropriate boundaries.
- Providing programs elements sufficiently engaging that participants are able to overcome apprehensions and are willing to control emotional and behavioural outbursts and thereby learn to understand the cause and effect of their behaviours.
- Providing programs which are considered 'fun' but are also personally meaningful to each of the participants.
- Acknowledging each participant as a unique individual with abilities, challenges and interests.
- Providing a non-judgemental environment for both parents and participants including accepting that behaviours vary, and difficult behaviours can be accepted and managed rather than judged.

- Providing a safe environment in which to strategically introduce cognitive and physical challenges to enable individual skill development.
- Ensuring opportunities within programs which progressively facilitate social interactions and encourage increased social engagement including with peers.
- Providing a safe place with a sense of familiarity to enable the introduction of changes within regular routines to further extend participants' confidence in being able to manage difference and still feel a sense of belonging.
- Incorporating specific social skills into the program such as activities which include taking instructions, tolerating waiting, taking turns, social interactions with the varied personnel, sharing, learning compliance with safety-related rules, etc.
- Supporting development of program personnel who are interested, caring and passionate about the program aims and activities, and who share a common understanding of the approach, values and goals.

Acknowledgements

The researchers gratefully acknowledge and thank the parents and coaches who generously participated by sharing their experiences and understandings. And our funding supporters; Riding for the Disabled Association of Victoria, Joan Tonge Therapeutic Riding Foundation, Sport and Recreation Victoria, Department of Jobs, Precincts and Regions, without whom this research would not have been possible.

References

- ABS (2014) ABS 4427.0 Young People with Disability. Downloaded 8/1/20 from:
<https://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/4428.0Main%20Features32012>
- ABS (2017) ABS 4430.0 Disability, Ageing and Carers, Australia: Summary of Findings, 2015. Downloaded 8/1/2020 from:
<https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4430.0Main%20Features752015>
- ABS (2019) ABS 4430.0 Disability, Ageing and Carers, Australia: Summary of Findings, 2018. Downloaded from:
<https://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/4430.0Main%20Features102018?opendocument&tabname=Summary&prodno=4430.0&issue=2018&num=&view=>
- AMAZE (2018) Awareness and Understanding of Autism. Research report Downloaded from:
<https://www.amaze.org.au/creating-change/research/>
- Atun-Einy, O., & Lotan, M. (2017). A Systematic Review of Hippotherapy (horseback riding) for Individuals with Autism is the Cognitive Level Considered. *Autism Open Access*, 7(215), 2
- Australian Autism Alliance (2016) A Snapshot of Autism in Australia. Downloaded from:
<http://www.australianautismalliance.org.au/autism-snapshot/>

- Bass, M.M., Duchowny, C.A. and Llabre, M.M. (2009). The effect of therapeutic horse-back riding on social functioning of children with autism. *Journal of Autism and Developmental Disorders*, 39, 1261-1267.
- Bauminger, N. and Kasari, C. (2000). Loneliness and friendship in high-functioning children with autism. *Child development*, 71(2), 447-456.
- Bauminger, N., Shulman, C. and Agam, G. (2003). Peer interaction and loneliness in high-functioning children with autism. *Journal of Autism and Developmental Disorders*, 33(5), 489-507.
- Bizub, A.L., Joy, A. and Davidson, L. (2003). "It's like being in another world": Demonstrating the benefits of therapeutic horseback riding for individuals with psychiatric disability. *Psychiatric Rehabilitation Journal*, 26(4), 377-384.
- Bracher, M. (2000) Therapeutic horse-riding: What has this to do with occupational therapists? *British Journal of Occupational Therapy*, 63(6), 277-282.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. doi:10.1191/1478088706qp063oa
- Carpenter, J. and McConkey, R. (2012), Disabled Children's Voices: The Nature and Role of Future Empirical Enquiry. *Children & Society*, 26: 251–261. doi: 10.1111/j.1099-0860.2012.00438.
- DeGrace, B.W. (2004). The everyday occupations of families with children with autism. *American Journal of Occupational Therapy*, 58, 543-550.
- Engel, B. T., & MacKinnon, J. R. (Eds.). (2007). *Enhancing human occupation through hippotherapy: A guide for occupational therapy*. (pp. 119-126) Bethesda, MD: The American Occupational Therapy Association.
- Elliott, S., Funderburk, J.A., and Holland, J.M. (2008). The impact of the "Stirrup Some Fun" therapeutic horseback riding program: A qualitative investigation. *American Journal of Recreation Therapy*, 7(2), 19-28.
- Gabriels, R. L., Agnew, J.A., Holt, K.D., Shoffner, A., Zhaoxing, P. and Ruzzano, S (2012). Pilot study measuring the effects of therapeutic horseback riding on school-age children and adolescents with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 6(2), 578–588. doi:10.1016/j.rasd.2011.09.007
- Greene, S. (2004) Social skills intervention for children with autism spectrum disorder. In H. Miller-Kuhaneck (Ed.), *Autism: A comprehensive occupational therapy approach* (2nd ed., pp. 171–192). Bethesda, MD: AOTA Press.
- Greene, S. (2004) Social skills intervention for children with autism spectrum disorder. In H. Miller-Kuhaneck (Ed.), *Autism: A comprehensive occupational therapy approach* (2nd ed., pp. 171–192). Bethesda, MD: AOTA Press.
- Hammell, K.W. (2004). Dimensions of meaning in occupations of daily life. *Canadian Journal of Occupational Therapy* 71 296-305
- Kendall, E., Maujean, A., Pepping, C.A., Downes, M. Lakhani, A., Byrne, J. and Macfarlane, K. (2015) A systematic review of the efficacy of equine assisted interventions on psychological outcomes. *European Journal of Psychotherapy & Counselling*, 17:1, 57-79, DOI: 10.1080/13642537.2014.996169
- Kielhofner, G. (2008). *Model of human occupation: Theory and application* (4th ed.). Baltimore, MD: Lippincott Williams & Wilkins.
- King, N. (2007). Perceived efficacy of therapeutic riding for children with autism. In B.T. Engel, & J.R. MacKinnon. (Eds.). *Enhancing human occupation through hippotherapy: A guide for occupational therapy*. (pp. 119-126). Bethesda, MD: The American Occupational Therapy Association.
- Liamputtong, P. (2010). *Research Methods in Health: foundations for evidence-based practice*. Oxford University Press: South Melbourne, Victoria.
- Martin, F. and Farnum, J. (2002). Animal assisted therapy for children with pervasive developmental Disorders. *Western Journal of Nursing*

- Martin, F. and Farnum, J. (2002). Animal-assisted therapy for children with pervasive developmental Disorders. *Western Journal of Nursing Research*, 24(6), 657-670.
- McConnell, S.R. (2002). Interventions to facilitate interaction for young children with autism: Review of available research and recommendations for educational intervention and future research. *Journal of Autism and Developmental Disorders*, 32(5), 351-372.
- RDAA (n.d.) Riding for the Disabled Association of Australia. <http://rda.org.au/who-we-are.aspx>
- Rebeiro, K. L. (2001). Enabling occupation: The importance of an affirming environment. *Canadian Journal of Occupational Therapy*, 68(2), 80-89.
- Roberts, F., Bradbury, J. and Williams, C. (2004). Equine-facilitated psychotherapy benefits students and children. *Holistic Nursing Practice*. 18(1) 32-25.
- Stuckey et al, 2014, unpublished transcript. Available on request from lead author.
- Weisberg, J. (2007) Determining the goodness of fit between occupational therapy and therapeutic riding. In Engel, B. T., & MacKinnon, J. R. (Eds.). (2007). *Enhancing human occupation through hippotherapy: A guide for occupational therapy*. (pp. 119-126) Bethesda, MD: The American Occupational Therapy Association.
- White, S.W., Keonig, K. and Scahill, L. (2006). Social skills development in children with autism spectrum disorders: A review of the intervention research. *Journal of Autism and Development Disorders*, 37, 1858-1868.