Predicting response to an internet-delivered parenting program for anxiety in early childhood

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Abstract

Previous research has identified factors related to outcome in child anxiety treatment and parent training programs for child behavior problems. However, it is unclear what factors predict outcomes in interventions delivered online to parents of young children at risk of anxiety. This study investigated predictors of child anxiety outcomes among 433 families with young children (3-6 years) who participated in a randomized controlled trial of Cool Little Kids Online, an 8-module early intervention program for child anxiety based on cognitive behavioral therapy (CBT). Potential predictors included baseline demographic factors, child and parent mental health factors, and indicators of program use, including number of online modules completed and frequency of homework practice. Results showed that only access to a printer moderated intervention effectiveness. Printer access predicted lower child anxiety in the Cool Little Kids Online group, but had no effect on outcomes in the waitlist group. In both groups, higher levels of child anxiety symptoms, child inhibited temperament and poorer parent mental health at baseline predicted higher levels of child anxiety symptoms at 6-month follow-up. The amount of online program use was not related to improvements in child anxiety symptoms. However, parents who reported practicing the program skills more frequently showed greater reductions in child anxiety, and access to a printer was related to frequency of program skills practice. These findings provide empirical support for the important role of skills practice in online CBT interventions, and suggest that practicing program skills may be more important than completing the online modules.

Keywords: early childhood, anxiety, homework, internet, predictors

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Anxiety disorders are common in children and adults and intervening early in life with children at risk could help mitigate the course of anxiety (Hirshfeld-Becker & Biederman, 2002). One prevention approach is to teach parents how to help their child cope with anxiety-provoking situations in the preschool years, when parents are highly influential and behaviors may be easier to modify. Such an intervention could change avoidant coping styles before anxiety becomes more entrenched and impairing as children grow older. The Cool Little Kids parenting group program applies this approach to preschool-aged children with a highly inhibited temperament, who are at greater risk of developing anxiety problems (Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2005). This cognitive-behavioral program teaches parents practical ways to reduce child anxiety through graded exposure (stepladders), contingency management, reducing overprotective behaviors, and managing their own fears and worries. It has been shown to prevent anxiety and depression in children many years after the intervention was delivered (Rapee, 2013; Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2010).

Cool Little Kids has recently been adapted into an online delivery format to increase its accessibility and reach in the community (Cool Little Kids Online; Morgan, Rapee, & Bayer, 2016). Online delivery may overcome some barriers to attending group programs or face-to-face clinic-based therapy, including scheduling conflicts, transportation, childcare arrangements, perceived stigma, and limited availability, particularly outside metropolitan areas (Axford, Lehtonen, Kaoukji, Tobin, & Berry, 2012; Dittman, Farruggia, Palmer, Sanders, & Keown, 2014). Online interventions have been proposed as one means of improving the scope of mental health care, by increasing the reach of mental health treatments and thereby reducing the burden of mental health problems (Comer & Barlow,

2014; Kazdin & Blase, 2011). The treatment of child anxiety with computerized CBT shows promise in this regard, as programs such as BRAVE-ONLINE (March, Spence, & Donovan, 2009) and Camp Cope-A-Lot (Khanna & Kendall, 2010), have a strong evidence base and the potential for wide dissemination.

A randomized controlled trial (RCT) of Cool Little Kids Online found that online delivery was efficacious in reducing child anxiety symptoms ($d = .38$, $p < .001$) when offered to parents in the community, yet a significant minority of 42% did not show reliable reductions in anxiety (Morgan et al., 2017). It is important to understand who the program worked for and didn't work for in order to improve its effectiveness and to identify families who may need additional support. In the treatment of anxiety disorders in older children, a significant minority (~40%) also do not respond adequately to cognitive behavior therapy (CBT) (James, James, Cowdrey, Soler, & Choke, 2015). Reviews of factors associated with CBT treatment response have generally failed to identify consistent predictors of outcome (Lundkvist-Houndoumadi, Hougaard, & Thastum, 2014; Nilsen, Eisemann, & Kvernmo, 2013). These reviews have concluded that demographic factors such as child age, gender, ethnicity, and socioeconomic status do not appear to be associated with anxiety treatment outcome. More recently, larger studies with greater power have examined predictors of poor response to child anxiety treatment (Compton et al., 2014; Hudson et al., 2015). The largest of these found poorer treatment outcomes were associated with greater anxiety severity at baseline, comorbidity (externalizing problems and depression), a diagnosis of social anxiety disorder, and parent psychopathology, particularly at later follow-up after treatment had finished (Hudson et al., 2015). Compton et al. (2014) also identified baseline anxiety severity and poor family functioning as predictors of higher anxiety following treatment.

While these findings apply to treatment of anxiety in older children, they may be less relevant for identifying who is least likely to respond to interventions delivered to parents of

young children. There is limited research in this area in early childhood. Hirshfeld-Becker et al. (2010) found no effect of child age, gender, or parental anxiety on treatment response to a combined parent and child CBT program for anxiety disorders in children 4 to 7 years old. However, this study may have been underpowered as only 46 children were included in these analyses. Turning to the broader literature on parent training programs for early-onset child behavior problems, several child and family characteristics have been identified as important predictors of intervention response. Poorer treatment outcomes are associated with higher levels of child behavior problems, maternal depression or psychopathology, and single-family households (Reyno & McGrath, 2006). Low socioeconomic status (indicated by parent education, income, or occupation) has also been found to predict poorer outcome (Lundahl, Risser, & Lovejoy, 2006; Reyno & McGrath, 2006). However, a recent analysis suggests that socioeconomic status may interact with initial problem severity, such that disadvantaged families only do worse than advantaged families when initial problem behaviors are mild (Leijten, Raaijmakers, de Castro, & Matthys, 2013). These parenting programs are usually offered face-to-face to groups or individual parents, but online delivery is a growing area of research (Dittman et al., 2014; Sourander et al., 2016). A concern is that online delivery may not be effective for families with high levels of adversity, who may need more support from a professional to optimally implement program skills (O'Brien & Daley, 2011). In contrast to this, an evaluation of the predictors of child behavior outcomes after an online parenting program found that neither parent education, income, nor mental health were influential factors, and the most reliable predictor was the number of online modules completed (Dittman et al., 2014).

The number of modules completed is one measure of program engagement and could be considered analogous to program attendance in face-to-face parenting groups. Attending parenting sessions is a precondition for beneficial effects, but there are other aspects of

engagement that may be more influential than mere attendance (Nock & Ferriter, 2005). Engaging within sessions, such as by participating in group discussions, and completing homework assignments between sessions have been identified as stronger predictors of treatment response than attendance (Nix, Bierman, & McMahon, 2009). Similarly, module completion in online interventions is inconsistently associated with outcome in programs for adults with anxiety (Donkin et al., 2011). A linear relationship between program use and outcome may be too simplistic, as some users may stop using an intervention because they have received the help they needed (Donkin et al., 2013; Mohr, Burns, Schueller, Clarke, & Klinkman, 2013). In the Cool Little Kids Online RCT, despite finding beneficial effects on average, there were few participants who completed all of the program, and the relationship between program use and outcome has not been explored (Morgan et al., 2017). Relatedly, it is important to know which participants didn't use the program much, to help understand how it could be improved to better meet the needs of all families. Parent engagement and attendance at parent training programs is a significant challenge, and is potentially more so for prevention programs where the motivation to attend may be lower than when treating established problems (Baker, Arnold, & Meagher, 2011). Less attendance at parenting programs has frequently been associated with lower parent education and income, younger maternal age, ethnic minority status, single family households and negative life events (Reyno & McGrath, 2006). In online interventions for depression, lower education level and younger age have also been associated with less adherence, in addition to being male and having co-morbid anxiety symptoms (Karyotaki et al., 2015).

The Current Study

Previous research has identified factors related to outcome in child anxiety treatment and parent training programs for child behavior problems. However, no study to date has examined predictors of response to a preventive online parenting program for early childhood

anxiety problems. The present paper therefore reports on an exploratory study of child and family characteristics associated with response to Cool Little Kids Online, an online parenting intervention for preschool child anxiety. This paper presents a secondary analysis of data from the RCT, and examines child and family sociodemographics, child mental health factors, parent mental health, and parenting behavior as potential predictors of outcome. In addition to baseline predictors, we investigated whether the amount of program use was related to outcomes, and whether there were characteristics that predicted which families tended to use the program.

Method

Full methodological details of the RCT are available in the study protocol (Morgan et al., 2015) and primary outcomes paper (Morgan et al., 2017) but are summarized below. The study was approved by La Trobe University Human Ethics Committee (UHEC15-010).

Participants

Participants were Australian parents of 433 children (52.7% female) aged between 3 and 6 years ($M = 4.8$ years, $SD = 1.0$) with high levels of temperamental inhibition, defined as a score > 30 on the Short Temperament Scale for Children, Approach subscale (STSC-A; Prior, Sanson, & Oberklaid, 1989). A minority (13.9%) were an only child and 65.6% were in the abnormal range on the Emotional Symptoms subscale of the Strengths and Difficulties Questionnaire (Goodman, 1997). The majority of parents were female (95.8%) and the mean age was 35.9 years ($SD = 5.1$). Most parents were married or in a defacto relationship (91.7%) and few were single or widowed (3.2%), or separated/divorced (5.1%). More than half possessed a tertiary degree or higher qualification (63.1%) and lived in a major city (71.6%; which is representative of the Australian community (Australian Bureau of Statistics, 2016b)). There was a range of household annual income levels: $< \$44,000$ (7.3%), $\$44,000-$

\$75,000 (15.3%), \$75,000-\$116,000 (32.7%), >\$116,000 (44.7%),¹ and 17.1% reported possessing a welfare card. The majority spoke mainly English at home (94.9%). About half used the internet for 10 hours or more a week (53.1%), and most had access to a printer (91.5%). More than a quarter of parents (27.0%) reported experiencing high or very high psychological distress (≥ 22) on the K10.

Measures

Except where noted, all measures described below were collected at baseline as potential predictors of outcome and program use.

Child and family sociodemographics. Demographic information collected at baseline included child age and gender, parent age, marital status, family composition, parent education (dichotomized to tertiary degree or not), language mainly spoken at home, place of residence (dichotomized to major city or not), and weekly internet use (dichotomized to less than 10 hours or 10 hours or more, as this was the median for Australians in 2014-15 (Australian Bureau of Statistics, 2016a)). Socioeconomic status was assessed by household income (optional question) and family financial hardship (welfare card). Families also indicated how many hours they used the internet each week and whether they had access to a printer.

Child mental health. *Child anxiety symptoms* were measured using the total score of the 28-item Revised Preschool Anxiety Scale (PAS-R) (Edwards, Rapee, Kennedy, & Spence, 2010), in which parents rate how often symptoms of separation anxiety, specific phobia, social phobia, and generalized anxiety apply to their young child. Scores correlate with observer ratings of child anxiety, and are predictive of DSM-IV anxiety diagnoses assessed by semi structured interview (Edwards et al., 2010). Child anxiety symptoms at the

¹ The median Australian household income in 2011-2012 was \$74,984 and was \$113,880 for a couple aged 35-44 with dependent children (Australian Bureau of Statistics, 2013).

24-week follow-up was the primary outcome of interest. *Child internalizing symptoms* were assessed with the Emotional Symptoms subscale of the Strengths and Difficulties Questionnaire (parent version; SDQ-P) (Goodman, 1997). The SDQ-P is a widely-used and well validated screening tool of psychosocial problems in children (Stone, Otten, Engels, Vermulst, & Janssens, 2010). It comprises five subscales of five items each that assess Emotional Symptoms, Conduct Problems, Hyperactivity, Peer Problems and Prosocial Behavior. The five items within the SDQ-ES subscale include statements such as ‘Often unhappy, downhearted or tearful’ and ‘Many worries or often seems worried’, which are rated on a 3-point scale. It correlates highly with other measures of internalizing symptoms ($r_s .67 - .73$) and can discriminate between children with and without emotional diagnoses (Stone et al., 2010). Although the Emotional Symptoms and Peer Problems subscales can be combined to form an Internalizing subscale, we used the Emotional Symptoms subscale instead, as is recommended for samples at high-risk for anxiety (Goodman, Lamping, & Ploubidis, 2010). *Anxiety life interference* was measured with the preschool version of the Children's Anxiety Life Interference Scale (CALIS) (Lyneham et al., 2013). The CALIS was adapted by Kennedy et al. (2009) for use with younger, preschool age children (CALIS-PV). The preschool version includes 20 items across two subscales that assess the impact of children’s anxiety symptoms on their own life and general family life (e.g. ‘Interacting with other children at preschool/daycare/school’, ‘Your ability to go out to activities/events without your child’). The CALIS-PV’s internal consistency is excellent and it is sensitive to change with treatment (Kennedy et al., 2009).

Parent mental health. Parent mental health was measured using the Kessler 10 Psychological Distress Scale (K10) (Kessler et al., 2003). This assesses 10 symptoms of psychological distress in the anxiety–depression spectrum. The K10 is widely used as an indicator of mental health in the general population and as a screening tool, as it is a good

discriminator between those with and without mental disorders (Furukawa, Kessler, Slade, & Andrews, 2003). According to Australian norms, scores from 10-15 indicate low, 16-21 moderate, 22-29 high, and 30-50 very high psychological distress (Slade, Grove, & Burgess, 2011).

Parenting behavior. Parents completed the Over-Involved/Protective parenting scale (OI/P) (Bayer, Sanson, & Hemphill, 2006). The OI/P is an 8-item measure of overinvolved/protective parenting behaviors that discourage autonomy in young children (e.g. ‘I prevent my child getting involved in activities or tasks that he/she finds too difficult and may fail at’). Items are rated on a 4-point response scale and refer to specific behaviors rather than broad parenting statements to minimize social desirability bias. Scores range between 1 and 4, with higher scores indicating greater over-involved/protective parenting practices. The OI/P has good internal consistency and is significantly associated with child internalizing symptoms (Bayer, Sanson, & Hemphill, 2009).

Program use. Throughout the 24-week access period, the Cool Little Kids Online website recorded the number of logins, number of modules accessed, number of modules completed, and time spent logged in. Modules were recorded as completed when 80% of pages had been viewed, including the final summary page. Homework practice was assessed at the 12-week follow-up only, as it was anticipated most participants would have completed the program by this point and therefore this would be analogous to a post-intervention assessment. Indeed, less than a fifth (18.7%) of parents accessed the online program after providing 12-week follow-up data. Parents were asked “During the program, how often did you practice Cool Little Kids skills with your child?” which was rated on a 4-point scale (everyday, a few times a week, once a week, less than once a week).

Procedure

Participants were recruited from Australia via paid advertisements on Facebook and Google, advertisements on parenting and mental health related websites, and flyers distributed to preschool services in the state of Victoria, Australia. Eligibility screening and consent was conducted online via the Cool Little Kids Online website (www.coollittlekids.org.au). Participants were eligible if their child was aged 3-6 years old with temperamental inhibition (a score >30 on the STSC-A) and did not have a major developmental delay (i.e., cerebral palsy, an intellectual disability, or severe autism). Parents from 433 eligible families enrolled in the trial and were randomized to intervention group ($n = 215$) and waitlist control group ($n = 218$). Once enrolled, parents in the intervention group were emailed instructions on how to create an account with the online program. A parent or primary care giver completed online questionnaires at baseline, 12 weeks after baseline and 24 weeks after baseline. The waitlist group received access to the intervention once they had completed the 24-week follow-up questionnaire.

Intervention

Cool Little Kids Online is an 8-module parenting intervention adapted from the Cool Little Kids parenting group program. It was designed to be engaging and easy to use and includes written information, videos, audio narration, interactive worksheets and activities, and parent stories. Modules include psychoeducation about the nature, development and risks for anxiety disorders and teach practical ways to reduce child anxiety through graded exposure (stepladders), contingency management, reducing overprotective behaviors, and managing parents' own fears and worries (Morgan et al., 2016; Morgan et al., 2015). Table 1 presents an overview of each module. Parents were given 6 months access to the program. Modules were released weekly and parents were encouraged to complete one module per week, but could work at their own pace if they preferred. Parents were set homework

activities to complete between modules to facilitate skill acquisition. These included noting when their child was anxious on an anxiety awareness worksheet, practicing graded exposure (stepladders) with their child, recording when they ‘jumped in too soon’ to help their child when upset or worried, recording when they resisted jumping in to help their child and what they learned, and completing ‘realistic thinking’ worksheets. These were provided as printable pdfs as well as interactive online forms. The program was primarily self-guided, but participants were given the opportunity to request a telephone support call from a Cool Little Kids clinician. However only 5% of parents in the RCT received a call (Morgan et al., 2017). To increase program adherence, parents received automated summary emails after completing each module, which reinforced activities to practice at home before the next module. Emails announced the availability of each new module, and reminder emails were also sent 18 weeks after baseline and one week before access to the program ended. Participants were also sent one SMS reminder after 2 weeks of website inactivity to check whether they were having technical problems and to encourage them to log in.

Results

Predictors of Child Anxiety at Follow-up

Linear regression analyses were conducted with participants to identify the predictors of lower child anxiety symptoms at the 24-week follow-up assessment. Week 24 data was available for 77.2% of intervention families and 82.6% of control families ($\chi^2 = 1.94, p = .164$). Initially, simple linear regressions were conducted with each potential predictor, controlling for baseline child anxiety score and group allocation. To investigate whether effects varied between groups, models that included an interaction term between group allocation and each predictor were also evaluated. Negative regression coefficients indicate higher values of the predictor were associated with lower child anxiety scores at 24 weeks (see Table 2).

No interactions between predictors and group allocation were significant, except for access to a printer, suggesting that the effect of printer access on outcome varied depending on group allocation. In the intervention group, access to a printer significantly predicted lower child anxiety scores at follow-up ($b = -14.55$, $SE = 6.05$, $p = .017$), whereas there was no significant association in the control group ($b = 0.62$, $SE = 3.72$, $p = .868$). There were several other characteristics related to change in child anxiety overall. Higher baseline child anxiety score, child inhibition, family life interference due to child anxiety, parent psychological distress, and overinvolved/protective parenting practices were each associated with higher child anxiety scores at follow-up. Parents with more education tended to have lower child anxiety scores at follow-up.

To evaluate the best combination of variables that predicted child anxiety at follow-up, predictors significant at the $p < .1$ level in simple regression models were retained for simultaneous entry in a hierarchical multiple regression analysis, with baseline child anxiety and group allocation entered in the first block. Table 3 presents the final model after removing variables that did not meet the significance threshold of $p < .1$. Adjusting for the effects of other predictors, higher child anxiety at follow-up was uniquely predicted by higher child inhibition and parent psychological distress. Education, family life interference from anxiety, and overinvolved/protective parenting were not significant predictors of child anxiety in the multiple regression model.

Program Usage and Child Anxiety Outcome

Of the 215 participants randomized to the intervention group, 6 did not create an account, and 12 did not access any modules despite creating an account. Therefore, 197 participants used some of the intervention. Of those who created an account ($n = 209$), the mean number of modules *accessed* was 4.0 ($SD = 2.8$) and the mean number of modules *completed* was 3.1 ($SD = 2.8$). However, the distribution of modules completed was

approximately bimodal (see Figure 1). Figure 2 highlights that module 1 was completed by most participants, and the number of completions gradually declined after module 3.

The number of logins to the program varied from 1 to 35 (Mean = 6.0, *SD* = 5.3). The period of program use varied from 1 to 182 days (Median = 44, IQR = 16-91). Time spent logged in per visit averaged 23.7 minutes (*SD* = 14.6) and total time spent logged in was about 1.5 hours on average (Median = 84 minutes, IQR = 43-174). At the week-12 assessment, 66.9% of parents reported practicing program skills every day or a few times a week, and 33.1% practiced once a week or less.

Linear regression models evaluated whether program usage was associated with lower child anxiety scores at follow-up, controlling for baseline child anxiety scores. As can be seen in Table 4, the number of modules completed, number of logins, period of program use, and total time spent online did not predict child anxiety at follow-up. Module completion was also dummy coded into categories to explore non-linear dosage effects (0 modules, 1-2 modules, 3-5 modules, 6-8 modules). This showed a non-significant trend for higher follow-up child anxiety for parents who completed a moderate number of modules (3-5) compared to parents who completed most modules (6-8). Despite online program use not being associated with intervention response, more self-reported homework practice significantly predicted less child anxiety at follow-up (see Table 4).

Predictors of Homework Practice and Module Completion

To explore whether baseline characteristics were associated with homework practice, a series of simple logistic regression models were conducted, predicting practicing everyday or a few times a week, versus once a week or less. Table 5 shows that frequent parental homework practice was more likely with female children (74.4% vs 56.9%) and with access to a printer (69.3% vs 36.4%).

A series of multinomial logistic regression analyses were conducted to explore baseline characteristics associated with the number of modules completed (see Supplementary Table 1). Multinomial logistic regression (with 6-8 modules completed as the reference category) was performed rather than linear regression as the response variables have multiple categories. Overall, there were no consistent characteristics that were associated with number of modules completed. The only significant findings were that parents with an only child were less likely to use 1-2 modules than 6-8 modules, and parents with greater internet use were less likely to complete 3-5 modules than 6-8 modules.

Discussion

This study explored predictors of outcomes and use of the Cool Little Kids Online program. In line with previous empirical findings, baseline characteristics associated with reduction in child anxiety at follow-up were child symptom severity and parent psychological distress, irrespective of whether families participated in the online program or not. Importantly, only access to a printer moderated intervention effectiveness. Printer access predicted lower child anxiety in the Cool Little Kids Online group, but had no effect on outcomes in the waitlist group. In contrast to expectations, the amount of online program use did not relate to improvement in child anxiety. Parents who completed fewer modules had similar effects to those who completed most of the program. The key aspect of program use that predicted child anxiety response was the amount of homework practice conducted by parents. Parents who reported practicing the program skills more frequently experienced greater reductions in child anxiety at follow-up, compared to parents who practiced once a week or less. While few participant characteristics predicted program usage, access to a printer appeared to be an important factor facilitating frequent homework practice. In summary, study findings suggest that the Cool Little Kids Online program could be

appropriate for a variety of families and is most effective when parents practice program skills frequently.

Contextualizing these findings in the prior literature, the predictors of anxiety at follow-up were similar to predictors reported in treatment studies with older children. These studies have also found child anxiety severity and parental psychopathology to be related to poorer outcome, with little influence from sociodemographic factors (Hudson et al., 2015). These findings highlight families who are more likely to have difficulties over time, and be at increased risk for later anxiety regardless of program use. This has implications for the dissemination of Cool Little Kids Online, as these families may need augmented support to maximize outcomes. The program could also be offered as the first-step in a stepped-care model, with face-to-face care provided to families whose children still have clinical levels of anxiety after using the program.

In line with existing findings on online interventions for adult anxiety, the current data failed to indicate a linear relationship between module use and outcomes (Donkin et al., 2011). Interestingly, the present data suggested a potential U-shaped relationship, with the poorest outcomes in children whose parents completed a moderate number of modules, however this finding requires replication. It may be that parents whose children fail to respond persist for a while with the program without substantial child improvement and then stop use. In contrast, parents whose children respond to the program may stop early due to rapid improvement, or may persist with the program due to positive gains. Rather than simply more engagement, there needs to be a greater emphasis on promoting *effective* engagement with online interventions, such as module completion in the context of practice (Yardley et al., 2016). Importantly, findings align with past research on parent training that shows homework completion (rather than session attendance) relates to child outcomes (e.g., Clarke et al., 2015; Ros, Hernandez, Graziano, & Bagner, 2016).

These findings need to be considered in light of some limitations. Homework practice may have been subject to recall bias and demand characteristics given that its measurement was by self-report at one point in time. It is possible that it measured perceived rather than actual homework completion, and could be a proxy for other constructs such as lower parental self-efficacy, which has been linked with child psychopathology (Jones & Prinz, 2005). Further research using more refined and objective measures of homework practice is required. This could investigate the relative importance of particular skills for improvements in child anxiety (e.g., stepladders, not jumping in too soon, realistic thinking). Ideally, this would use a short measure that could be administered frequently so as not to overburden participants, and would allow exploration of how skills practice mediates change in child anxiety.

Secondly, although assessment attrition was relatively low and similar across groups, the results on predictors of child anxiety at follow-up should be interpreted cautiously given the potential for confounding. Furthermore, analyses may have been underpowered to detect small relationships among variables, although the present sample was larger than similar published research (Dittman et al., 2014; Ingersoll & Berger, 2015; Nilsen et al., 2013). There may have been elevated risk of a Type 1 error with the number of analyses conducted and therefore the present findings require replication. Finally, the sample represented a mostly educated, middle-class group, from intact families and a different pattern of results might have been found had a larger proportion of disadvantaged participants been included. Indeed, printer access was common in our sample and the relationship between printer access and outcome was dependent on a relatively small portion of the sample. Future research could explore the effects of the program in disadvantaged families, who may have fewer resources and time available to engage with the program and practice program skills.

In terms of practical implications, study results suggest an important role for frequent CBT skills practice in reducing child anxiety. It may not be sufficient for parents to ‘complete’ an online module; they also need to incorporate its new skills into daily family life. While the key mechanism of CBT is thought to be skills acquisition, a causal relationship between skills usage and symptom outcomes has rarely been empirically tested (Terides et al., 2016). In the online program, access to a printer appears key to facilitating homework practice and thereby child anxiety improvements. The printed parent worksheets provide a daily visible reminder to practice stepladders and a structured plan for practice. The modules reinforce to parents the importance of skills practice, particularly practicing graded exposure (stepladders). Modules 5 and 6 largely focus on overcoming difficulties implementing stepladders and common barriers to stepladder practice. However, without printed worksheets parents may only consider the intervention ideas ‘in their head’ rather than actively practicing with their child, which may be less effective. Given this, online programs could provide the option of posting hardcopy worksheets to participants, so that practice does not need to be contingent upon printer access. Other mechanisms for encouraging homework completion could also be explored, such as SMS reminders to practice that incorporate parent goals and preferences.

Progressively refining online interventions based on mixed-methods research is recognized as key to optimizing outcomes (Yardley et al., 2016). Further qualitative research could investigate the reasons for parents’ low level of module completion in this study, to inform whether reducing or restructuring the modules could be helpful to families with young children who are time-poor. In-depth qualitative research can complement objective online program usage data, offering insight into why users interact with the intervention in particular ways and factors influencing effective engagement (Yardley et al., 2016). The present format encouraged parents to slowly build knowledge and skills with sequential new modules and

review and practice of previous skills, according to best practice in online learning (Allen, 2007; Clark & Mayer, 2008). However, most parents did not complete all 8 modules and were not exposed to all program skills (especially cognitive restructuring introduced in module 6). As a prevention program, some parents may find that only a couple of modules are needed to help their child with the graded exposure skill introduced in module 2. Qualitative feedback could shed light on these aspects of engagement.

Keeping in mind the limitations identified above, having access to a printer at home may predict better child anxiety outcomes for Cool Little Kids Online. Printer access and parent homework practice of intervention skills with their child may link to better child outcomes. This reflects parents' engagement with the intervention better than online module completion. These findings point to the need to strengthen efforts to understand how to support participants to practice skills taught in CBT-based online interventions.

References

- Allen, M. W. (2007). *Designing successful e-learning: Forget what you know about instructional design and do something interesting*. San Francisco, CA: Pfeiffer.
- Australian Bureau of Statistics. (2013). *Household Income and Income Distribution 2011-2012 (6523.0)*. Retrieved from Canberra, Australia:
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6523.02011-12?OpenDocument>
- Australian Bureau of Statistics. (2016a). *8146.0 - Household Use of Information Technology, Australia, 2014-15*. Retrieved from Canberra, Australia:
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8146.02014-15?OpenDocument>
- Australian Bureau of Statistics. (2016b). *Regional population growth, Australia, 2014-15 (cat. no. 3218.0)*. Retrieved from Canberra, Australia:
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3218.02014-15?OpenDocument>
- Axford, N., Lehtonen, M., Kaoukji, D., Tobin, K., & Berry, V. (2012). Engaging parents in parenting programs: Lessons from research and practice. *Children and Youth Services Review, 34*(10), 2061-2071. doi:10.1016/j.childyouth.2012.06.011
- Baker, C. N., Arnold, D. H., & Meagher, S. (2011). Enrollment and attendance in a parent training prevention program for conduct problems. *Prevention Science, 12*(2), 126-138. doi:10.1007/s11121-010-0187-0
- Bayer, J. K., Sanson, A. V., & Hemphill, S. A. (2006). Parent influences on early childhood internalizing difficulties. *Journal of Applied Developmental Psychology, 27*(6), 542-559. doi:10.1016/j.appdev.2006.08.002

- Bayer, J. K., Sanson, A. V., & Hemphill, S. A. (2009). Early childhood aetiology of internalising difficulties: A longitudinal community study. *International Journal of Mental Health Promotion*, 11(1), 4-14. doi:10.1080/14623730.2009.9721777
- Clark, R. C., & Mayer, R. E. (2008). *e-Learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning* (2nd ed.). San Francisco, CA: Pfeiffer.
- Clarke, A. T., Marshall, S. A., Mautone, J. A., Soffer, S. L., Jones, H. A., Costigan, T. E., . . . Power, T. J. (2015). Parent attendance and homework adherence predict response to a family-school intervention for children with ADHD. *Journal of Clinical Child and Adolescent Psychology*, 44(1), 58-67. doi:10.1080/15374416.2013.794697
- Comer, J. S., & Barlow, D. H. (2014). The occasional case against broad dissemination and implementation: Retaining a role for specialty care in the delivery of psychological treatments. *American Psychologist*, 69(1), 1-18. doi:10.1037/a0033582
- Compton, S. N., Peris, T. S., Almirall, D., Birmaher, B., Sherrill, J., Kendall, P. C., . . . Albano, A. M. (2014). Predictors and moderators of treatment response in childhood anxiety disorders: results from the CAMS trial. *Journal of Consulting and Clinical Psychology*, 82(2), 212-224. doi:10.1037/a0035458
- Dittman, C. K., Farruggia, S. P., Palmer, M. L., Sanders, M. R., & Keown, L. J. (2014). Predicting success in an online parenting intervention: The role of child, parent, and family factors. *Journal of Family Psychology*, 28(2), 236-243. doi:10.1037/a0035991
- Donkin, L., Christensen, H., Naismith, L. S., Neal, B., Hickie, B. I., & Glozier, N. (2011). A systematic review of the impact of adherence on the effectiveness of e-therapies. *Journal of Medical Internet Research*, 13(3), e52. doi:10.2196/jmir.1772
- Donkin, L., Hickie, B. I., Christensen, H., Naismith, L. S., Neal, B., Cockayne, L. N., & Glozier, N. (2013). Rethinking the dose-response relationship between usage and

outcome in an online intervention for depression: Randomized controlled trial.

Journal of Medical Internet Research, 15(10), e231. doi:10.2196/jmir.2771

Edwards, S. L., Rapee, R. M., Kennedy, S. J., & Spence, S. H. (2010). The assessment of anxiety symptoms in preschool-aged children: The Revised Preschool Anxiety Scale. *Journal of Clinical Child and Adolescent Psychology*, 39(3), 400-409. doi:10.1080/15374411003691701

Furukawa, T. A., Kessler, R. C., Slade, T., & Andrews, G. (2003). The performance of the K6 and K10 screening scales for psychological distress in the Australian National Survey of Mental Health and Well-Being. *Psychological Medicine*, 33(02), 357-362. doi:10.1017/S0033291702006700

Goodman, A., Lamping, D., & Ploubidis, G. (2010). When to use broader internalising and externalising subscales instead of the hypothesised five subscales on the Strengths and Difficulties Questionnaire (SDQ): Data from British parents, teachers and children. *Journal of Abnormal Child Psychology*, 38(8), 1179-1191. doi:10.1007/s10802-010-9434-x

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38(5), 581-586. doi:10.1111/j.1469-7610.1997.tb01545.x

Hirshfeld-Becker, D. R., & Biederman, J. (2002). Rationale and principles for early intervention with young children at risk for anxiety disorders. *Clinical Child and Family Psychology Review*, 5(3), 161-172. doi:10.1023/A:1019687531040

Hirshfeld-Becker, D. R., Masek, B., Henin, A., Blakely, L. R., Pollock-Wurman, R. A., McQuade, J., . . . Biederman, J. (2010). Cognitive behavioral therapy for 4- to 7-year-old children with anxiety disorders: A randomized clinical trial. *Journal of Consulting and Clinical Psychology*, 78(4), 498-510. doi:10.1037/a0019055

- Hudson, J. L., Keers, R., Roberts, S., Coleman, J. R., Breen, G., Arendt, K., . . . Eley, T. C. (2015). Clinical predictors of response to cognitive-behavioral therapy in pediatric anxiety disorders: The Genes for Treatment (GxT) study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 54(6), 454-463.
doi:10.1016/j.jaac.2015.03.018
- Ingersoll, B., & Berger, N. I. (2015). Parent engagement with a telehealth-based parent-mediated intervention program for children with autism spectrum disorders: Predictors of program use and parent outcomes. *Journal of Medical Internet Research*, 17(10), e227. doi:10.2196/jmir.4913
- James, A. C., James, G., Cowdrey, F. A., Soler, A., & Choke, A. (2015). Cognitive behavioural therapy for anxiety disorders in children and adolescents. *Cochrane Database of Systematic Reviews*(2), Art. No.: CD004690.
doi:10.1002/14651858.CD004690.pub4
- Jones, T. L., & Prinz, R. J. (2005). Potential roles of parental self-efficacy in parent and child adjustment: A review. *Clinical Psychology Review*, 25(3), 341-363.
doi:10.1016/j.cpr.2004.12.004
- Karyotaki, E., Kleiboer, A., Smit, F., Turner, D. T., Pastor, A. M., Andersson, G., . . . Cuijpers, P. (2015). Predictors of treatment dropout in self-guided web-based interventions for depression: An 'individual patient data' meta-analysis. *Psychological Medicine*, 45(13), 2717-2726. doi:10.1017/S0033291715000665
- Kazdin, A. E., & Blase, S. L. (2011). Rebooting psychotherapy research and practice to reduce the burden of mental illness. *Perspectives on Psychological Science*, 6(1), 21-37. doi:10.1177/1745691610393527
- Kennedy, S. J., Rapee, R. M., & Edwards, S. L. (2009). A selective intervention program for inhibited preschool-aged children of parents with an anxiety disorder: Effects on

current anxiety disorders and temperament. *Journal of the American Academy of Child and Adolescent Psychiatry*, 48(6), 602-609.

doi:10.1097/CHI.0b013e31819f6fa9

Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., . . .

Zaslavsky, A. M. (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry*, 60(2), 184-189.

doi:10.1001/archpsyc.60.2.184

Khanna, M. S., & Kendall, P. C. (2010). Computer-assisted cognitive behavioral therapy for

child anxiety: Results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology*, 78(5), 737-745. doi:10.1037/a0019739

Leijten, P., Raaijmakers, M. A. J., de Castro, B. O., & Matthys, W. (2013). Does

socioeconomic status matter? A meta-analysis on parent training effectiveness for disruptive child behavior. *Journal of Clinical Child and Adolescent Psychology*, 42(3), 384-392. doi:10.1080/15374416.2013.769169

Lundahl, B., Risser, H. J., & Lovejoy, M. C. (2006). A meta-analysis of parent training:

Moderators and follow-up effects. *Clinical Psychology Review*, 26(1), 86-104.

doi:10.1016/j.cpr.2005.07.004

Lundkvist-Houndoumadi, I., Hougaard, E., & Thastum, M. (2014). Pre-treatment child and

family characteristics as predictors of outcome in cognitive behavioural therapy for youth anxiety disorders. *Nord J Psychiatry*, 68(8), 524-535.

doi:10.3109/08039488.2014.903295

Lyneham, H. J., Sbrulati, E. S., Abbott, M. J., Rapee, R. M., Hudson, J. L., Tolin, D. F., &

Carlson, S. E. (2013). Psychometric properties of the Child Anxiety Life Interference Scale (CALIS). *Journal of Anxiety Disorders*, 27, 711-719.

doi:10.1016/j.janxdis.2013.09.008

- March, S., Spence, S. H., & Donovan, C. L. (2009). The efficacy of an internet-based cognitive-behavioral therapy intervention for child anxiety disorders. *Journal of Pediatric Psychology, 34*(5), 474-487. doi:10.1093/jpepsy/jsn099
- Mohr, D. C., Burns, M. N., Schueller, S. M., Clarke, G., & Klinkman, M. (2013). Behavioral Intervention Technologies: Evidence review and recommendations for future research in mental health. *General Hospital Psychiatry, 35*(4), 332-338. doi:10.1016/j.genhosppsych.2013.03.008
- Morgan, A. J., Rapee, R. M., & Bayer, J. K. (2016). Prevention and early intervention of anxiety problems in young children: A pilot evaluation of Cool Little Kids Online. *Internet Interventions, 4*, 105-112. doi:10.1016/j.invent.2016.05.001
- Morgan, A. J., Rapee, R. M., Salim, A., Goharpey, N., Tamir, E., McLellan, L. F., & Bayer, J. K. (2017). Internet-delivered parenting program for prevention and early intervention of anxiety problems in young children: Randomized controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 56*(5), 417-425. doi:10.1016/j.jaac.2017.02.010
- Morgan, A. J., Rapee, R. M., Tamir, E., Goharpey, N., Salim, A., McLellan, L. F., & Bayer, J. K. (2015). Preventing anxiety problems in children with Cool Little Kids Online: Study protocol for a randomised controlled trial. *Trials, 16*, art. no. 507. doi:10.1186/s13063-015-1022-5
- Nilsen, T. S., Eisemann, M., & Kvernmo, S. (2013). Predictors and moderators of outcome in child and adolescent anxiety and depression: A systematic review of psychological treatment studies. *European Child and Adolescent Psychiatry, 22*(2), 69-87. doi:10.1007/s00787-012-0316-3

- Nix, R. L., Bierman, K. L., & McMahon, R. J. (2009). How attendance and quality of participation affect treatment response to parent management training. *Journal of Consulting and Clinical Psychology, 77*(3), 429-438. doi:10.1037/a0015028
- Nock, M. K. P., & Ferriter, C. (2005). Parent management of attendance and adherence in child and adolescent Therapy: A conceptual and empirical review. *Clinical Child and Family Psychology Review, 8*(2), 149-166. doi:10.1007/s10567-005-4753-0
- O'Brien, M., & Daley, D. (2011). Self-help parenting interventions for childhood behaviour disorders: A review of the evidence. *Child: Care, Health and Development, 37*(5), 623-637. doi:10.1111/j.1365-2214.2011.01231.x
- Prior, M. R., Sanson, A. V., & Oberklaid, F. (1989). The Australian Temperament Project. In G. A. Kohnstamm, J. E. Bates, & M. K. Rothbart (Eds.), *Temperament in childhood* (pp. 537-554). Chichester, England: John Wiley and Sons.
- Rapee, R. M. (2013). The preventative effects of a brief, early intervention for preschool-aged children at risk for internalising: Follow-up into middle adolescence. *Journal of Child Psychology and Psychiatry, 54*, 780-788. doi:10.1111/jcpp.12048
- Rapee, R. M., Kennedy, S., Ingram, M., Edwards, S., & Sweeney, L. (2005). Prevention and early intervention of anxiety disorders in inhibited preschool children. *Journal of Consulting and Clinical Psychology, 73*(3), 488-497. doi:10.1037/0022-006X.73.3.488
- Rapee, R. M., Kennedy, S. J., Ingram, M., Edwards, S. L., & Sweeney, L. (2010). Altering the trajectory of anxiety in at-risk young children. *American Journal of Psychiatry, 167*(12), 1518-1525. doi:10.1176/appi.ajp.2010.09111619
- Reyno, S. M., & McGrath, P. J. (2006). Predictors of parent training efficacy for child externalizing behavior problems – a meta-analytic review. *Journal of Child Psychology and Psychiatry, 47*(1), 99-111. doi:10.1111/j.1469-7610.2005.01544.x

- Ros, R., Hernandez, J., Graziano, P. A., & Bagner, D. M. (2016). Parent training for children with or at risk for developmental delay: The role of parental homework completion. *Behavior Therapy, 47*(1), 1-13. doi:10.1016/j.beth.2015.08.004
- Slade, T., Grove, R., & Burgess, P. (2011). Kessler Psychological Distress Scale: Normative data from the 2007 Australian National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry, 45*(4), 308-316. doi:10.3109/00048674.2010.543653
- Sourander, A., McGrath, P. J., Ristkari, T., Cunningham, C., Huttunen, J., Lingley-Pottie, P., . . . Unruh, A. (2016). Internet-assisted parent training intervention for disruptive behavior in 4-year-old children: A randomized clinical trial. *JAMA Psychiatry, 73*(4), 378-387. doi:10.1001/jamapsychiatry.2015.3411
- Stone, L., Otten, R., Engels, R. M. E., Vermulst, A., & Janssens, J. A. M. (2010). Psychometric properties of the parent and teacher versions of the Strengths and Difficulties Questionnaire for 4- to 12-year-olds: A review. *Clinical Child and Family Psychology Review, 13*(3), 254-274. doi:10.1007/s10567-010-0071-2
- Terides, M. D., Dear, B. F., Karin, E., Jones, M. P., Gandy, M., Fogliati, V. J., . . . Titov, N. (2016). The frequency of actions and thoughts scale: Development and psychometric validation of a measure of adaptive behaviours and cognitions. *Cognitive Behaviour Therapy, 45*(3), 196-216. doi:10.1080/16506073.2016.1149876
- Yardley, L., Spring, B. J., Riper, H., Morrison, L. G., Crane, D. H., Curtis, K., . . . Blanford, A. (2016). Understanding and promoting effective engagement with digital behavior change interventions. *American Journal of Preventive Medicine, 1*-28. doi:10.1016/j.amepre.2016.06.015

Table 1

Overview of Module Content in Cool Little Kids Online

1. Understanding anxiety	<ul style="list-style-type: none"> • Nature of child anxiety, its development and the role of temperament • Overview of program content • Setting goals
2. Introducing stepladders	<ul style="list-style-type: none"> • Principles and application of exposure hierarchies (stepladders)
3. Using rewards	<ul style="list-style-type: none"> • Principles of using rewards effectively to reinforce child behavior
4. Parenting an anxious child	<ul style="list-style-type: none"> • Role of overprotection in child anxiety • Alternative parental strategies including encouraging greater child independence
5. Troubleshooting stepladders	<ul style="list-style-type: none"> • Review of stepladder progress • Troubleshooting difficulties that commonly occur
6. Overcoming barriers	<ul style="list-style-type: none"> • Overcoming barriers to stepladder practice • Introduction to cognitive restructuring for parent worries
7. Managing worries	<ul style="list-style-type: none"> • Cognitive restructuring for parent worries, particularly related to implementing exposure with their child • Review of stepladders
8. Planning for the future	<ul style="list-style-type: none"> • Review of progress so far • Planning of strategies to use for future challenges or high-risk times such as starting school

Table 2

Baseline characteristics predicting child anxiety symptoms at 24-week follow-up^a

Predictor variables	Group by predictor interaction ^b				
	<i>B</i>	<i>SE</i>	β	<i>p</i>	<i>p</i>
Child and family sociodemographic factors					
Child age	-0.26	0.84	-0.01	.753	.287
Parent age	-0.03	0.17	-0.01	.876	.519
Child gender (female)	1.13	1.70		.506	.544
Only child	1.05	2.53		.679	.677
Marital status ^c	1.40	2.31		.544	.414
Speaks mainly English at home	0.64	3.93		.871	.412
Parent education - tertiary degree	-3.43	1.79		.056	.629
Lives in major city	-2.23	1.91		.243	.556
Family financial hardship (welfare card)	4.01	2.45		.103	.909
Weekly internet use	0.85	1.71		.620	.232
Has access to a printer	-4.25	3.27		.195	.028
Child mental health factors					
Child anxiety symptoms	0.69	0.06	0.50	<.001	.459
Child internalising symptoms	-0.01	0.49	0.00	.989	.959
Anxiety life interference - child	0.25	0.16	0.09	.118	.707

Anxiety life interference - family	0.36	0.12	0.15	.004	.784
Child inhibition	0.68	0.30	0.11	.022	.195
Parent mental health					
Parent psychological distress	0.43	0.14	0.14	.003	.327
Parenting behavior					
Overinvolved/protective parenting	4.42	2.29	0.09	.055	.523

a. Baseline child anxiety symptoms and group allocation entered as covariate in each analysis. Standardized coefficients (β) are shown only for continuous predictors. Bold values indicate $p < .05$

b. p value of interaction term from regression model containing baseline child anxiety symptoms, group allocation, predictor variable, and predictor*group interaction term

c. Coded 1= Married or defacto, 0=Single or widowed/Separated or divorced

Table 3

Results from hierarchical multiple linear regression analysis predicting child anxiety score at follow-up (N = 346)

Variable	<i>B</i>	<i>SE</i>	β	<i>p</i>
Step 1				
Constant	8.46	4.45		.058
Child anxiety symptoms	0.69	0.06	0.50	<.001
Group allocation	-6.04	1.69		<.001
Step 2				
Constant	-15.19	10.45		.147
Child anxiety symptoms	0.54	0.07	0.39	<.001
Group allocation	-5.76	1.66		.001
Child inhibition	0.67	0.29	0.11	.023
Parent psychological distress	0.36	0.15	0.12	.018

Note: $R^2 = .28$ for Step 1, $\Delta R^2 = .04$ for Step 2 ($p < .001$). Bold values indicate $p < .05$

Table 4

Program usage predicting 24-week child anxiety score in the intervention group, controlling for baseline child anxiety

Variable	n	<i>B</i>	<i>SE</i>	β	<i>p</i>
Number of modules completed	165	-0.51	0.46	-0.08	.263
Completed 6-8 modules	51	-	-	-	-
Completed 0 modules	24	3.48	4.20		.408
Completed 1-2 modules	62	2.29	3.21		.478
Completed 3-5 modules	28	6.80	3.99		.090
Number of logins	165	-0.38	0.24	-0.11	.109
Period of program use (days)	165	0.00	0.03	0.00	.953
Total time spent online (minutes)	157	-0.01	0.01	-0.07	.355
Homework practice	137				
Less than once a week	19	-	-	-	-
Once a week	23	-9.80	5.17		.060
A few times a week	65	-11.94	4.38		.007
Everyday	30	-12.28	4.90		.013

Note: Standardized coefficients (β) are shown only for continuous predictors. Bold values indicate $p < .05$

Table 5

Baseline characteristics predicting frequency of homework practice^a in the intervention group (N = 151)

	<i>OR</i>	<i>95% CI</i>		<i>p</i>
Child and family sociodemographic factors				
Child age	0.81	0.58	1.12	.206
Parent age	0.98	0.91	1.05	.556
Child gender (female)	2.20	1.11	4.39	.025
Only child	7.24	0.92	57.01	.060
Marital status ^b	0.66	0.13	3.39	.619
Speaks mainly English at home	0.67	0.07	6.58	.728
Parent education - tertiary degree	0.82	0.41	1.66	.586
Lives in major city	0.91	0.41	2.00	.816
Family financial hardship (welfare card)	0.92	0.36	2.33	.853
Weekly internet use ^c	0.77	0.39	1.52	.453
Has access to a printer	3.95	1.10	14.20	.035
Child mental health factors				
Child anxiety symptoms	1.02	0.99	1.04	.248
Child internalising symptoms	1.16	0.99	1.36	.076
Anxiety life interference - child	1.04	0.98	1.10	.176
Anxiety life interference - family	1.03	0.98	1.07	.279
Child inhibition	1.04	0.93	1.17	.488

Parent mental health

Parent psychological distress	1.02	0.96	1.07	.580
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Parenting behavior

Overinvolved/protective parenting	1.60	0.54	4.80	.398
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Note: *OR* = Odds Ratio, *CI* = Confidence Interval. Bold values indicate $p < .05$

a. Coded 1=Everyday to a few times a week, 0=Once a week or less)

b. Coded 1= Married or defacto, 0=Single or widowed/Separated or divorced

c. Coded 1=10 hours or more, 0=<10 hours

Figure 1. Histogram of the number of modules completed by participants who created an account ($n = 209$)

Figure 2. Percentage of participants who completed each module ($n = 209$)