SPECIAL FEATURE - METHODS

Addressing challenges to carrying out intervention programs with youth populations: Successes and strategies

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Abstract
We identify five challenges notoriously faced by researchers conducting youth intervention studies: access to the target population, successful recruitment, ensuring continued attendance, promoting engaged, enthused, and task-focused participation, and efficient data collection. To ensure research quality, we have devised strategies to address these obstacles. Successes and lessons are included from The Compass Project (TCP), a 9-week morality strengthening program designed to facilitate positive attitudinal and behavioral outcomes in young people. Despite four of the five identified challenges being overcome in TCP, the fifth challenge of data collection was insurmountable as many participants failed to complete questionnaire scales. We propose that researchers build on our success by building rapport and trust with participants and youth organizations and building a participant sense of community, and improve upon our design by scrutinizing the format, accessibility, and length of data measures. Ultimately, tests of whether intervention programs can result in positive outcomes in the lives of young people hinge on adequately overcoming the identified challenges. Implementation of the proposed strategies will be instrumental to allow for meaningful and powerful statistical analyses to more accurately gauge the positive impact of intervention programs on young people's lives.

KEYWORDS
adolescent development, crime reduction, morality, program evaluation, youth interventions

INTRODUCTION

Conducting rigorous intervention research with youth samples is exceedingly difficult, particularly with "hard-to-reach" populations (Abrams, 2010). This paper centers on identifying these challenges and developing strategies for future research. In the social sciences, most retention research is conducted with adult participants (Manohar et al., 2018) and few studies explore youth access, recruitment, and retention specifically. Researchers have called for more practical guidance to facilitate engagement of youth as participants (Hawke et al., 2020), which we supply in this paper. While it is quite common for medical journals to report on difficulties with participant recruitment and retention and to provide suggestions for future researchers (e.g., Brannon et al., 2013), it is less common in the social sciences, with the notable exception of the Delphi study (Schoeppe et al., 2014), which has developed a set of strategies for behavioral health research in children.

Despite widespread theorizing that psychological intervention studies might help to address the problem of crime, there is a distinct lack of such youth intervention studies in the field of Criminology (Dezember et al., 2021). Recent research calls for tailormade interventions to curb violence-supportive attitudes in children and young people (Conroy et al., 2023). Recent criminological studies emphasize the complexities of carrying out research with children on sensitive topics (Miller et al., 2022) using practical group activities (Morgan et al., 2002). Generally, the challenges of interventions with criminological adolescent populations are often ignored or minimally addressed (Boduszek et al., 2019). This paper aims to bridge this gap, drawing from the compass

project (TCP), to assist researchers across disciplines to enhance the statistical robustness of youth intervention studies. Successes are often reported, but "failure" stories also hold valuable (Karlan & Appel, 2016).

In this manuscript, we will delineate five specific challenges that researchers may encounter when conducting randomized controlled trials (RCTs) with at-risk youth, such as access to participants, recruitment and retention of participants, and methodological constraints and data quality. Drawing from our own case study of TCP, we will discuss successful (and less successful) strategies to these challenges and provide general considerations that could guide future research. By emphasizing both the successes and the shortcomings we experienced in TCP, we aim to provide a candid and instructive guide for other researchers venturing into this complex and sensitive area of study. The goal is to enhance the quality and reliability of youth intervention research, facilitating more targeted and effective interventions to address crime and other behavioral issues among young populations.

THE COMPASS PROJECT (TCP)

TCP pilot study was a 9-week after-school intervention implemented from May to July 2022, targeting 12–16-year-olds. The chosen study design was an RCT with the control group only completing the pre- (time 1) and post- (time 2) questionnaires. In contrast, the program group was invited to attend weekly 90-minute sessions for nine weeks. Data were collected via questionnaires assessing empathy, morality, law legitimacy, emotion recognition, quality of relationships with others, and self-reported crime. The research aimed to determine whether strengthening morality and emotion management could curtail antisocial behavior and crime. The link between law-relevant morality, emotional functioning, and crime is well-evidenced (Pauwels et al., 2018; Trivedi-Bateman, 2021; Trivedi-Bateman & Crook, 2022; Wikström et al., 2012). What is less understood is the ways in which morality can be strengthened in adolescence by participation in innovative, evidence-led, moral, and emotion development programs (more information about The Compass Project can be found at https://lboro.ac.uk/research/compass-project/).

Led by the Principal Investigator, a five-member team delivered the intervention at community centers in Cambridgeshire, UK, partnering with Romsey Mill youth charity. The intervention program was delivered in Trumpington, Cambourne, and Linton where Romsey Mill ordinarily delivers their open-access youth work sessions. Activities included practical tasks, discussions, debates, and role-playing to bolster morality-related skills. A description of the program content and all program materials and instructions can be found in a detailed fieldwork handbook and can be obtained upon request. Program group participants were compensated in vouchers that could be used in thousands of retail and food outlets ("Love2Shop") to the value of up to

£95 for their participation, depending on the number of sessions they attended; £5 per session for the first 4 weeks, and then £15 per session for the remaining 5 weeks. The control group participants were paid £40 in vouchers upon completion of the time 2 questionnaire. The University Ethics Committee and other university policy documents recommend the use of vouchers as opposed to cash.

The average age of recruited young people was 12.84 with a gender split of 46% males, 53% females, and 1% non-binary. Compared to the national UK average (Department for Education, 2023), our sample is typical of the UK population for gender (51% of the UK school-aged population is male) and markers of socioeconomic status. In 2022, 22.5% of pupils were eligible for free school meals (just under 1.9 million pupils). In our sample, 29% of young people were eligible for free school meals. However, our sample, of which 10% were from a non-White background, is not racially diverse. In the UK, 35% of students are from a minority ethnic background, and in Cambridge, 25.5% of residents are from a non-White background (U.K. Census, 2021). Research indicates that it is not uncommon for minority ethnic groups to be underrepresented in participant samples for several reasons (see e.g., Brannon et al., 2013). In this paper, we report analyses for our dropout population to explore the possibility of attrition bias by age, gender, and location.

While TCP primarily served as a feasibility study to assess content, budget, and staffing, there were hopes to evaluate the program's effectiveness. Regrettably, the study was underpowered due to a small sample size, limiting statistical analysis (see Figure 1 for participant numbers at each stage). Such low retention is not uncommon but rarely reported, particularly in social sciences (Schoeppe et al., 2014). This limitation undermines the research community's shared goal of informing policy through robust statistical power (Ariel et al., 2022; Glennerster & Takavarasha, 2013), and the solutions offered in this paper are designed to reduce this risk in future research.

CHALLENGES AND SOLUTIONS TO THE SUCCESSFUL DELIVERY AND EVALUATION OF YOUTH INTERVENTIONS

Challenge 1: Access to youth populations

Various sectors including youth offending services, youth work charities, schools, and other youth justice system-related organizations that work directly with young people have access to opportunities for research. Access permissions are generally granted by senior staff, and it is notoriously difficult for researchers to gain access. Since children are classified as a vulnerable population, gatekeepers are tasked with protecting the young people that they work with from harm, including potentially damaging or invasive research (Francis, 2009). Furthermore, the hierarchal nature of organizations can mean that multiple layers of access
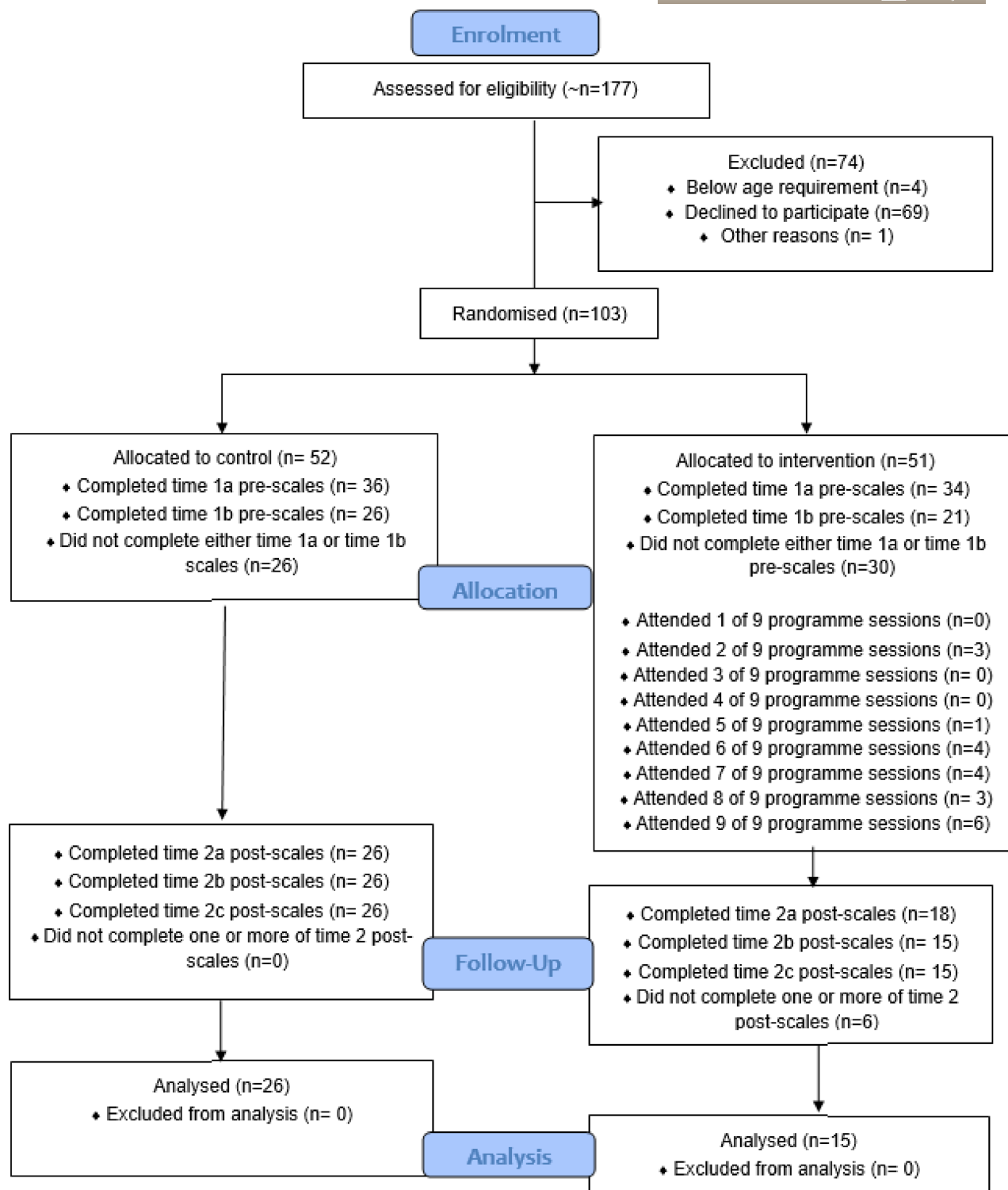
Enrolment

Assessed for eligibility (~n=177)

Excluded (n=74)
- Below age requirement (n=4)
- Declined to participate (n=69)
- Other reasons (n= 1)

Randomised (n=103)

Allocation

Allocated to control (n= 52)
- Completed time 1a pre-scales (n= 36)
- Completed time 1b pre-scales (n= 26)
- Did not complete either time 1a or time 1b scales (n=26)

Allocated to intervention (n=51)
- Completed time 1a pre-scales (n= 34)
- Completed time 1b pre-scales (n= 21)
- Did not complete either time 1a or time 1b pre-scales (n=30)

- Attended 1 of 9 programme sessions (n=0)
- Attended 2 of 9 programme sessions (n=3)
- Attended 3 of 9 programme sessions (n= 0)
- Attended 4 of 9 programme sessions (n= 0)
- Attended 5 of 9 programme sessions (n=1)
- Attended 6 of 9 programme sessions (n=4)
- Attended 7 of 9 programme sessions (n=4)
- Attended 8 of 9 programme sessions (n= 3)
- Attended 9 of 9 programme sessions (n=6)

Follow-Up

- Completed time 2a post-scales (n= 26)
- Completed time 2b post-scales (n= 26)
- Completed time 2c post-scales (n= 26)
- Did not complete one or more of time 2 post-scales (n=0)

- Completed time 2a post-scales (n=18)
- Completed time 2b post-scales (n= 15)
- Completed time 2c post-scales (n= 15)
- Did not complete one or more of time 2 post-scales (n=6)

Analysis

Analysed (n=26)
- Excluded from analysis (n= 0)

Analysed (n=15)
- Excluded from analysis (n= 0)

FIGURE 1   CONSORT flow diagram.

approval may be required (Coyne, 2010). Although protecting children's rights is crucial, it has been argued that there is generally an overly cautious approach to research with young people (Campbell, 2008). Building trusted networks between researchers and organizations that have access to young people is vital. Once senior decision-makers have granted permission to access their participant population, it

is critical that relationships are formed between the research team and the staff on the ground for the smooth day-to-day running of research. Public sector workers, generally underpaid and overworked, deal with demanding workloads and unpredictable incidents in the lives of the children that they work to support (Campbell, 2008). As such, it is important to find ways to compensate them for their time to support

research teams. These tensions mean that researchers who solely rely on the goodwill of public sector workers to foot most of the work involved, instead of putting in the legwork alongside them, are unlikely to find success.

Challenge 1: Access to youth populations: successes and lessons from The Compass Project

The Principal Investigator of TCP established a collaboration with Romsey Mill youth work charity in Cambridgeshire to access their youth population. Permission was granted based on Romsey Mill's interest in the research, the belief in the value of addressing morality and emotion for youth outcomes, and confidence that the research team had an authentic goal of helping young people as opposed to a self-interested pursuit with respect to the collection of data. This was achieved by investing time in several discussions with a known contact in the senior leadership team, by presenting the research-informed intervention content in an informal manner, sharing relevant research outputs, and open and transparent conversations about what could and could not be achieved. For example, the PI presented the study proposal in three subsections: theoretical mechanisms that explain the association between morality and rule-breaking (Situational Action Theory, Wikström et al., 2012), a summary of interventions and exercises that have been implemented in past research and their shortcomings, and some examples of and justifications for the use of the newly developed TCP activities.

However, access was contingent on jointly administering TCP with agreement from individual youth workers, which was not always straightforward as they had other obligations and priorities for their youth work sessions. This is illustrated in this email extract from the permission granter "I spoke with [YW] who said they have got plans already for how they are redirecting their youth club. However, I will email him now to see if anything is still possible. And it would be worth you contacting him just to double check whether there are any ways you could find a time to run something that he helps facilitate". After this, eventually arrangements were made to deliver the intervention in the area in question, but unfortunately, the youth worker called on the first day of fieldwork to convey that young people in that area no longer wished to take part. Nonetheless, formal agreements were made to jointly administer TCP with youth workers in three other locations in which Romsey Mill already offered open-access youth work sessions, and were able to offer the use of community centers for the interventions sessions to take place in. In total, these Romsey Mill sessions served approximately 177 young people ($N = 90$ Cambourne, $N = 47$ Trumpington, $N = 40$ Linton).

Jointly administering TCP with Romsey Mill was a successful strategy to ensure access to a youth population for research. In addition to being physically able to administer the program during Romsey Mill's already scheduled open-access youth work sessions, we were able to use established

parental consent procedures and take advantage of the already established rapport and trust that had been built over years by a dedicated team of youth workers and youth charity volunteers. We were also able to let young people know that Romsey Mill endorsed the research study, for example, Romsey Mill granted permission for the invitation to take part to include the following statement "We have discussed the project with Romsey Mill staff and we have their full support in delivering this project to you".

However, a trade-off was made by not using a full researcher staff team. Some Romsey Mill staff had a background in criminology (e.g., a BSc Criminology degree) and/or a keen interest in criminological research, and others did not. An external research project placed additional burdens on their restricted time set against their demanding workloads. In addition, it was not possible to hold youth workers accountable for allocated activities, such as sending WhatsApp messages to potential participants, or helping young people who expressed an interest to participate to enroll online. For example, "Some of them after your visit did say that they scanned the QR code [to enrol], not sure if they did or not!" (YW1). Lack of time, resources, and the disruption to their work was likely to be a key factor. The research team also experienced some setbacks when it came to youth workers not being able to help in the way originally intended, for example, "Apologies that all of our reshuffling and staff challenges have come at an awkward time for helping you guys out, it's been very hard to find time to engage young people on this, and we don't have a huge amount of contact numbers for young people themselves" (YW6). On the other hand, those youth workers who were actively championing their support for and advocating involvement in the program, referred to as "project champions" (Miller et al., 2022:213; Schoeppe et al., 2014) were pivotal in drumming up considerable interest in the program. For example, "They are really interested. Some of them were asking about when it will be starting," "School does not start back until tomorrow, which could lead to some young people forgetting but I'll put a reminder out on our social media" (YW2).

Solutions to challenge 1: Access to youth populations

Build rapport and trust with community partners
It is suggested that time is allotted to have informal conversations with community partners in person, by phone, and by email well in advance of the recruitment phase and throughout the intervention. Developing new professional relationships takes time and is incremental, for example, research assistants' reminders to community partners before research visits over time can become more natural and conversational and allow the teams to get to know one another. This is an important, often overlooked step in working together to achieve a common goal and to encourage external staff to be motivated to champion the success of the project delivery. In addition to allowing relationships

to grow naturally over time, trust can be scaffolded by being realistic about project timelines and practicalities, reliable completion of agreed objectives, and openly communicating about challenges and setbacks, with a shared understanding of the mutual benefits of professional conduct and expressing humility. Being able to offer payment to the organization is ideal, and in cases where the research budget is restricted, providing refreshments at meetings is one way of showing appreciation for the time and effort being given to support the research.

Challenge 2: Recruitment of youth populations

Recruitment is a key challenge to research (Shahabi et al., 2011). Use of multiple communication methods to invite young people to take part in the research study are key. This might include presentations, posters, informal discussions, and letters to young people and their parents or guardians. Allowing time in the study schedule for a lengthy recruitment period to enable these activities to take place before the study begins is critical (Bryant, 2014). Participants need to be motivated to take part, and this can take many forms; for example, participants might be attracted by a monetary incentive, a belief that the intervention could lead to positive outcomes, and/or recommendations by friends, parents, or teachers. Once recruited, participants require reminders, regular communication, and clear instructions on what participation will involve, when their involvement will be required, and if applicable, when payments will be made.

Challenge 2: Recruitment of youth populations: successes and lessons from The Compass Project

Romsey Mill youth workers unanimously agreed that gradual and natural rapport and trust-building between the research team and potential participants were essential before inviting young people to take part. The TCP team attempted to achieve this by visiting each of the three youth community centers in person, in pairs, and for approximately 30 min per visit, for a total of 12 visits during the recruitment phase. During these visits, recruitment posters were put up in the community centers to begin to introduce the study in a minimally invasive way. Despite these efforts, in retrospect, having spent more than 30 min at the sessions would have been beneficial. Youth workers reported that participants wanted the research team to earn their trust. For example, the association of TCP with a university was at times viewed to be daunting and formal, and suspicions were raised about whether we worked closely with the police. This view was shared by a youth worker, who when asked what the research team could have done to improve the program delivery, stated "Having more time before the program began to build relationships/engage their interest in the project" (YW 2). Recruitment activities involved

invitation letters with handwritten names on the front of the envelopes, youth workers posting the study invitation on their social media accounts, and youth workers sharing the invitation verbally and by phone with young people. Youth workers' inside knowledge and insight were particularly useful during recruitment as they could highlight where best to focus recruitment effort. This is illustrated in an email excerpt from a youth worker: "Our turn out for Wednesdays has not been great. We have been getting more young people in the Tuesday youth club and they have shown more interest [in the program]" (YW2).

Overall, recruitment for TCP was broadly successful. An increase in the payment amount likely contributed to the enrolment rise from 39 participants to 103 participants in the few weeks leading up to the project start date. TCP had access to ~177 young people and recruited 58% of this population ($N = 103$, 59 from Cambourne, 20 from Trumpington, and 24 from Linton). Young people expressed the importance of their existing peers taking part in the study (almost a quarter of participants signed up because their friends did so), and in line with other research, some TCP participants dropped out of the study because their friends were not or no longer wished to take part (Bryant, 2014; Lauver & Little, 2005). When asked what their main reasons for signing up for the program were (12% ($N = 9$) missing), participants responded as follows; 23% ($N = 18$) "friends took part," 23% ($N = 18$) "personal development," 14% ($N = 11$) "something to occupy my time," 14% ($N = 11$) "money," 8% ($N = 6$) "parents or others encouraged me to, and" 6% ($N = 5$) "other".

Solutions to challenge 2: Recruitment of youth populations

Build rapport and trust with young people

It is suggested that in order to account for attrition, initial recruitment numbers need to be two or three times the desired number of participants. Oversampling in this way to account for expected drop-out rate has been suggested by other researchers in criminology (Miller et al., 2022). To facilitate enrolment, participants must find the study attractive and appealing, and trust must be earned where hostility toward strangers might exist (Shahabi et al., 2011). It is imperative that researchers build rapport and trust with the potential participant pool by spending time with them in a natural and organic way. For example, informal discussions getting to know one another, during activities such as arts and crafts, table football, outdoor sports, and/or preparing food together. Supportive relationships between study staff and participants characterized by "humor, kindness, and support" are deemed to be one of the main factors contributing to success with participant retention (Lauver & Little, 2005: 73).

Research assistants have high demands placed on them to exercise their research and data collection skills as well as to build relationships with participants. Furthermore, rapport building is often not a skillset that research assistant are trained in (with more focus being placed on data integrity

procedures). If resources allow, it is proposed that specific rapport (or recruitment) research assistants could perform distinct roles from general research assistants, where the focus would be on building rapport by exercising strong intuitive and flexible communication skills. Rapport research assistants could spend time with young people in group settings for 8–12 weeks before invitations to take part in the study are delivered. If resource is available, ideally rapport researchers would remain present for the entirety of the program since participants may feel allegiance to the individuals that welcomed them to the program, thereby attempting to protect a potentially rising attrition rate. It is particularly important to recruit rapport researchers that the target sample can identify with, either by age, demographics, lived experience, knowledge of the local area, and/or knowledge of local activities and schools (Kim, 2016). Staff at the community partnership would be ideal for this role but are likely to be working at full capacity. Once rapport research assistants develop relationships with participants over time, misunderstandings about the intentions of the research team (e.g., data sharing with other organizations such as the police) could be addressed in informal discussions. Once trust and rapport are built, participants may also be more likely to check and respond to communications sent by the research team and render social media handles to be used appropriately (such as Instagram, Snap Chat, and Facebook), as found to be successful in health research (Mendelson et al., 2021) and social science research (Dalessandro, 2018). In addition, some of the factors that might be related to dwindling attendance (listed in this paper) can be addressed with good rapport and trust between the research team and the participants.

Build a sense of community and commitment among young people

Participants' sense of belonging to a community (Lauver & Little, 2005) and participants perspectives on the intervention experience (Klim-Conforti et al., 2022) are deemed to be some of the main factors contributing to success with participant retention. Creating a "study identity" is also identified as a key consideration for the recruitment and retention of children in the Delphi study (Schoeppe et al., 2014:798). To build a sense of community among young people, group activities are useful during the recruitment phase, for example, by hosting group activity days (such as trips to trampoline parks, water parks, or fast-food outlets). Excursions of this kind may create a sense of group belonging and encourage a shared sense of responsibility to take part in and attend every session of the program. Group identity can be further facilitated by administering icebreaker activities, eating together, and working on group problem-solving tasks together so that when the program begins, the onus is on young people to attend and make the program work. Another way of improving the sense of group belonging and community, as has been achieved in other research (Chang et al., 2009) is to request for consent to take photographs throughout the program and post them on a board during sessions. Rapport research assistants could also be tasked with gathering young

people's perspectives on the structure, format, and content of the upcoming program, also referred to as participatory research, the merits of which have been documented elsewhere (Hawke et al., 2020; Kellett, 2011; Schoeppe et al., 2014). This strategy has numerous benefits, for example, the more students have a say in their learning environment, the higher their engagement and learning achievement (Bond & Bedenlier, 2019; Pino-James et al., 2019).

Challenge 3: Participant attendance

Irregular attendance and drop-out after the first few sessions of an intervention study, often seen in "out of school" programs such as TCP, pose a serious threat to the success of the research (Lauver & Little, 2005). The factors that impact attendance can be categorized into those that can be mitigated by the research team, and those that fall further outside the influence of the research team. Focusing on the former, participants may be more likely to continue attending intervention program sessions if: friends or acquaintances enroll to the study (although in an RCT, random allocation of friends to different conditions might counteract this), they view the sessions to be useful to them and their lives, they receive payment for attending, they receive food at the sessions, and/or if they find the sessions to be fun or enjoyable. The final point of enjoyability is highly dependent on the intervention content itself. Factors somewhat outside of the control of the research team might include whether young people have transport to the study location and alternative engagements/events being held at the same time as the intervention sessions (e.g., plans with friends, entertainment events such as a circus or a fair event, or hobbies or sports). If carrying out research during term-time with school-age children outside school settings, scheduling of research sessions is limited to the time window between the end of the school day and before average dinner or bedtimes. If carrying out research during school holidays, young people may be away from home or not engaged in their usual routines. The importance of accurately identifying the ideal days, weeks, and months for research sessions is critical (Miller et al., 2022).

Challenge 3: Participant attendance: Successes and lessons from The Compass Project

The percentage of young people who attended the sessions each week averaged 84.56% (see Figure 2). A repeated measures ANOVA (with Greenhouse–Geisser correction) determined that attendance did not differ statistically significantly between sessions ($F(4.03, 80.57) = 0.84$, $p = .496$, $\eta^p_2 = 0.04$).[1]

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[1]This analysis did not include week seven as attendance data were not available for Trumpington for this session (the youth worker canceled the open access youth work session that day). Note that attendance percentages are calculated for young people expected to attend, that is, the young people randomized to the program group who had completed the pre-intervention scales.
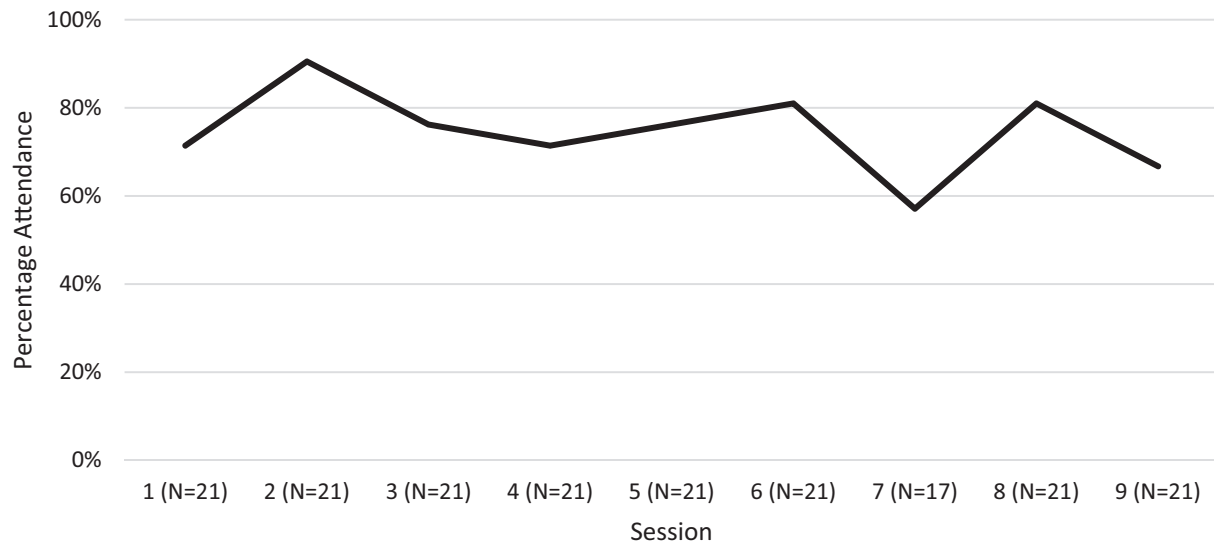
FIGURE 2   Percentage attendance at the nine intervention sessions.

Weekly reminders were sent thanking those who had attended and encouraging those who did not attend to attend the next session. However, it became apparent that participants often did not have access to or did not read their emails and messages, and this combined with frequent changes in contact details (email and phone numbers), meant contact was mostly unsuccessful. This so called "transience" in relation to contact is found to be an issue to other research with youth samples (Abrams, 2010).

There were many factors that impacted participants' attendance. First, young people reported that they had missed occasional sessions because they had instead chosen to attend other after-school activities being run by the school or other local organizations or chose to spend time in pleasant weather outdoors (this was particularly problematic as the project ran during summertime). Reduced attendance can be seen with the dip in attendance in week nine, which was the annual schools' activities week, during which normal classroom lessons are suspended and replaced with a range of experiences outside the classroom, some of which take place away from home. A dip can also be seen in week seven, although this is a logistical issue as the session ordinarily held in Trumpington was canceled by the youth worker that day.

To explore the possibility of attrition bias by age, gender, and location, we conducted analyses on these demographics for our dropout population. Exploratory analyses revealed no evidence that dropout rates varied by demographic characteristics. A between-subjects t-test revealed that young people who completed the study ($N = 46$) did not differ significantly in age from those who dropped out ($N = 55$, $t(99) = 0.51$, $p = .611$, Cohen's $d = 0.10$). A Chi-Squared test indicated that gender did not significantly differ between those who completed the study and those who dropped out (X^2 (1, $N = 102$) $= 1.27$, $p = .259$, $\varphi = -0.11$). In addition, another Chi-Squared test revealed that the proportion of young people attending by intervention

location did not significantly differ between those who completed the study and those who dropped out (X^2 (2, $N = 103$) $= 5.82$, $p = .055$, $\varphi = 0.24$). Overall, all dropout analyses by age, gender, and location revealed null results, although the sample size is small.

Solutions to challenge 3: Participant attendance

Make young people feel valued for their individual contributions to the program

It is pertinent that young people feel recognized as individuals with different preferences and needs, and feel valued for making contributions to and for being individually critical to the success of the program. This needs to be at the forefront of the research team ethos and the research atmosphere that they create, and staff should be trained and prepared to handle this delicately (Klim-Conforti et al., 2022). Celebrating and emphasizing individuality could be achieved by making the program as accessible as possible, for example, by considering neurotypical and neurodiverse ways of learning, the sociocultural factors that influence student engagement (Bond & Bedenlier, 2019), and/or considering variations in reading and writing comprehension. Another method of showing appreciation to individuals could be to put up a wall chart listing everyone's names and marking it with stickers when young people attend and marking it with "you were missed" when young people do not attend. Research assistants could find commonalities with every participant and have some one-to-one conversations to complement the group interactions, both in the pre-recruitment phase and throughout the program.

Carefully consider the timing of intervention sessions

Scheduling the intervention sessions at a convenient time for participants is crucial. This strategy is of course applicable to the challenge of participant recruitment

(challenge 2) as well as to encourage continued attendance. Research assistants could collate a list of events and activities that are scheduled to take place during the program phase (e.g., entertainment events such as circus and fairs, sporting events, and school activities week), and this could be taken into consideration when scheduling sessions. Research assistants could also directly discuss with young people which alternative events or activities might deter them from attending the full schedule of the intervention program, and a poll could be carried out to measure scheduling preferences (although this is contingent on their responsivity). Staff that work at the youth organization might also have some knowledge about where young people go and what they do after school. The time of year is also a consideration; speaking generally, in the spring and summer months, young people may have a preference to spend time outdoors after school, but in the winter months, they may have a preference to go to their homes or friends' homes after school to stay warm and dry. As such, it is suggested that autumn might be an ideal time of year to run an after-school intervention program. School holidays might run during the intervention period and decisions need to be made about whether to continue to run the program during that time and the potential implications for lack of continuity in relation to the intervention content if attendance is temporarily disrupted for those who are away from home.

Challenge 4: The nature of participation

Participant participation that goes beyond physical attendance is critical because engagement (Chiu, 2022), enthusiasm (Nurlaelah et al., 2021), and focus (Cicekci & Sadik, 2019) enhance short-term and longer-term learning in children. If learning does not take place during an educational intervention, the hypothesized change is unlikely to occur (Bond & Bedenlier, 2019; Shernoff et al., 2017). The three universal psychological learning needs outlined in self-determination theory (SDT) of autonomy, competence, and feeling connected to others, have been linked to motivation to learn and engagement with learning (Chiu, 2022). By designing program tasks to be open-ended, flexible, and authentic, learning is more likely to be successful (Zhang et al., 2020).

Challenge 4: The nature of participation: successes and lessons from The Compass Project

In their written fieldwork notes, research assistants (RAs) indicated that young people met expectations for enthusiasm in various ways such as energetic completion of tasks, investment in the outcomes of activities, and finding associations between the program content and their own personal experiences. Somewhat meeting expectations for enthusiasm was typified by fluctuating levels of enthusiasm or tepid enthusiasm, for example, occasional sighing. Young people who did not meet expectations for enthusiasm were recorded as requiring prompting to participate, being highly distracted, or reluctant to follow instructions. On a scale from 0 (does not meet expectations) to 2 (meets expectations) RAs rated young people's enthusiasm for the program on average as 1.55 (SD = 0.19). See Figure 3 (The Ns here represent the number of people who attended each week).

Turning to engagement, young people met expectations for engagement mostly by contributing to discussion-based activities. Contributions that were more thoughtful, thorough, and relevant to the topic were rated by RAs as more engaged. Some young people somewhat met expectations for engagement even if they did not verbally contribute, for example, if they demonstrated engagement by making eye contact and using body language that signified that they were paying attention. Not meeting expectations for engagement was typified by not listening to program leaders and being
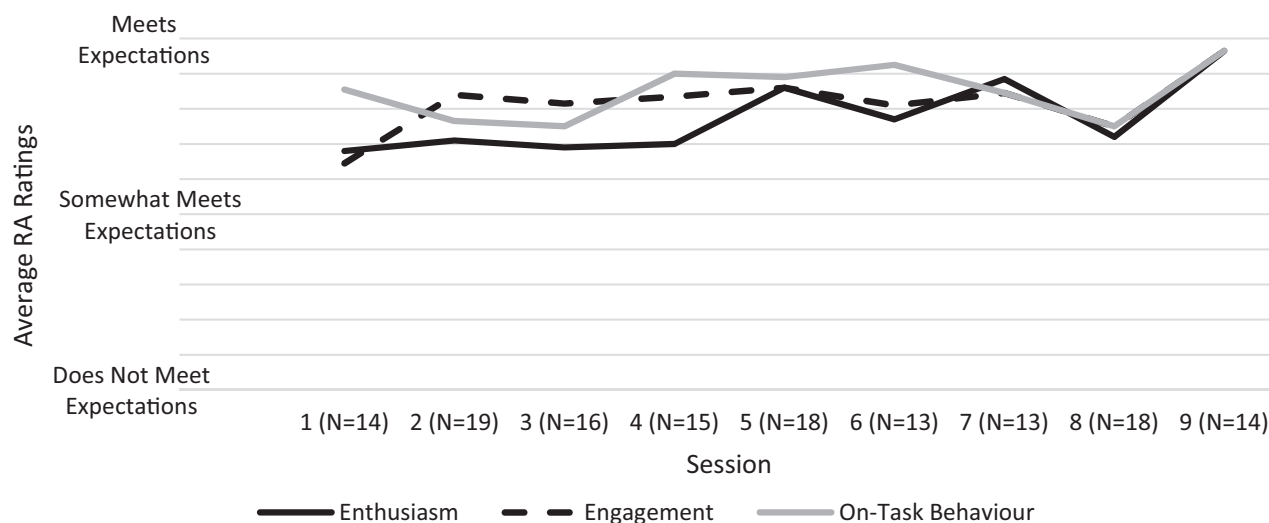

FIGURE 3 RA ratings of young people's average enthusiasm, engagement, and task-focused behavior at the nine sessions.

unable or unwilling to respond to RA questions. On a scale from 0 (does not meet expectations) to 2 (meets expectations) RAs rated young people's engagement for the program on average at 1.64 (SD = 0.16). See Figure 3.

Turning to task-focused behavior, on-task behavior met expectations by default unless young people demonstrated behaviors that prevented themselves or others from completing the session activities. Intermittent or mildly disruptive behaviors were classified as somewhat met expectations, for example, if a young person answered in a silly voice or was eating snacks in a disruptive way during activities. Behavior did not meet expectations when it was persistent throughout a session or severe. For example, persistent talking while the RA was speaking, or interrupting others, and/or physical and verbal altercations. On a scale from 0 (does not meet expectations) to 2 (meets expectations) RAs rated young people's on-task behavior on average at 1.70 (SD = 0.15). See Figure 3.

Repeated measures ANOVAs (with Greenhouse–Geisser corrections) determined that average RA ratings did not differ statistically significantly between sessions for enthusiasm ($F(2.40, 7.21) = 1.49$, $p = .293$, $\eta^P_2 = 0.33$), engagement ($F(2.11, 6.34) = 1.47$, $p = .300$, $\eta^P_2 = 0.32$), nor task-focused behavior ($F(1.73, 5.20) = 1.36$, $p = .327$, $\eta^P_2 = 0.31$). This seems to indicate that those that attended the program were, overall, stable in their enjoyment, engagement, and level of task-focused behavior (as rated by RAs). It was clear that for those who were less enthused, engaged, and task-focused, sessions needed to better consider individual variation and accessibility, for example, "The sessions worked well for young people who were able and willing to sit and be compliant, but need to be delivered more creatively for the target young people" (YW 4).

Solutions to challenge 4: The nature of participation

Ensure participants are engaged from start to finish
Research teams can exert the most influence on participant engagement by adjusting the immediate learning environment by choosing tasks carefully (Bond & Bedenlier, 2019) and selecting attentive staff facilitators (Pino-James et al., 2019). In a multi-session intervention, it is pertinent that the first one or two sessions are engaging to prevent early participant drop-out before they have had the chance to build rapport with the team and feel a strong commitment to program participation. Challenging, accessible, and fun activities are deemed to be one of the main factors contributing to success with participant retention (Lauver & Little, 2005). Care must be taken to ensure the program is not similar to sitting in the classroom at school. To assist to achieve this, and to encourage young people to attend every program session, research assistants can offer a warm and uplifting welcome to participants as they arrive at the sessions and fill any waiting time (and breaktimes) with conversation, as well as provide snacks throughout the sessions.

Administrative aspects of the program need to be well-oiled and rehearsed during fieldwork training, for example, carefully planned preparation of paperwork to avoid young people waiting around unnecessarily. One way of addressing this is to ensure that a sufficient number of electronic tablets are acquired for participants to record information. Engagement at the sessions also heavily hinges on the intervention content itself, which should be designed and selected with this consideration at the forefront. Young people may prefer activities where they are required to move around physically, or that have a competitive element to them, as opposed to sitting still or quietly. Other factors affecting the attention (Cicekci & Sadik, 2019) and engagement of students (Bond & Bedenlier, 2019), and suggested strategies for enhancing learning, have been widely documented in education literature.

Challenge 5: Data collection

Turning to data collection, it is important to evaluate how engaging, accessible, and suitable the type, format, length of, and nature of the data collection tools are for youth populations (Bradburn et al., 2004). If data is to be collected in a group setting, individual variation in reading and writing comprehension, digital literacy, and data confidentiality needs to be considered. If questionnaire scales are to be administered remotely online, monitoring the level of involvement of parents is required. Consideration also needs to be paid to when data completion occurs, especially if participants must complete pre-intervention questionnaires before the first intervention session, and post-intervention questionnaires shortly after the last intervention session (this is particularly problematic if participants are non-responsive to phone and email reminders or do not have regular access to the Internet).

Challenge 5: Data collection: successes and lessons from The Compass Project

TCP struggled with data collection, especially at the pre-intervention stage. Of the 103 participants who enrolled, only 45.6% (N = 47) completed the full pre-intervention questionnaires (see Figure 4). The concern for researchers is that the retained sample is not representative of the broader youth population (Schoeppe et al., 2014), known as attrition bias. In a worst-case scenario attrition may select out those young people most at need of the intervention (Lauver & Little, 2005; Ribeaud et al., 2022).

For the pre-test, on average it took participants 36 min to complete the first section and 36 min to complete the second section. 69.9% of enrolled participants (N = 72) completed the first part of the pre-intervention scales only (categorized as "Incomplete Pre-Test"). Of all research stages, the biggest drop-out was encountered at the pre-intervention questionnaire scale stage. Young people were generally vocal in sharing
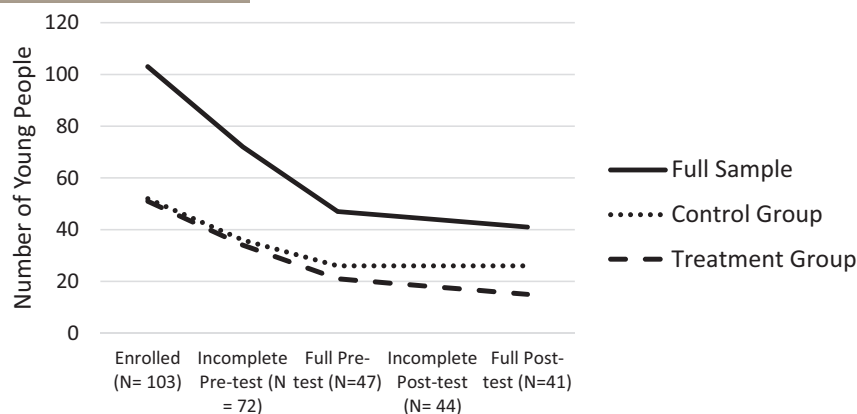
FIGURE 4 Number of participants at each research stage.

with the research team that they did not generally enjoy or feel positively about being asked to complete a seemingly lengthy and repetitive set of questions, and this was reflected in unrecorded comments to the research team during completion, and in the post-study questionnaire, in which participants were asked what they least enjoyed about the program, for example, "the long [pre-study questionnaire] at the start."

The post-intervention scales were split into three sections, and three (program group) participants dropped out before completing the final two sections. On average, it took participants 32 min to complete the first section, 24 min to complete the second section, and 28 min to complete the third section. Retention rates were higher for post-intervention data collection. Of the 47 participants who completed the full pre-intervention scales, 87.2% ($N = 41$) also completed the full post-intervention scales (see Figure 4). To ease concerns about the risk of participants not completing the post-scales after the intervention sessions had finished (particularly as they would not be meeting the research team again to be reminded to do so, and they were not generally very responsive to email and message reminders), post-intervention scales (2a, 2b, and 2c) were carried out on electronic tablets in the last 30 min of the weeks seven, eight, and nine program sessions. This compromised the research design because this rendered the data mid-end of the intervention program as opposed to post-program, but the upside was to ensure everyone who attended completed post-intervention scales. Improved retention in the post-survey is also likely due to the self-selecting nature of this sample; young people who were willing to persist through the pre-intervention questionnaire scales appear quite likely to persist through the post-intervention scales. Ultimately, the number of completions was still low because it relied on participants attending the final three sessions of the program. For the control group, everyone who completed the pre-intervention scales also completed the post-intervention scales, and this might have been driven by the monetary incentive since they would not be paid until the post-intervention scales had been submitted. The CONSORT table in Figure 1 displays the number of participants at every stage of the project.

Solutions to Challenge 5: Data collection

Ensure data measures are accessible, appealing, and engaging

Data collection tools need to be carefully scrutinized for the length of time taken to complete data measures, the level of parental involvement, variations in reading comprehension, and the merits and downfalls of offering a choice of paper and online measures. If the study design includes pre-intervention measures, it is crucial that pre-intervention measures are completed before the study begins; one way of achieving this is to hold a number of sessions, providing favorite foods (such as pizza or sweet and savory snacks) and competitive games and prizes, to complete these well in advance of session one of the intervention. Offering food might also decrease the chances that participants will be distracted. If relevant, it is suggested that questionnaires should be read aloud to young people in a group setting, and for time efficiency they should be asked to select from a bank of response options in electronic format, although this would need to account for variations in participants' response times. This method ensures there is no missing data, increases the speed with which questionnaires can be completed, reduces the cognitive load on participants, and ensures the electronic data file can easily be created (i.e., inputting of data from paper format is not necessary). Finally, research assistants are required to be adequately trained and available to assist in cases where individual one-to-one support is required and in cases where behavior is not task-focused.

DISCUSSION

The primary objective of this paper was to highlight the importance of accessing, engaging, and retaining youth participants, and ultimately securing data from an adequate number of participants to carry out well-powered statistical analyses. Such analyses can lead to generalizable conclusions regarding the efficacy of intervention programs and are typically composed of comparative assessments between the program and control groups. If additional

moderator analyses are required, such as comparing the efficacy of the program for girls versus boys, even greater sample sizes are required. Without consistent retention of participants, not only is the success of the intervention for the young people involved jeopardized, but the ability to know if the program is useful at all is lost. This point is made evident in the TCP pilot which explored the potential to spark change in moral behaviors in daily life among young people (Wright et al., 2020). The testing of any such intervention program is ambitious and its success is entirely dependent on overcoming the challenges identified in this paper.

We identify five challenges to conducting youth intervention research and propose seven strategies to help overcome. Although we believe using one, or several, of these strategies will help research across disciplines, they must be adapted to the specific research context in a way that considers the interests of young people and the organizations that serve them. Generally, thoughtful planning and strategic allocation of resources are essential to navigating these complex challenges. The strategies presented in this paper emphasize a delicate balance between the conflicting demands of robust data collection and the unique needs and sensitivities of the youth population being studied. Striking this equilibrium requires a multifaceted approach imbued with perseverance, thoughtful planning, determination, and optimism. The process also requires recognizing the interactive and complex nature of the challenges, where solutions might have overlapping applications, reflecting the intricacy of the issues.

Overall, we advocate for a highly responsive and empathetic approach to intervention studies that balances the technical rigor of research with sensitivity to the individual needs of the youth population. We hope these insights can pave the way for more effective and meaningful research in the realm of youth intervention studies.

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