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Title: Youth-oriented outcomes of education, employment, and training interventions for upcoming youth: protocol for a discrete choice experiment

Running title: Youth not engaged in employment, education or training

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Abstract

Aim. The issue of youth who are not engaged in education, employment, or traininghave been a focus of policy-makers for decades. While interventions exist for these youth, they often measure success in ways that fail to capture what youth seek to gain. The project aims to address this gap by assessing youth-oriented outcomes for interventions targeting upcoming youth. Acknowledging the stigma attached to the deficit-based notion of not engaged in education, employment, or training , hereafter we refer to "upcoming youth", a term coined by youth partners on the project. This study asks what youth want to achieve by participating in an intervention for upcoming youth, with a view to guiding service and research design.

Methods.A mixed-methodsdiscrete choice experimentwill be conducted with youth engaged as partners. Aqualitative (focus group)stage will be conducted to design discrete choice experimentattributes and levels.The experiment will be piloted and administered online to 500 youth (aged 14-29) across Canada to identify the outcomes that youth prioritize for interventions.Latent class analyses will then be conducted to explore clusters of outcomes that different groups of youth prioritize.

Conclusions. From a strengths-basedrecovery oriented framework, hearing the voices of the target population is important in designing and evaluating services. This youth-oriented research project will identify the intervention outcomes that are the highest priority for upcoming youth. Findings will inform

the development, implementation and testing of interventions targeting relevant outcomes for youth who are not engaged in education, employment or training.

Keywords: adolescents, education, employment, training, youth, patient-oriented outcomes

Strengths and limitations of this study(5 bullets related to methods)

- Focuses on specific outcomes of interventions that are identified as desirable by upcoming youth, rather than relying on researchers or policy makers to identify markers of a successful program
- Uses a mixed-methods approach to produce a rigorous understanding of youth-oriented outcome preferences regarding interventions for upcoming youth
- Partners with youth in the development of the study assessment tool, the collection and interpretation of data, and the dissemination of results
- Collects non-random samples and may miss certain special populations
- Will not identify intervention efficacy or cost-effectiveness, but will guide intervention development and measurement initiatives by identifying outcome targets

Introduction

When striving to transition from school into the workforce, some youth become disengaged from education, employment and training structures. This comes at a developmental period in which investment in skills and experience through work are foundational for their future(Social Exclusion Unit, 1999).This is traditionally described as not in education, employment, or training or "NEET." However, this deficit-based lens is considered stigmatizing(Yates & Payne, 2006). We therefore refer to this population as "upcoming youth", a term selected by a youth member of our research team.

Upcoming youth can experience disengagement dueto a variety of barriers that make it difficult to enter the job market, includingdifficulties finding work, educational, or training opportunities;indecisionabout the next step for their future;disability; mental health or substance use challenges, or household or parenthood tasks and caring responsibilities(Gariepy & Iyer, 2019; Gutiérrez-García, Benjet, Borges, Méndez Ríos, & Medina-Mora, 2018). In 2018, 5.9% of youth between 15-19 years and some 13.4% of youth between 20-24 years of age in Canada were found to be disengaged from employment, education and training(Organisation for Economic Co-operation and Development, 2018).Disengagement has substantial impacts for individual youth during this life phase characterized by developmental milestones leading through to adulthood; it also has considerable economic repercussions.

Many social determinants of health intersect with disengagement risk factors. For example, upcoming youth are more likely to experience low academic achievement, parental unemployment, lowfamilialsocioeconomic status, precarious housing,and early parenthood(Henderson, Hawke, & Chaim, 2017; Lindemann & Gangl, 2019; Pitkänen, Remes, Moustgaard, & Martikainen, 2019; Public

Health England, 2014).Also commonly found are increased rates of mental health and substance use challenges and a higher likelihood of criminal justice system involvement(Benjet et al., 2012; Gariepy & Iyer, 2019; Henderson et al., 2017; O'Dea et al., 2014; Rodwell et al., 2017). Youth in care through the child welfare system also face risks with regard to employment, education and training success(Dixon, 2007). Furthermore, a single instance of disengagement from employment, education or training opportunities increases the risk of experiencing this again, highlighting potential longer-term repercussions(Public Health England, 2014).

In our team's national study, 26.8% of youth presenting for services across multiple youth-serving sectors (e.g., mental health, substance use, education, justice, housing, etc.) were disengaged from employment, education and training, pointing to the importance of widely implementing interventions (Henderson et al., 2017).We found risk factors across psychosocial domains among upcoming youth, including considerable mental health and substance use challenges. In a separate study, our team found high levels of disengagement among upcoming youth with early psychosis(Iyer et al., 2018); these upcoming youth experienced greater illness severity and more difficulty with daily functioning, and were slower to receive treatment than engaged youth with early psychosis. Our work has pointed to the vulnerability associated with being disengaged, the presence of upcoming youth in diverse service environments, the importance of providing targeted interventions, and the importance of considering diverse aspects of health andwellbeing beyond employment/education status.

Interventions and outcomes. A systematic review shows that available interventions for upcoming youth include social skill and vocational training, classroom-style learning opportunities, on-the-job training

etc., with positiveeffects for more intensive interventions(Mawn et al., 2017).The most commonly measured outcomeswere employment status, NEET status, earnings, and welfare payments. Few studies considered psychological distress, psychosocial indicators, or metrics reflecting the transition from adolescence to adulthood. None reported on the meaningfulness of the interventions to the upcoming youthserved.The inconsistency of outcomes highlights the need to reflect on what these interventions should aim to achieve: what is the right outcome, for which youth, at which point in development?

Youth-oriented outcomes. Understanding stakeholder perspectives is essential in designing and enhancing social services(Brownlie, Chaim, Heffernan, Herzog, & Henderson, 2017). When services fit with service users'preferences, service users are more likely to continue to receive services and benefit from them(Swift & Callahan, 2009; Swift, Callahan, & Vollmer, 2011).From a youth-oriented and patient-reported outcome measures (PROMs) stance(Staniszewska, Haywood, Brett, & Tutton, 2012), youths' goals for a program take precedence over researcher-defined outcomes. This is consistent with strengths-based and recovery-oriented models of mental health and wellness, which have been applied to employment support(Secker, Membrey, Grove, & Seebohm, 2010), where the goal should be to establish meaning as part of an ongoing recovery process rather than striving to eliminate clinically defined impairment(Rapp & CGoscha, 2012). From this perspective, obtaining a job or entering an educational or training program may not be the primary goal of recovery-oriented programming for upcoming youth. The outcome goals of interventions for upcoming youth should be defined by and with the target population.

Objective. To systematically examineyouth perspectives regarding the preferred outcomes of interventions for upcoming youth not engaged in education, employment or training, with a view to guiding service and research design.

Methods

This study employs a mixed-methods focus group and discrete-choice experiment (DCE) design. The DCE is a quantitative approach derived from marketing research that elicits consumer preferences regarding products or services with complex sets of hypothetical characteristics(Bridges et al., 2011). DCE puts different characteristics ("attributes") of a service or product, each with different "levels," head to head in hypothetical scenarios and asks the respondent to choose between them; the DCE leads to complex decisions that provide more information than traditional surveys regarding the relative importance of certainpriorities over others, and makes it possible to identify subgroups with different preference sets(Bridges et al., 2011; Phillips, Johnson, & Maddala, 2002).DCEs are enriched by qualitative datato effectively capture users' experiences of complex interventions(Lewin, Glenton, & Oxman, 2009), conducted to support DCE tool development(Creswell & Clark, 2007). This study was designed following the International Society for Pharmacoeconomicsand Outcomes Research taskforce's report on Good Research Practices for Conjoint Analysis(Bridges et al., 2011).

Youth engagement in the design, development and execution of research about youth-relevant issues has many benefits for the quality of the research(Heffernan et al., 2017; Viswanathan et al., 2004). This study engages youth in all stages of the study, consistent with the McCain Model of Youth Engagement(Heffernan et al., 2017).A youth was engaged during the grant development process. The

team also includes another youth as a core research team member and co-author on this manuscript. The progressive development of the project, including DCE level and attribute development, will be informed by discussions with additional youth members of the Youth Engagement Initiative at the Centre for Addiction and Mental Health (CAMH).

Phase 1.Draft DCE Tool Development: The research team will develop a draft of possible DCE attributes and levels, including diverse NEET outcomes identified in previous research(Mawn et al., 2017), the broader literature, and by our expert research team (which currently includes oneyouth).The process will combine in-person meetings with the circulation of an iteratively refined selection of attributes and levels to team members in survey format for team ranking and commenting.

Phase 2.Focus group consultations for primary qualitative data and DCE refinement:Previous studies have used approximatelythree stakeholder consultations per stakeholder group for efficient DCE tool development, e.g., (Cunningham et al., 2008; Cunningham et al., 2012). We will conduct approximately four consultations, one in each of four Canadian provinces (Ontario, Quebec, New Brunswick, Alberta), in large and small urban settings for geographical diversity. Consultations will include approximately 8 youth per group (total N=32). Additional consultations will be held if saturation is not reached.

Participant recruitment. We will recruit directly through youth-serving agencies across sectors, ensuring that the sample consists of the types of youth who would access services for upcoming youth.

Procedure.Two-hour focus group discussions will explore preferred outcomes for interventions for

upcoming youth and narrow the pre-developed list to the attributes and levels most relevant to youth(Bridges et al., 2011). Focus groups will be co-facilitated by youth and adult researchers. They will first explore preferences broadly using a semi-structured focus group guide, then use a prioritization and ranking activity to refine, or add to, the list of attributes/levels obtained in Phase 1. Participants will provide informed consent and receive an honorarium.Focus groups will be audio recorded.

Data analysis. Data analysis will take two forms: (1) thematic analysis inNVivo software(Braun & Clarke, 2006; Harper & Thompson, 2011); (2) identification of the core preferred outcomes for refinement of the DCE tool, through the prioritization and ranking exercise.For thethematic analysis, the Braun & Clarke(Braun & Clarke, 2006) methodology will be employed. Initial codes will be produced on transcribed interviews in NVivo software. Two team members will read through several transcripts independently to identify codes, which will then be organized into tentative themes. Themes will then be reviewed and refined. Once completed on the pilot transcripts, this process will be applied to the remaining focus groups to verify if our thematic map accurately reflects the whole data set. We will conduct a detailed analysis for each theme to articulate the theme's 'story' and how that story fits into the overall conception of the data. . For the DCE tool (2), outcomes identified as priorities across groups, using the frequency of rankings, will be retained as the outcome for Phase 3. Emergent themes will be used to refine the attribute grid in an iterative process, as per standard DCE development procedures(Coast & Horrocks, 2007). Data sharing not applicable – no new data generated, or the article describes entirely theoretical research

Phase 3.DCE Pilot.DCEs typically include a small pilot of the quantitative data collection tool to ensure the clarity of the wording and process(Bridges et al., 2011). The revised DCE tool will therefore be programmed and pilotedamong approximately 30% of Phase 2 participants. Youthwill complete the DCE with a research staff member in person or by phone, with cognitive interviewing to collect feedback on the instructions, format, items, and overall process. Feedback will be discussed among the team to further refine the items and create a final version.

Phase 4.Final DCE study. We will target $N = 500$ participants across Canada.We will work with our partners to reachyouth with diverse experiences, largely via community-based youth-serving agencies of various sizes, with varying youth demographics, and with varying support needs. Youth will be recruited via email through: 1) the CAMH McCain Centre's National Youth Action Council (NYAC), 2) each partner's respective youth engagement groups and networks,3) invitations through our network of youth-serving agencies, 4) other activities to be identified by our youth engagement team.*Inclusion criteria*: youth must be aged 14 to 29 and self-identify as having experienced employment/education/training challenges; previous service use is not an inclusion criterion, as the feedback of youth who have never used services due to barriers is also valued.

DCE design. The final DCE will contain approx. 10 attributes, each with 2 to 4 levels, as established in Phases 1 to 3. For a preliminary sample item representing 3 attributes and 3 levels,see *Figure 1*. Each participant will complete approx. 10 to 12 tasks(Bridges et al., 2011), in which they choose from one of 3 options, as well as an opt-out option if none of the attribute combinations are desirable. Using algorithms, Sawtooth software builds blocks of tasks presented to each respondent to maximize task

balance: all attributes and their levels appear a similar number of times in the whole task and with each level of each other attribute. This balance allows efficient estimation of utilities at the respondent and aggregated levels(Kuhfeld, 1997). The design provides as many blocks as respondents, so each respondent sees a different set of tasksto guarantee an overall balance for precise population-level estimates.

Procedure. The DCE will be housed on Sawtooth softwareon a secure CAMH server. Potential participants will receive an email invitation to participate by clicking on a link. Upon informed consent, participants will complete a demographic form, a practice exercise, and the DCE. Participation will take approximately 20 minutes. After completing the survey, respondents will have the option of providing their email address to receive an honorarium.Recruitment will take place over a 4 month period.

Sample size. Given the above specifications, a sample size of 200 respondents would guarantee that each level of every attribute would be shown at least 500 times, which should result in a margin of error of +/-4.4% assuming the estimation of a proportion of 50% in an independent sample and 95% confidence level. Such sample size calculation is suggested in the literature(Bridges et al., 2011; de Bekker-Grob, Donkers, Jonker, & Stolk, 2015; Orme, 1998). However, lack of independence between classes, the use of covariates, sample diversity (e.g., four provinces, gender, experienced vs. did not experience services) and the configuration of the final attribute set is expected to increase the required sample size. To be conservative, we will initially target approx. 500 participants, which is considered a feasible and statistically sound tentative target.However, the final sample size will be determined using simulation analyses.Upon finalization of the DCE tool, we will use Sawtooth Software's Advanced Test Design

module to compute standard errors reflecting the precision of main effect parameter estimates for simulated (random) data sets with sample sizes varying from 200 to 2000. Ensuring that all levels are estimated with precision of +/-5%, the final target sample size will be established accordingly.

Data analysis. We will use descriptive statistics to analyze participant characteristics. Sawtooth Software will be used to fit a Choice Based Conjoint Hierarchical Bayes (CBC/HB) mixed multinomial logit model to the stated choice data.Model coefficients are zero-centered and interpreted as utilities, that is, the effect of each attribute level on decision-making, where higher scores reflect stronger preference. Importance scores will be calculated, indicating the relative influence (rank) of importance of the attributes on participant's preferences. Mixed effect models calculate individual level utilities to generate preference estimates for each attribute within each subject. Latent class analysis (LCA) is a finite mixture model that can use the heterogeneity across subjects to estimate unobserved segments of participants, where each segment differs in relation to which attributes drive their preference. Using maximum likelihood criterion, LCA will estimate the probability that each participant is a member of each segment. Latent class solutions with different numbers of classes will be estimated and model selection will be based on fit indices (i.e., Akaike Information Criterion [AIC], Bayesian Information Criterion [BIC]; the model with fewest classes and the lowest AIC and BIC will be selected), segment size and interpretability. Lastly, chi^2 tests will examine associations between demographics and latent class segments. Multivariate analysis of covariance (MANCOVA) will be used to assess significance of utilities and importance scores across segments, including demographic covariates that might influence class membership. When MANCOVAs are statistically significant, univariate ANCOVAs and post-hoc Dunnett's C adjustment for multiple comparisons will be used. Randomized first choice simulations will

specifically compare preferences for the typically measured outcomes, i.e., employment/education rates and income stability,versus psychosocial outcomes as an alternative set of outcomes that may be important to youth, determined from Phase 2 results.

Limitations. 1) A non-random sample will be recruited, which may lead to non-generalizability. However, since we are recruiting through community-based youth-serving agencies, participantsare likely to reflect diverse types of youth, including those likely to use such services. 2) Special populations, such as youth in extremely remote areas and Indigenous youth, will not be systematically reached, although such demographic information will be collected. These groups may have different needs to be explored in future research. 3) This project will not derive conclusions regarding the efficacy or cost-effectiveness of interventions. However, it will identify preferred outcomes; models targeting these outcomes can then be developed and tested in future research.

Ethics & dissemination. The project has been approved by the CAMH Research Ethics Board, in Toronto, Canada (protocol #124-2019). Data will be kept confidential in full compliance with Research Ethics Board requirements. We will employ an integrated knowledge translation and exchange (KTE) approach, as well as robust end-of-grant KTE.Conventional KTE activities will include open-access peer-reviewed journal articles and presentations at international, national, and local conferences with diverse audiences. Consistent with the McCain Centre's youth engagement strategy, youth-friendly reports will be developed by youth representatives on our team. Discrepancies in the preferences of different subgroups of youth will invite important KTE dialogue among stakeholders to encourage appropriate service adaptations to maximize youth service engagement and uptake. Results will enable

us to develop tailored messaging for the employment/education sector. Results also will be used to pursue federal research funding, to guide intervention development and testing, and ultimately implementation efforts.

Discussion

It is essential to understand youth perspectives when designing, enhancingand evaluating health and social services(Brownlie et al., 2017). Strong alignment between youth preferences and services increases the likelihood that youth will access services and remain in the services longer(Swift & Callahan, 2009; Swift et al., 2011).This youth-engaged study will provide robust, youth-oriented perspectives on the highest priority outcomes of interventions for upcoming youth, guiding future research. By engaging youth as partners in all phases of the project and soliciting qualitative and quantitative feedback of a diverse youth, these results will guide researchers and implementation specialists as they design andidentify the interventions for upcoming youth that hold strong potential to engage youth in real-world settings.

Among the diverse contexts in which interventions for upcoming youth might be successfully implemented are integrated youth service hubs (IYSHs). IYSHs are a growing focus of research and implementation around the world(Hetrick et al., 2017; Settipani et al., 2019). They hold tremendous promise in serving vulnerable upcoming youth through holistic, collaborative services addressing their physical, mental, and psychosocial wellbeing.Like community service agencies in general(Dea et al., 2014; Henderson et al., 2017), Canadian IYSHs see many upcoming youth who are not engaged in employment, education, or training opportunities (in as of yet unpublished data). Discussions are

therefore ongoing on how to optimize employment, education, and training interventions as a critical component of supporting youth wellbeing and their successful transition to adulthood.

Upcoming youth constitute a vulnerable group affected by multiple psychosocial risk factors and social determinants of health, in a bidirectional manner. Interventions that engage upcoming youth successfully have the potential of supporting them in their transition to adulthood, with possible long-term benefits. By listening to youth and identifying outcomes that youth deem most relevant,this study will provide guidance in identifying interventions and intervention targets with the most potential to achieve this goal, while guiding measurement choices in this area of research.This type of innovation can also advance future health and social service design research by illustrating a scientifically robust method of engaging with youth.

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Declarations

- Ethics approval and consent to participate: This project is governed by the Research Ethics Board of the Centre for Addiction and Mental Health. Informed consent will be sought from all

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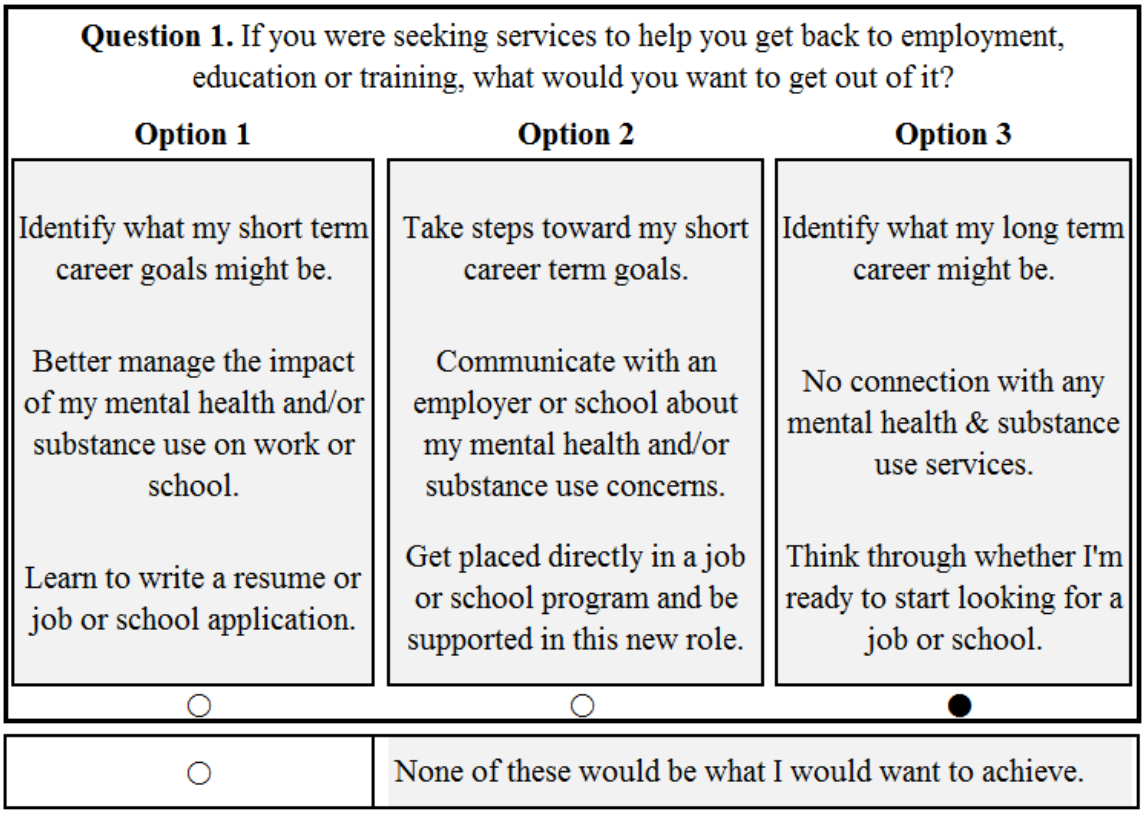
Figures

Figure 1. Tentative sample choice item to be employed in the DCE task, pending the advancement of the DCE item development phase



Abbreviations

NEET: Not in education, employment or training

IYSH: Integrated youth service hub

Youth not engaged in employment, education or training

KTE: Knowledge translation and exchange

LCA: Latent class analysis

DCE: Discrete choice experiment

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