

Text2dads

Final Report

22nd May 2019

Dr Chris May

22nd May 2019



Executive Summary

“So I guess now I’m coming across more approachable and rather than being the boss I’m now more of a mentor which as a dad is where I want to be.”

What is Text2dads?

Text2dads is a text based support and information program for fathers of children on the autism spectrum. Text2dads has been developed in a cooperative project between Positive Partnerships and Dr Chris May from the Family Action Centre (University of Newcastle). For a detailed description of the project please see Appendix 1.

What were the aims?

To create a text message campaign for Fathers with a child on the autism spectrum providing information about autism and links to Positive Partnership resources.

To test the feasibility and acceptability of using text messages to communicate with fathers of children on the autism spectrum.

Targeted Outcomes

- To test the feasibility of using SMS as a method to communicate with fathers
- To test the acceptability of using SMS as a method to communicate with fathers
- To evaluate whether receiving the SMS messages have increased Fathers feelings of competency when supporting their child on the autism spectrum

What did we do?

To our knowledge Text2dads is the only intervention, to date, that has been designed specifically for fathers of children on the autism spectrum. Following the development of a methodology to test the feasibility and acceptability of the project a working group was formed to develop a corpus of messages addressing fathers’ knowledge about autism, their interactions with their child/n, relationships with sources of formal support, coping and relationships with their parenting partners (where appropriate). Fathers (N=184) were recruited through networks and established by Positive Partnerships. Fathers enrolled online and most received 16 weeks of messages including linked information, intermittent surveys and a final survey.

How did we go?

The primary aim was to test the feasibility and acceptability of Text2dads and this went very well. Following 274 expressions of interest 184 dads enrolled and 89% went onto completion. Sixty-nine percent of fathers interacted with the program on at least one occasion during the intervention with 71 (45.6%) going on to complete the exit survey. Most of those completing the final survey reported changes in their knowledge, their thinking about their parenting role and changes in parenting behaviour.

Analysis of responses for fathers who completed both pre and post surveys demonstrated significant changes in their perceptions regarding formal support, their parenting stress, and their sense of parenting self-efficacy. These changes, all going in the desired direction, provide objective evidence of a likely influence however further research will be required to provide confidence that these changes can be attributed to the influence of the text messaging.

Project Team

Chief Investigator

Dr Chris May
Family action Centre
University of Newcastle
Callaghan, NSW, 2308
Email: chris.may@newcastle.edu.au
T: 02 49217224
M: 0427119853

Co-Investigator/s

Dr Jennifer St George & Professor Shelly Lane
University of Newcastle
Callaghan, NSW, 2308
Email: jennifer.stgeorge@newcastle.edu.au
T: 61 2 4921 6690

Steering Group

- Dr Chris May – Family Action Centre, University of Newcastle
- Alison Macrae – Positive Partnerships
- Lee Casuscelli – Positive Partnerships
- Laura Boyle – Positive Partnerships
- Craig Smith – Positive Partnerships
- Heath Wild – Positive Partnerships
- Dr Jennifer St George – Family Action Centre, University of Newcastle
- Professor Shelly Lane – University of Colorado

Acknowledgement

Particular acknowledgement is due for the effort accorded to this project by steering group members from Positive Partnerships. Lee Casuscelli is acknowledged for supporting the initiation of the project. Craig, Heath and Laura must be acknowledged for their attention to detail and their generosity in doing all that was asked of them. Particular acknowledgement needs to be given to Alison Macrae for her insight in seeking out consultation, for understanding the opportunity for text based intervention in this cohort, for supporting the project from inception to conclusion and for exceptional liaison with the University of Newcastle.

It is also important to acknowledge the fathers who had the courage and foresight to participate in this intervention and particularly those who gave generously of their time in completing surveys and contributing in interviews.

Background

Fathers and mothers of children on the autism spectrum often experience high and similar levels of parenting stress (May et al, 2015). While mothers and fathers both play important roles in supporting each other in the parenting of children on the autism spectrum mothers often take on a more intensive primary parenting role which means that mothers are often highly engaged with providers of education, intervention, support and other services (Gray, 2006). However the roles and responsibilities of fathers in these families are not diminished by the extra efforts that mothers make in meeting their children's needs. Fathers continue to provide for their families, parent their children and, in most families, deliver the mothers' most important source of parenting support (May et al, 2014). However, as in families of typically developing children, fathers often share weak relationships with service provision and are much less likely than mothers to attend programs designed to enhance their understanding of how to interact with their child/n on the autism spectrum, positively influence their development or cope with parenting.

Positive Partnerships identified relatively poor attendance figures for fathers in their workshops – approximately 1 father for every 6 mothers – despite promoting these events using principles of father inclusive practice (Fletcher et al, 2016). In recognition of the challenges associated with paternal engagement a team from Positive Partnerships sought consultation with Dr Chris May from the Fathers and Families Research Team, Family Action Centre, University of Newcastle in December 2017 where discussion focused on the potential for text-based intervention (Fletcher & May, 2017).

As a result of this consultation Positive Partnerships formed a collaboration with the University of Newcastle to develop and trial a text-based intervention for fathers of children on the autism spectrum. An agreement was reached to develop this project (Text2dads) in April 2018 with the understanding that the project (Text2dads) would be completed by April of 2019.

What is Text2dads?

Text2dads is a phone based intervention for fathers of children on the autism spectrum. Participants received between 12 and 16 weeks of text messages addressing five domains of likely concern for fathers of children on the autism spectrum. The majority of messages, many containing links, provided information and encouragement to fathers while others surveyed participant opinion.

Fathers enrolling before the first cut-off date (n=175) received 16 weeks of messages (N=56, 17 containing links) plus a welcome message, intermittent surveys (N=17) and goodbye messages (N=2). To maximise participation the enrolment window was left open for a further four weeks with later enrolments (n=9) missing the first 4 weeks of messages due to a tight project timeline. Messages and

surveys were manually prescheduled into a regularly irregular 4 week cycle wherein they arrived at different times (between 9am and 4pm Australian Eastern Summer Time) and on different days (including weekends).

The intervention design included different message schedules to fit the developmental needs of preschool (<5yrs), primary school (5-11yrs) and high school children (11-17yrs) and a further refinement for parents identified from enrolment data as either co-parents or non-coparents. Co-parents were defined as those who were working together to raise their child, whereas non-coparents were no longer living together and no longer working co-operatively in their parenting roles. Fathers who did not provide information on their parenting relationship were placed in non-coparent schedules.

Project Aim

The project aimed to assess the feasibility and acceptability of Text2dads; a project designed to engage fathers of children on the autism spectrum in an SMS intervention designed to reduce parenting stress, enhance parenting self-efficacy and enhance perceptions of co-parenting competence.

The analysis of feasibility and acceptability has been founded on Piotrowska et al's (2017) COPE model of engagement; COPE is an acronym for connection, attendance, participation and engagement. Connection reports on the number of participants who learn about the program as a result of promotional efforts and personal recommendations; in the present study this was represented by data on expressions of interest. Attendance is represented by the traditional metric of enrolment. Participation is represented by retention, responses to surveys and clicks on linked information. The final component of enactment is represented by participant responses to questions in the final survey asking about their perceptions of the program. This final component of the feasibility and acceptability analysis is founded on responses to an exit survey which included questions about the influence that the program had on parenting knowledge, how they think about their parenting and what they do in their parenting role. These items were designed to assess perceptions of change in relation to knowledge, contemplation and action as described in Thaler and Sunstein's Nudge Theory of behaviour change (Thaler & Sunstein, 2008).

Participants also completed pre and post surveys exploring autism specific perceptions of parenting self-efficacy (APQ), Parenting Stress (PS), and coparenting competence (CCS) along with 2 items exploring their knowledge about and likelihood of seeking formal support.

Enrolment and exit surveys, including consent, were completed on the phone optimised QUALTRICS platform while messaging was managed through Clicksend.

For a more comprehensive overview of the aims and method see Appendix 1.

Ethics Approval

Approval for the project was awarded by the Human Research Ethics Committees of the University of Newcastle (Ref: H-2018-0286) and Autism Spectrum Australia (Ref: 1821A)

Participants

Participants (N=184) were recruited through Positive Partnerships. The project was advertised via Positive Partnership's Facebook page, through the organisations' mailing list and at workshops for parents of children on the autism spectrum. Participation was without financial cost and open to anybody who reported to be >18yrs of age and the father of a child (<18yrs) on the autism spectrum.

Participants could express interest in the project via a short form on a dedicated web page or by sending an expression of interest, by text, to a dedicated phone number. Those expressing interest were then sent a link (via SMS) to an online consent, information statement and registration survey. Recruitment commenced in mid-October 2018 and closed 8 weeks later.

Table 1 Participant Demographics

Participants	Total 16 week cohort 12 week cohort	N=184 n=175 n=9	
Age (Father)	Mean = 42.17 Range = 27-63		
Number of children	Range = 1 to 5 or more Mode = 2		
Age (Youngest child AS)	Range = 2-16 Mode = 6 (n=27), 143 (78%) between 4-11, <5 years (n=23 non-coparent n=4) 5-11 years (n=117, non-coparent, n=8) 11+yrs (n=43, non-coparent n=3)		
Coparenting Status	Biological Parents living together with child/n	133 (72%)	
	Non-biological parents living together with child/n	18 (10%)	
	Not living together but working together to raise child/n	19 (10%)	
	Not living together and not working together to raise child/n	7 (4%)	
	Not stated	7 (4%)	
Prosperity	Very poor	2	1.1%
	Poor	8	4.3%
	Just getting by	62	33.7%
	Reasonably Comfortable	91	49.5%
	Very Comfortable	14	7.6%
	Prosperous	2	1.1%
	Not sure	1	0.5%
	Prefer not to answer	4	2.2%

Chart 1: Participant Distribution by Postcode

Results

Connection

There were 274 expressions of interest, and 202 attempted enrolments. Those expressing interest received a single reminder if they had not completed enrolment within a week of being sent the enrolment link. Enrolments were completed by fathers in both urban and remote locations and from all states and territories across Australia.

Attendance

Recruitment

In total 13,973 messages were sent to participants (N=184) who completed enrolment from across Australia. Messages were sent over a 16 week period from December 2018 to March 2019. Mean age of fathers was 42yrs with a large proportion of the cohort (78%) reporting that their youngest child on the autism spectrum was between 4-11 years. Most (71%) were raising 2-3 children and most (86%) reporting having only 1 child on the autism spectrum. Most fathers, (72%) were from families where biological parents were living and working together to raise their child on the autism spectrum while a small proportion of the cohort (4%) were no longer living or working together to raise their child/n. Perceptions of prosperity indicated that the majority of participants (58%) were financially comfortable or better while many (39%) were struggling financially. The present intervention therefore reached almost as many men (84.4%) as all of the Positive Partnership workshops (N=44) conducted across Australia in 2018.

Participation

Retention

Twenty one (11.4%) of fathers withdrew before completion of the program. A small group (n=3) withdrew within 8 days of the first message with feedback from one of these indicating that a mistake had been made when entering the phone number. The average duration of participation for fathers who remained in the program for more than 8 days (n=18) was 71.5 days (approximately 35 messages). One father sent a stop message, asked to be re-enrolled in response to the stop survey and remained enrolled to completion. The majority of stops 52.4% (n=11) occurred between 79 and 101 days of intervention.

A third of those who opted out (n=7) provided a response to the brief exit survey indicating that they were either too busy to receive the messages (n=3), that it was not useful (n=1), that the message were no longer useful as they had become repetitive (n=1), or for “other” unstated reasons.

Engagement through reply texts.

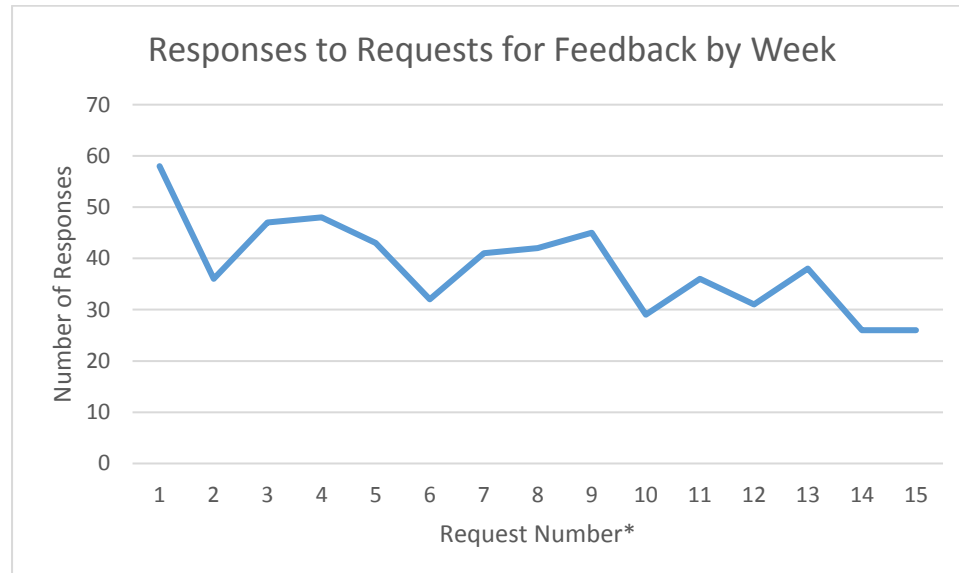
One hundred and twenty-eight (69.5%) participants sent a reply text (not including stop requests) on at least one occasion. Most of these participants (n=96, 52.2%) sent reply texts (Max=16) on more

than one occasion with the most common reply coming in response to requests for feedback on the last message sent.

Feedback on last message sent.

Responses (N=558) to requests for feedback (N=14) also included comments, which will be reported in the qualitative analysis of the program. The response rate to surveys on the last message sent (M = 38.5, 20.9%) declined as the length of participation increased (See Fig. 1), with the highest response (n=58, 31.5%) following the first request. Most (87.4%) responses rated the last message as “great”, 10.3% reported being “unsure” and 1.9% provided an average ratings of “poor”. Only 3 surveys (21.4%) received a poor rating with the largest “poor” response (12%) being for a message encouraging fathers to help their child stop disruptive or risky behaviours. Three messages received “great” feedback from 100% of responders (n=54, 38, 32) with the first being a message pointing to how comfortably “hanging out” with their dad is a communication about how safe their child feels, the second being a message about the importance of spending time with family and the third about thinking first and acting afterwards when dealing with challenging behaviour. There was no significant correlation ($p=0.16$) between the type of feedback received and the category of message (previously described).

Chart 1: Frequency of response to requests for message feedback



*Request # 1 was first request sent, 15 was the last.

Message Suggestions and Unsolicited feedback

Twenty-five participants (13.6%) provided suggestions (N=39, range 1-5) on potential future messages. There were 86 occasions of unsolicited feedback from 35 (19.0%) of participants. For example one father suggested:

“Give you child experiences, be prepared before you go, have a discussion about what will happen, what might happen, give them as much information as you can so they can enjoy it as much as possible.”

Clicks on Linked Information

Clicks on links were measured by how many times each of the shortened links were accessed.

There were 1201 clicks on 17 links (M=71) with the highest number of clicks on a father's story (n=114) indicating that 63% of participants may have accessed this linked information. The system for tracking link access did not provide information on who clicked a link or how many times they did so.

Exit Survey Completion

Seventy-one (43.6% of those completing the program) submitted the final survey with 60 completing all items on the quantitative surveys.

Interview Acceptance and Completion

Twenty-nine (17.7%) agreed to a telephone interview in their final survey; 23 went on to complete the interview.

Enactment

Participants generally rated the messages highly (see Table 2) with 95.8% having enjoyed receiving the messages and 93% reporting that they would recommend the program to other fathers. It was encouraging to see that 87.3% of fathers felt more supported in their fathering role as a result of participation and that 81.7% reported that the messages had positively influenced the way that they think about parenting their child on the autism spectrum.

Table 2: Exit Survey Engagement Questions and Response Data

		N	Agree	Not Sure	Disagree
1	I have enjoyed receiving the messages from Text2dads	71	68 (95.8%)	3	0
2	The messages have helped me to feel more supported as a father of a child on the autism spectrum.	71	62 (87.3%)	7	2
3	The messages have influenced the way I think about parenting my child/n on the autism spectrum.	71	58 (81.7%)	7	6
4	The messages have had a positive influence on the way that I parent my child/n on the autism spectrum	71	63 (88.7%)	6	2
5	The messages have helped me to better understand my child/n on the autism spectrum.	71	51 (71.8%)	16	4
6	The messages have positively influenced my relationship with my child/n on the autism spectrum.	71	54 (76.1%)	15	2
7	The messages have positively influenced my relationship with my child/s other parent/s.	68	52 (73.2%)	5	11
8	I have a better understanding of where and how to get info and support because of the messages.	71	45 (63.4%)	16	10
9	I have had more to do with my child's school or other services as a result of the messages from Text2dads.	71	23 (32.4%)	26	22
10	I would recommend Text2dads to other fathers who have children on the autism spectrum.	71	66 (93.0%)	5	0

Quantitative Survey Outcomes

Although the responses reported in the above section on enactment provide indicators of influence the completion of pre and post responses on validated surveys provides more credible indicators of potential intervention influence. This data should be interpreted with caution as there is no control group to manage the influence of other potential factors that could have contributed to outcome changes in the present sample.

Exit surveys were completed by 71 participants however a number of these could not be matched to data at enrolment because of unknown phone numbers, fathers who reported that their partner completed the enrolment surveys, and participants who did not answer any questions on either the pre or post surveys of parenting self-efficacy, co-parenting, stress or formal support.

While parenting self-efficacy, parenting stress and co-parenting competence were assessed on validated surveys, the 2 items on formal support were developed for the current project and cannot be interpreted as outcomes from a validated scale.

The analysis of formal survey data demonstrated significant change in all factors other than co-parenting competence. The outcomes indicate a rise in personal perceptions related to parenting self-efficacy and formal support, and a fall in parenting stress. These variables have shifted in the direction aimed for in the intervention development.

Table 3: Survey Reliability and Paired Sample T-Tests

	<i>N</i>	<i>Mean T1/T2</i>	<i>SD T1/T2</i>	<i>a</i>	<i>t</i>	<i>Sig. (2-tailed)</i>
APQ	65	99.52	16.06	.90	-6.07	.000*
		108.34	16.28	.91		
Parenting Stress	62	48.19	10.77	.90	5.04	.000*
		45.42	10.62	.89		
Co-parenting Competence	59	40.45	5.84	.84	-.021	.98
		40.47	5.76	.76		
Formal Support	62	7.29	1.44	N/A	-5.14	.000
		8.26	1.30			

*Significant at $p < .001$

Interview Outcomes

Telephone interviews were conducted with 23 participants with only 1 of these being a single father who reported that he was raising his child on his own. The following quotations provide an insight into the way that fathers who participated in the interviews illustrated their experience of Text2dads.

"I wouldn't say every single one helped, but then every so often I would see one and it would do something, or I'd go through on the link and read it..."

"[Text2dads] ... taught me [to] stand on my own two feet as opposed to depending on my wife for information and she giving me the answers"

"I was in a very bad place and when I started talking to my wife she was also in a very bad place after the diagnosis. And so it did, it got us talking about stuff."

"...it got us talking eventually about the big life issues: What are we going to do with him? Because for months we just hid it under the carpet"

"I think from a parent with a newly diagnosed child on the spectrum, it's worthwhile and I'm glad we did it."

"Yeah, but I would have like it to be extended, it was sad to see it come to an end."

"I've never liked change, but as I've gotten older it's kind of like, 'Well, we've got to roll with the punches', and that's something the Texts to Dads helped me with a bit when it was like, 'Hang on a minute, it's okay to change things.'"

"Yeah, it's nice, for me as a person I think it's really good that someone values my input, I mean really values it in regard to you guys asking, I thought, 'No, I like that.'"

"... it's that prompting, that little bit of thought from someone else to give you a bit of a tap on the shoulder and say, "Hey, you might do this, or maybe try that."

"I found it all very valuable. It was just good, that little hint, that little bit of help, that validation that you're on the right path when things come along. It was good to have someone else saying that. "What about this? What about that?" these little hints and little things"

"... it was validating what I was, some of what I was already doing, but it gave me pointers on different things that I could try, and some things worked, some things don't, but you've got to try..."

"Sharing stories, complimenting her on doing a good job, reaching out for support when I need help, that sort of stuff. So those messages really resonated with me, and have been really good."

"I feel as though I've got more confidence in my parenting ability, to do it by myself, up until the middle of last year my wife and were pretty much locked in to a carers, well yeah, a caring responsibility where she couldn't go away because I didn't feel as though I had the skills to cope by myself. And that's changed, so my wife's been away by herself."

"Yes [they have changed the way I interact with him] It's really [about] getting in to the head space of what are we trying to achieve...I was trying to diffuse a potentially violent situation where [Mum] was trying to allow him to self-regulate, and work how to self-regulate...it's okay for him to have a melt

down and process information, he'll come back from it, and then you can talk to him about it."

And From a single dad:

Interviewer: What was the main reason for your decision to participate in texts to dads?

Participant: One was curiosity, two was there seemed to be a lack of resources for single dads. There seemed to be plenty of emotional and family support for ladies. I couldn't find much for men...

... by the end of the program with text messages the ball is more thrown into [name] court to contribute to how he wants to communicate, how he wants to be disciplined, how he wants his life to progress. It's changed from what you might call authoritarian or autocratic system to a much more [name] lead environment.

Interviewer: Can you describe that?

Participant: Yeah. So physical affection like hugging, it has always been there, probably not as much. Judging by the last few weeks, not as much as Aidan would like. Aidan would like more physical contact. He'd like more cuddles. He likes to hold my arm when we walk down the street or walk through the shopping centre. That wasn't something that he used to do a lot of before. It was all very behaving very prim and proper and that wasn't allowing his emotions to get out as much. So I guess now I'm coming across more approachable and rather than being the boss I'm now more of a mentor which as a dad is where I want to be.

Summary, Conclusion & Recommendations

The project has demonstrated that it is feasible to recruit and engage fathers in a text-based program for fathers of children on the autism spectrum. The program elicited interest from a large number of potential participants while actual recruitment was very close to the arbitrary target of 200 participants with 89% of participants remaining with the program to completion. Responses to intermittent surveys demonstrated a level of engagement from almost 70% of participants, while clicks on links revealed that fathers did, at times, seek further information in response to the messages.

The qualitative data, from phone interviews, is yet to be analysed but from experience of this data it has been apparent that this has been an important experience for many fathers who described how they felt supported by the messages and how the information influenced their knowledge, their thinking and the way that they interact with their partners and their children.

The statistical analysis comparing pre and post data in participants who completed both of these surveys demonstrated desirable changes in parenting self-efficacy, parenting stress and perceptions in relation to formal support. These encouraging results will need to be confirmed in similar studies and hopefully tested in controlled trials designed to ensure that other sources of influence were not responsible for these outcomes.

Text2dads has been a remarkably successful project. The results will be presented at the Asia Pacific Autism Conference (Singapore, 2019), developed for publication and used to find ongoing support for the development and further study of this innovative intervention.

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Appendix 1 - Research Protocol

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This document was submitted in support of ethics application.

Author Chris May

Project Title

Text2dad Pilot Project

Short Title

Text2dad

Chief Investigator

Dr Chris May

Family action Centre
University of Newcastle
Callaghan, NSW, 2308
Email: chris.may@newcastle.edu.au
T: 02 49217224
M: 0427119853

Co-Investigator/s

Dr Jennifer St George

Family action Centre
University of Newcastle
Callaghan, NSW, 2308
Email: jennifer.stgeorge@newcastle.edu.au
T: 61 2 4921 6690

Lee Casuscelli

National Manager Positive Partnerships
Positive Partnerships
Email: lcasuscelli@autismspectrum.org.au
T: 02 8977 8300
M: 0425 287 426

Steering Group

- Lee Casuscelli – Positive Partnerships
- Dr Chris May – Family Action Centre, University of Newcastle
- Laura Boyle – Positive Partnerships
- Alison Macrae – Positive Partnerships
- Dr Jennifer St George – Family Action Centre, University of Newcastle
- Craig Smith – Positive Partnerships
- Heath Wild – Positive Partnerships

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Summary

Fathers of children on the autism spectrum often experience high levels of parenting stress that predict a range of negative family outcomes. The present project explores the feasibility and acceptability of developing and implementing a text messaging program to address difficulties that services experience in engaging with fathers of children on the autism spectrum (AS). The messages will address malleable factors in fathers' relationships with their family systems that are known to be associated with parenting stress.

While assessing the feasibility and acceptability of the project using quantitative evidence, such as enrolment and duration of participation, the study will also employ qualitative techniques to assess paternal perceptions of the experience. The project will also pilot a methodology to assess the effectiveness of the intervention. This component will assess key factors such as parenting stress, the quality of family relationships and paternal perceptions of competence in parenting a child on the autism spectrum.

Introduction

The aim of the present project is to explore feasibility and acceptability of developing and implementing a program founded on text messaging to address the difficulty that services experience in engaging with fathers of children on the Autism Spectrum. The project will also pilot a methodology that could be used in future research exploring the effectiveness of the intervention.

Multiple studies have now found that mothers and fathers of children on the autism spectrum are likely to experience levels of parenting stress that predict a range of negative family outcomes. The present project will explore the feasibility and acceptability of developing and sending messages to fathers of children on the autism spectrum. The messages will address malleable factors in fathers' relationships with their family systems that are known to be associated with parenting stress.

While assessing the feasibility and acceptability of the project using quantitative evidence such as enrolment and duration of participation the study will also employ qualitative techniques to assess paternal reports and perceptions of the experience. In addition to these primary analysis the study will also explore the feasibility and acceptability of employing surveys assessing latent variables that assess keys factors such as parenting stress, the quality of family relationships and paternal perceptions of competence in parenting a child on the autism spectrum. The aim of this secondary analysis is to provide evidence regarding the feasibility of conducting a larger, follow up study based on the outcomes of the present project.

Investigators at the Family Action Centre have extensive experience in the development, implementation and evaluation of projects that employ text messaging to engage with fathers in long term intervention. The present study will employ skills that these researchers have developed working with fathers during their transition to fatherhood to implement the present project with fathers of children on the autism spectrum.

A key factor in predicting the capacity for the present study to achieve the aims of the study design is the strong link that this study has with Positive Partnerships and the commitment of this organisation to promote the project and achieve the projects recruitment aims.

BACKGROUND

Fathers play important roles in the lives of all members of their families and the fathering role can be particularly important in families where there is a child with an Autism Spectrum Disorders (AS). Aside from the immediate role in sharing the responsibilities for the care of their children fathers also play key roles in supporting their partners and contributing to key factors that enable parenting partnerships and families to function effectively. However, the parenting of a child on the autism spectrum can have adverse influence on fathers and the relationships that they share across family systems.

Mothers and fathers of children on the autism spectrum often experience high levels of parenting stress and recent evidence suggests that these high levels of stress aggregate in parenting partnerships (May et al, 2014). High levels of parenting stress in families of children on the autism spectrum have been linked to a range of factors including parenting self-efficacy, coparenting quality and parent/child attachment. Intervention can either aim to directly influence parenting stress or the factors that are associated with parenting stress in predicting poor family outcomes. The present study will test the feasibility of an intervention designed to enhance paternal parenting efficacy in relation to the parenting of their child on the autism spectrum, to enhance the quality of support in parenting partnerships, to enhance the quality of interaction that occurs between fathers and their children, and to enhance the sense of support that fathers perceive in their relationship with services.

Mothers tend to take on a central role in the relationships that families share with services and schools and this central role is often amplified where there is a child on the autism spectrum (Hock et al., 2012; Tamli, 2013). Services therefore, as a result of their experience, tend to develop practices, processes and skills that align with the gendered differentiation of parenting roles and responsibilities. The decisions that families make, the experience of service providers and the expectations of employers all contribute to the way that parenting roles and responsibilities are allocated, reinforced and sustained along gendered lines (Frascarello et al, 2016). As a result of these and other societal influences, services often find it difficult to engage with fathers or sustain paternal participation in programs when they do engage.

Text messaging has now been employed in programs for weight reduction, diabetes management, medication compliance, peer support and in interventions associated with mental health. Research in the use of text messaging in intervention with fathers indicates that text messaging can be an effective way to engage fathers in long term intervention, get information to them, link them to further information, influence their thinking and effect change in their parenting and relationship behaviours (Fletcher & May, 2016). Text messaging to fathers therefore has the potential to improve paternal decision making, without coercion, in a manner consistent with the key principles of nudge theory (Thaler & Sunstein, 2008) by providing them with timely information, in small readily consumable portions, while linking them to further sources of reliable and specific online material.

Further advantages of text messaging to fathers include:

- Cost effective
- Access is not limited by location ie: rural, remote and isolated fathers
- The intervention comes to them
- They can receive information tailored to
 - Marital circumstances

- Child's developmental stage
- Links help them to find and navigate online material
- Links can enhance knowledge regarding reputable online sources of information
- Messages can be stored and recalled when needed or relevant
- Messages can be shared
- Messages can provide a sense of support and inclusion

The project team from the Family Action Centre, University of Newcastle have experience in developing, delivering and evaluating programs that send text messages and linked information to fathers during their transition to parenthood. This project will extend that work into the present project assessing the feasibility of providing supportive intervention to fathers of children on the autism spectrum.

The project aims to keep fathers engaged with the intervention while enhancing perceptions of parenting self-efficacy, coparenting competence and the sense of support that fathers have while raising a child on the autism spectrum. Messages will seek to achieve these aims through enhanced paternal understanding of autism and how autism manifests in the behaviour of children/youth, linking fathers to services and online information, encouraging their interaction with their child/n, encouraging positive parenting partnership behaviours and providing them with reasonable but positive expectations about their child and family's future.

Overview of Relevant Literature

Fathers of children on the autism spectrum play important roles in providing direct care to their children, supporting their parenting partners, and providing functional support that enables families to afford, navigate and cope with the demands of raising a child with special needs.

Fathers and mothers of children on the autism spectrum often experience high and similar levels of parenting stress and these high levels of stress are often similar within parenting relationships (May et al., 2014). High levels of parenting stress are linked lower levels of parenting competence, harsh and deregulated parenting behaviours, externalising behaviour problems in the parent's children and reduced relationship satisfaction across the family (See Deater-Deckard, 2005). These influences are likely to be stronger in families, such as those with a child on the autism spectrum, where child behaviour is characterised by challenging behaviours (Beltsy et al, 2007). However, families often weather these challenges in the hope of providing the opportunity for optimal developmental outcomes for their children (May et al., 2014).

Although there are reports in the literature of high divorce and separation rates in the parents of children on the autism spectrum available evidence from well-designed studies indicates that the rate of marital breakdown is likely to be similar to that in other families (Freedman et al, 2102, See also Editorial [Autism], 2013). However, fathers usually continue in their parenting and supportive roles following disruptions in the family system and it may be more important to find effective ways to engage with fathers in families where paternal isolation is likely to be more pronounced following changes such as divorce and separation.

The parenting partnership is the relationship that adults (usually the child's mother and father) share in the raising of children. A recent study has now demonstrated that the quality of their parenting partnership is a stronger predictor of parenting stress – in mothers and fathers - than many other key factors, including the severity of the child's AS and the sense of self-efficacy that parents have in the raising of a child on the autism spectrum (May et al., 2015).

Regardless of family structure it is evident across a wide range of services that providers generally find it difficult to engage and work effectively with fathers (Fletcher et al, 2014). The difficulty that services experience in engaging with fathers is also evident in services aiming to provide supportive intervention to the families of children with atypical development including AS (Panter-Brick et al., 2014). The emergence of mobile communication technologies that enable the delivery of affordable, convenient, personalized, and engaging information directly to men provides an opportunity to avoid many of the barriers to father inclusion by dissociating service delivery from the functional and ecological constraints of clinical environments (Head et al., 2013).

The development of text-based services could therefore provide an effective means for consistently supporting large numbers of fathers caring for a child on the autism spectrum. The widespread uptake of mobile phones in western economies now means that text messaging offers a potentially important tool to communicate with fathers at any time in their parenting experience. The flexibility of this technology enables the provision of information that is tailored to particular needs; such as marital status or child's developmental stage. Text messaging has now been successfully employed in programs focusing on weight reduction, diabetes management, medication compliance, and peer support in mental health programs. (Zubin and Peterson; 2015). Text messaging has also been successfully employed in interventions with hard to reach men and with new fathers during their transition to parenthood (Fletcher & May, 2016). Although there are currently no reports in the literature of SMS or text based parenting intervention in families where there are children on the autism spectrum there is reason to think that such intervention could be equally successful in this context

AIMS of the Study/Research Questions

Although services have found it particularly challenging to engage fathers of children on the autism spectrum in intervention this does not mean that these parents are not interested in receiving information that is relevant to their needs and delivered in a manner that fits with their availability, roles, responsibilities and the wider range of factors that influence relationships with services.

The aims of the present feasibility and acceptability project are:

- To engage fathers of children on the autism spectrum in an intervention delivered to their smartphones

The aims of the pilot project are to assess the feasibility and acceptability of a methodology designed to assess:

- Autism specific parenting self-efficacy in fathers of children on the autism spectrum
- Parenting stress in fathers of children on the autism spectrum
- Co-parenting competence in fathers who are working together with another parent to raise their child on the autism spectrum

To achieve these aims the project will have to also achieve the following aims:

- Develop a corpus of messages that can be delivered to fathers of children on the autism spectrum
 - Messages will address the following key areas
 - Knowledge about Autism
 - Relationship with their child
 - Relationship with child's other parent/carers
 - Self-care
 - Hope for the future

- Messages will also link fathers to reputable and valuable online information
- Allocate messages to a range of campaigns tailored to fathers needs based on:
 - Marital/parenting relationship status
 - Developmental age/stage of their child
- Enrol fathers of children on the autism spectrum (N=200)
- Deliver messages, linked information and surveys to the phones of participants
- Assess the feasibility and acceptability of participation
 - Recruitment
 - Retention
 - Engagement
- Recruit fathers from across Australia
- Deliver messages to fathers according to identified needs
- Assess the feasibility and acceptability of the intervention
- Assess paternal perceptions of variables listed in primary aims
- Assess the feasibility and acceptability of the surveys and methods used for data collection
- Monitor trends in quantitative data

Hypothesis

It is feasible and acceptable to engage fathers or children with on the autism spectrum in a text-based intervention designed to reduce parenting stress, enhance parenting self-efficacy and enhance co-parenting competence.

Outcomes

Feasibility and Acceptability

Fathers of children on the autism spectrum that receive the text-based intervention will:

- Report a sense of support through engagement with the service
 - Expressed as % of total respondents reporting a sense of support on final questionnaire
- Report that the messages and linked information that they receive are relevant to their needs
 - Expressed as % of total respondents - final questionnaire
- Remain engaged with the service by
 - Responding to feedback on messages sent
 - Retention
 - Calculated as total withdrawals/total participants and expressed as a percentage
- Reported access to linked information
 - % reporting accessing linked information on at least one occasion in final questionnaire
- Report confidence in recommending this service to other fathers
 - Expressed as % of total respondents - final questionnaire

Pilot Study

- Recruitment
 - Total recruitment
- Retention
 - As above
- Survey and Interview Completions
 - % completing surveys = total recruits/survey completions

- % of total participants that consent to interview
- Data will also be reported on number who consent to interview but either withdraw consent or do not complete interview when invited.

Study Design

Message Development

A group will be formed including fathers of children on the autism spectrum, clinicians, service providers and academics to develop and validate a corpus of text messages. These messages will be developed in an iterative, Delphi styled, process previously applied in the development of messages for SMS4dads. In this process an initial corpus of messages is developed by expert panel and then reviewed by a wider group of experts in 2 rounds (See Appendix 9). Unresolved concerns are worked through by the expert panel prior to finalisation of the message corpus (For detail see May & Fletcher, 2016)

Message readability will be required to sit at or below average year 8 reading level as assessed with the Flesch-Kincaid Grade Level test.

Pilot Study

Recruitment

The study will aim to recruit 200 fathers from across Australia. Participants will include people who identify themselves as fathers, are over the age of 18 (for consent purposes) and have a child on the autism spectrum who is living at home with them and currently under the age of 18. Participants will not be asked to identify their gender. The project will accommodate all participants who sign up during the recruitment window; as messaging costs and group allocation are a relatively minor components of the project resource allocation - there will be no upper limit on recruitment.

Recruitment will be managed through services of Positive Partnerships and ASPECT; the largest provider of services to people with Autism in Australia. Participants must supply their own smartphones and fund any costs that they incur in receiving messages or accessing linked information – noting that the cost of sending text messages will be paid for by the project. Information sheets, consent forms, text messages, linked information and surveys will all be available in English-language only.

Fathers will be able to enrol prior to the planned commencement date of September 2018 and will receive between 12 and 16 weeks of messages depending on their date of enrolment. Recruitment will remain open for 8 weeks after the commencement date.

Messages will be set into 6 different campaigns based on the following matrix for parent marital status (as reported by the participant father) and child's developmental phase (Assessed by child age).

	Married and living together with other biological parent**	Separated or divorced but in cooperative relationship with other parent**	Raising child independently of other parents when child in fathers care**
Preschool aged child (<5 yo)	Campaign 1A	Campaign 2A	Campaign 3A
Primary School age (6-12)	Campaign 1B	Campaign 2B	Campaign 3B

High school aged youth 12-18*	Campaign 1C	Campaign 2C	Campaign 3C
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*Note that children must not reach 18th birthday before completion of the intervention for consent purposes.

**All participants will be encouraged to inform their children and partners, if appropriate, that they are receiving the messages.

Fathers will enrol by completing an expression of interest form and then completing an online questionnaire (delivered to their phone by QUALTRICS). Enrolment data will be downloaded from QUALTRICS and stored in de-identified files housed on University of Newcastle, firewall protected computers and backed up on University protected cloud storage.

Unsolicited participant responses to messages will be monitored and stored for reporting purposes. Messages that indicate a high level of distress or concern will receive a predetermined response (see supporting documentation) acknowledging their distress and recommending that they take the next step in engaging with a free phone-based support service (Helpline).

The total time of the project from project launch in September 2018 to launch to final survey messages in 2019 will be 6 months.

Eligibility Criteria

Inclusion

- Parents of a child on the autism spectrum who identify as being a father
- Parents of a child on the autism spectrum who is less than 18 years of age at any time during the messaging period of the study.
- Participants must be over 18 years of age at the time of enrolment.
- Able to read English at average year 8 proficiency

Exclusion

- Parents less than 18 years of age
- Parents not identifying as a father
- Parents who do not have a child on the autism spectrum

Opting out

Participants can opt out at any time by sending a message stating “Stop” or conveying a similar intent such as “Opt out”, “Cease messages” etc.

Measures – See Appendices for Full Descriptions

- At enrolment
 - Demographic Survey
 - Parental Stress Survey
 - Parental Stress Scale (Berry & Jones, 1995)
 - Coparenting Competence Survey
 - Coparenting Competence Questionnaire (May et al., under review)
 - For fathers working in partnership only
 - Autism Specific Parenting Self-efficacy Survey
 - Autism Parenting Questionnaire (Kim et al., 2004)
- During participation
 - Follow-up text messages asking for feedback on last message sent
- At Completion
 - Post Participation Survey of Participant Experience

- Semi-structured Qualitative Phone Interview (N=30)
 - Conducted by either
 - Dr Chris May – Family Action Centre, University of Newcastle
 - Laura Boyle – Positive Partnerships
 - Alison Macrae – Positive Partnerships
 - Dr Jennifer St George – Family Action Centre, University of Newcastle
 - Craig Smith – Positive Partnerships
 - Heath Wild – Positive Partnerships
- Parental Stress Survey
- Co-parenting Competence Survey
- Autism Specific Parenting Self-Efficacy Survey

Study Procedures

There is no disadvantage to participants joining the program or choosing not to complete surveys or evaluation. Services will not be informed of individual choices regarding enrolment or of personal decisions regarding levels of participation. Although the planned evaluation requires 200 participants more participants will be accommodated if they choose to enrol.

Participants are advised of the opportunity to review and edit their responses prior to data analysis or publication in the Participant Information Statement and in the Interview Schedules.

Participants will receive approximately 14-16 messages per month to their mobile phones. Participants are reminded at regular intervals that they can opt out by texting back “Stop” at any time. When a stop message is received the participant’s messages and requests for surveys are ceased.

STOP reminder messages are sent at approximately every 8 message. These messages will be carefully placed so as not to appear to come from child or partner.

Messages will focus on key areas previously described in the method.

Each father will receive 6 messages over the course of the intervention that ask for feedback on the previous message sent. These messages will ask fathers to rate the previous message, to provide feedback on whether they have accessed linked information and if so to rate the linked information.

Approximately 30 per cent of messages will contain a website link to obtain further information – with preference for information from existing, non-commercial, government and non-government organization providers. All requests for feedback are optional and participants are not penalized if they do not respond.

Enrolment and Data Collection

Following receipt of an expression of interest fathers (see appendices) potential participants will receive a message with a link to a survey built on QUALTRICS software. This survey includes consent items, demographic items and previously described surveys, advice on how to Opt Out along with advice on contacting online phone support if the experience causes distress. Only fathers who complete the full suite of items in the enrolment questionnaire will be enrolled in the study.

Participants will then be allocated to campaigns according to their parenting relationship status and child age. They will then receive a message advising them that the enrolment has been successful, advising when the messages will start and reminding them about the capacity to Opt Out at any time.

Messages will commence following the campaign launch and continue for between 12 and 16 weeks; those who enrol later in the project – less than 16 weeks from completion – will receive only 12 weeks of messages.

Participants will be sent periodic links asking for their feedback on the last message sent and a further QUALTRICS survey at completion of participation (unless they choose to Opt Out). A final reminder will also be sent to those who do not complete the final survey within a week of first offering.

Access to Existing Data

N/A

Data Linkage Management

N/A

Safety Considerations

Participating fathers are passive recipients of text messages to their phones. The messages do not require any response (feedback and Mood Check are optional) and participants can exit by texting 'STOP' at any time.

Surveys and interviews administered during the study will include phone numbers of support services in case of any distress that may be caused. The information statement for participants states the risks and benefits:

We hope that participants will find benefit from the information that they receive through the text messages. However, there is potential that the information in text messages or questionnaires could raise discussion about distressing issues, encourage distressing thoughts, or contribute to existing emotional or psychological issues. If you do become distressed through participation in this study you are encouraged to seek support through calling Lifeline on 13 11 14 (24 hours).

Serious or adverse events identified during the study will be reported to the Ethics Committees of ASPECT and to the University of Newcastle.

Data Monitoring

The research team at the University of Newcastle under the direction of Dr Chris May will conduct regular reviews of the study and provide reports to the Steering Group.

Data Analysis

Quantitative

There is no required sample size for this pilot phase of the research.

A target of 200 participants will enable evaluation of:

- The feasibility of enrolling fathers into the project
- The feasibility of sending semi-tailored messages using the proposed platform and process.
- The acceptability of the messages to a, hopefully representative, cross section of fathers.
- Paternal reports of the relevance and acceptability of particular messages.
- Paternal reports of accessing linked information.

Statistical Measures

Linear mixed modelling will be used to analyse trends and relations between pre-post scores on latent variables of parenting stress, co-parenting competence and autism specific parenting self-efficacy.

Qualitative Analysis

Interviews will be conducted to evaluate the feasibility of Text2dad. Interviews will reveal the individual perspectives of the participants, and allow the program developers to better understand the qualitative results.

The analytic method will comprise of categorical coding that groups all responses according to the hypotheses of the study, which include participants' perspectives on the influence of the program on their sense of support, their sense of co-parenting competence, sense of parenting self-efficacy and acceptability of the program.

A second level of coding will be more inductive and will be used to identify overarching themes relating to engagement with e-health services, fathering, and co-parenting. All analyses will be conducted by the principal researchers, with team discussions to interpret codes and definitions, as well as to prevent coder drift as the coding continues. Findings will be presented as complementary to the quantitative method.

Data Handling and Record Keeping

Data collected will consist of electronic records for each participants of demographic data, survey responses, enrolment messages sent, feedback texts after specified messages and unsolicited feedback text responses (if any), opt out rates and duration of intervention. Interviews conducted, with participant agreement, will be audiotaped and later transcribed by a professional transcription service (Outscribe).

All data will be stored on password protected university server. Storage of information about participants during and after completion of the project will be stored in separate databases on the University firewall-protected server so that no identifying data can be linked to responses to surveys without access codes retained by the researchers.

A final report of study outcomes will be delivered to the sponsors at completion of the analysis. Weekly reports on recruitment outcomes will be provided during the recruitment phase.

Data collection and analysis is the responsibility of the research staff of the University of Newcastle, under the supervision of the Chief Investigator. The Chief Investigator is responsible for ensuring the accuracy, completeness, legibility, and timeliness of the data reported.

Protocol Deviations

A protocol deviation is any noncompliance with the study protocol, GCP, or HREC requirements.

The noncompliance may be either on the part of the participant, the investigator, or the study site staff. As a result of deviations, corrective actions are to be implemented promptly.

It is the responsibility of the site principal investigator to use continuous vigilance to identify and report deviations within 72 hours of identification of the protocol deviation. All deviations must be addressed in study source documents, reported to the approving HREC(s) and site Research Governance Officer(s).

Publication and Intellectual Property

The Steering Committee will be responsible for developing publication procedures and resolving authorship issues. Please refer to contract developed in partnership between Parenting Partnerships and University of Newcastle.

At the end of the study, the Chief Investigator, Dr Chris May, will make results of the research available to the research community.

ETHICAL CONSIDERATIONS

Indemnity & Compensation for Injury

Under the contract, the University of Newcastle will effect and maintain the policies of insurance for public liability (not less than \$10,000,000) and professional liability (not less than \$5,000,000). The University of Newcastle's liability to the SAMHC under this agreement is \$302,500.

Vulnerable populations

The men enrolling as adults whose child has special needs. Links to counselling and support are provided as part of Text2dad and fathers indicating distress are escalated to professional mental health services.

Waiver of Consent

Consent to be given by participants in response to online questionnaires.

Confidentiality

Reports and publications will present findings using de-identified examples and aggregate descriptions of participants' responses. Audio recordings taken from interview sessions will be kept for 5 years after recording.

Electronic data will be stored on University of Newcastle servers in secure folders accessible to only staff of the Fathers and Families Research Program.

Ethical Review

Ethical approval will be required from the following HRECs:

- Positive Partnerships
- University of Newcastle

The study will be conducted in full conformance with principles of the "Declaration of Helsinki", Good Clinical Practice (GCP), the National Statement on Ethical Conduct in Human Research (NHMRC, 2007), Australian Code for the Responsible Conduct of Research (2007) and within the laws and regulations Australia.

OUTCOMES AND SIGNIFICANCE

Services find it difficult and resource intensive to engage with fathers of children on the autism spectrum. Many fathers have little to no relationship with services and receive little to no direct intervention to support them in their parenting role.

The expected outcome is that most of the fathers that enrol with this program will remain enrolled, engage with the messages and perceive a sense of support from this experience.

Timeline

Actions	Due date
Draft design and methodology for project plan	22 nd June 2018
Submit for Peer Review	22 nd June 2018
First draft message writing	22 nd June 2018
Submit ethics approval to Newcastle University	7 th July 2018
Message reference group feedback	20 th July 2018
Finalise messages for campaigns available for entry	20 th August 2018
Recruit participants	Ethics Approval to 1 st September 2018
Launch SMS campaign	10 th September 2018
SMS campaign finishes	10 th February 2019
Conduct, record & transcribe 30 qualitative interviews (Positive Partnerships x 15, Chris May x 15)	28 th February 2019
Analysis of qualitative data	30 th March 2019
Analysis of Quantitative Data	30 th March 2019
Final Report UoN to Positive Partnerships	20 th April 2019
Positive Partnerships program report	30 th April 2019

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