A Model for Recruiting Clinical Research Participants With Anxiety Disorders in the Absence of Service Provision

Visions, Challenges, and Norms Within a Canadian Context

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Abstract: High-quality research in clinical psychology often depends on recruiting adequate samples of clinical participants with formally diagnosed difficulties. This challenge is readily met within the context of a large treatment center, but many clinical researchers work in academic settings that do not feature a medical school, hospital connections, or an in-house clinic. This article describes the model we developed at the University of Waterloo Centre for Mental Health Research for identifying and recruiting large samples of people from local communities with diagnosable mental health problems who are willing to participate in research but for whom treatment services are not offered. We compare the diagnostic composition, symptom profile, and demographic characteristics of our participants with treatment-seeking samples recruited from large Canadian and American treatment centers. We conclude that the Anxiety Studies Division model represents a viable and valuable method for recruiting clinical participants from the community for psychopathology research.

Key Words: Recruitment, anxiety disorders, comorbidity, clinical training, clinical research

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High-quality, valid, and reliable studies in clinical psychology often rely on accessing large samples of individuals with clinically significant mental health difficulties who are willing to participate in research. In Canada and elsewhere, this challenge is often met by recruiting participants from government-funded treatment centers or hospital-based clinics where treatment-seeking individuals have been referred by their family doctors or psychiatrists. Researchers working within this context have the opportunity to select and recruit participants whose clinical diagnoses and background history are already on record. Outside the context of a treatment center, it becomes more challenging to conduct well-designed and sufficiently powered clinical research studies, particularly when resources to provide concurrent clinical services are limited or altogether absent. In such contexts, potential clinical participants must be drawn from the community in other ways, in addition to developing a reliable system for determining their diagnostic status and eligibility for research.

The Anxiety Studies Division (ASD) of the Centre for Mental Health Research at the University of Waterloo has developed a formal system for recruiting samples of research participants who experience clinically significant symptoms of anxiety but who are neither seeking nor being offered clinical services through our research venue. We do not claim to be the first researchers to recruit clinical participants directly from the community via advertising and monetary remuneration, but to our knowledge, no previous studies have described this recruitment model and procedures in sufficient detail and none have compared the characteristics of participants recruited using this kind of system with representative samples of treatment-seeking participants who were recruited from large treatment centers. Led by our present research interests, recruitment efforts in the ASD have focused primarily on research participants with symptoms of social anxiety disorder (SAD) and obsessive-compulsive disorder (OCD). However, the ASD model is designed to accommodate shifting recruitment criteria, if needed, as research plans evolve over time.

This model may be of interest to researchers who wish to conduct clinical research but are based in university departments or other settings that may not typically attract large numbers of eligible clinical research participants. Some university-based psychological researchers develop fruitful collaborations with large treatment centers (*e.g.*, Carleton et al., 2009; Harkness et al., 2012). However, many academic psychologists who wish to conduct their research in-house must rely heavily on recruiting analog samples of participants—typically undergraduate students from psychology courses or on-campus research pools—who are prescreened for the presence of particular clinical features or traits. Many researchers have used this approach successfully and it has certainly helped yield important advancements in knowledge of clinically relevant populations, processes, and traits (see Abramowitz et al., 2014; Stopa and Clark, 2001). One obvious benefit of this approach is that it is a relatively low-cost and efficient way to collect data, as university-based researchers can easily take advantage of the well-organized systems on most campuses for recruiting undergraduate students into their laboratories.

One salient limitation of such studies, however, is that their findings might not be applicable to community-based (*i.e.*, nonstudent) samples of individuals who are experiencing clinically significant problems. This limitation represents a significant barrier to the development of public policy and clinical interventions designed to prevent and treat mental health problems. In Canada, such problems are estimated to account for 14.4 billion dollars in annual economic burden (Stephens and Joubert, 2001). Indeed, in the Canadian population, the 12-month prevalence rates of SAD and OCD alone are estimated to be approximately 7% and 1% to 3%, respectively (Stein et al., 1997, 2000), representing a combined total of over 3.5 million Canadians each year. These statistics resemble similar estimates from epidemiological studies in the United States, the United Kingdom, and New Zealand (American Psychiatric Association [APA], 2000; Kessler et al., 2012; Torres et al., 2006; Wells et al., 2006). Thus, there is a clear need for the development and evaluation of an alternative model for conducting clinical research in the absence of treatment provision.

American population-based studies have shown that only about one third of people with anxiety disorders, including OCD and SAD, ever seek treatment for their problems (Mojtabai et al., 2002; Pollard

et al., 1989; Robins et al., 1991; Robins and Regier, 1991). Symptomatic individuals may initially establish contact with treatment settings, but many of them ultimately opt not to proceed with the pretreatment assessment (Levy et al., 2013). These data are consistent with research showing that relatively few Canadians with mental health difficulties choose to consult medical professionals about their symptoms (Mayerovitch et al., 2003). Indeed, data from the Canadian Community Health Survey suggest that only 8.7% of Canadians seek mental health treatment despite an estimated need for such services that exceeds 21% of the population (Sareen et al., 2005). Thus, there are potentially large numbers of people residing in our communities with clinically significant anxiety symptoms who are not interested in treatment but could potentially be recruited for research purposes.

An implicit assumption in the field of clinical psychology is that people with anxiety disorders who do not seek treatment generally resemble those who do, at least with respect to their demographic and clinical characteristics. However, few empirical studies have examined the validity of this assumption. Thus, whether and how such samples differ from those drawn from treatment-seeking populations are important questions. Mojtabai et al. (2002) analyzed American epidemiological data from the National Comorbidity Survey (Kessler et al., 1994) and found that seeking professional help for psychiatric problems was associated with a variety of psychosocial variables, including older age, having a physical condition, and holding a positive attitude toward mental health help-seeking. This study also found no association between the variables that predicted perceived need for help and the likelihood of actually seeking such help. Moreover, younger respondents and men were particularly unlikely to express a need for professional help, even if they were experiencing significant psychiatric problems. In another study, Mayerovitch et al. (2003) found that among individuals who met diagnostic criteria for OCD, treatment seeking was associated with a greater number of OCD symptoms, including more severe obsessions involving violence and other unpleasant thoughts, than in those who did not seek treatment. These findings suggest that those who seek help—and perceive the need for help—may differ from those who do not in a number of ways (see also Cox, 2014; Levy et al., 2013; Mackenzie et al., 2012). It remains an important empirical question, therefore, whether the characteristics of individuals with anxiety disorders recruited from waitlists at large treatment centers would readily generalize to the "invisible majority" of individuals who are recruited from the community but are not actively seeking treatment.

The primary objectives of the current article are twofold. The first objective is to describe how the ASD functions as a part of our University of Waterloo Doctoral Training Program in Clinical Psychology to promote both clinical research and training. (The University of Waterloo PhD Training Program in Clinical Psychology was established in 1963. The program is aligned philosophically with the Boulder Model and has been accredited without interruption from its inception to the present day by the Canadian Psychological Association [CPA]. From 1963 through 2012, the program was also accredited by the American Psychological Association [APA]. However, APA accreditation became irrelevant for Canadian programs in 2012 with the signing of the First Street Accord by the CPA and APA, which formally recognized the equivalence of accreditation standards and practices across the two countries.) We will present our original vision for the ASD as well as its implementation, outline how the ASD has evolved as specific challenges have arisen over time, and discuss the potential viability of the ASD model for conducting clinical research and training in the future. The second objective is to describe the diagnostic composition, symptom severity, and demographic characteristics of our ASD sample and explore how these compare with representative samples of individuals with anxiety disorders from the empirical literature. Of particular interest is whether the composition of our sample, which was drawn from the Waterloo region without the accompanying incentives associated with service provision, resembles samples with SAD and OCD

from other nationally representative settings, including those that offer clinical services to their research participants. Alongside these primary objectives, a further aim of this article is to share our model with researchers in clinical psychology and related fields who plan to conduct clinical research outside the context of a major treatment center. We attempt to describe our model and procedures in sufficient detail to facilitate its replication or adaptation by new or established investigators who might find such information helpful for planning their own implementation of a similar framework at their home institutions.

The ASD Model: Operating Framework

A central challenge for those seeking to recruit participants in the absence of treatment provision and a dedicated clinical staff is in reliably establishing diagnosis. In our case, the essential resource for meeting this challenge has been graduate students associated with the ASD who are keen to conduct research with people with anxiety difficulties; have already completed intensive coursework and supervised training in *Diagnostic and Statistical Manual of Mental Disorders* (DSM) nosology, establishing differential diagnosis, and diagnostic interviewing and assessment within the context of our PhD program in clinical psychology; and are interested in developing their experience in assessing anxiety disorders. After close consultation with our students, we developed a general operating structure. The graduate students in our laboratories form the pillars of the ASD, along with the ASD coordinator, a paid research assistant who is an undergraduate student or has completed an undergraduate degree. Each graduate student holds one nonoverlapping timeslot per week in which to conduct a face-to-face diagnostic interview with a potential participant. Once per week, we meet as a group to review diagnostic information about each case and establish consensus about its diagnostic status.

Communication of Diagnostic Status, Confidentiality, and Other Ethical Considerations

Certain complexities are introduced by the fact that participants are not seeking or being offered treatment, the information that participants are providing is highly sensitive, and the clinical information they provide is being used exclusively for research purposes. Communicating a diagnosis is considered a Controlled Act under Canada's Regulated Health Professions Act (1991). As we do not provide a clinical report of any kind and because the assessment is for research rather than clinical purposes, participants are informed both during recruitment and the informed consent process that they will not receive individual diagnostic feedback about the interview or questionnaire findings. Although no formal diagnoses are communicated, ASD students do provide feedback to participants at the conclusion of the interview, in which they highlight the various areas of difficulty that participants endorsed to ensure accuracy of the information collected and to provide participants with a summary that organizes the main findings of the assessment. Diagnostic labels are reserved exclusively for our weekly group supervision meetings and our database. (A related consideration was how to provide feedback to those who fail to meet inclusion criteria or who meet exclusion criteria at the screening stage and thus are not invited to come in for a diagnostic assessment and receive remuneration. When participation is terminated at this stage, the news must be conveyed without communicating or implying information about diagnostic status. We handle such cases by informing participants that we are looking for people with specific patterns of symptoms that they do not appear to be experiencing. This is also an issue for recruitment into subsequent studies once the person is part of the ASD pool. For example, when recruiting people for research on OCD, we avoided using words like *compulsions* because they might imply that we have diagnosed the participant being contacted with OCD. Instead, we use phrases such as "repetitive acts that you feel compelled to do over and over.")

Another important consideration given the nature of these interviews is that participants may report suicidal ideation. Before beginning recruitment, in consultation with our university's human research ethics board, we designed a standard operating protocol for assessing suicidality reported during the screening and during the assessment itself. The protocol we developed requires the interviewer (who could be the coordinator conducting the diagnostic screen or the graduate student conducting the diagnostic assessment) to assess the degree of passivity of the suicidal ideation (i.e., ranging from vague and abstract to a formed, concrete plan; from feeling unhappy to being convinced that self and others would be better off if he/she were dead), the availability of the means with which to carry out the suicidal act, and willingness to seek help. Our coordinator and students are trained in assessing suicidality and are instructed to follow separate guided protocols for intervening in cases of acute, high, and serious risk if suicidal ideation is reported. Furthermore, the interviewer is instructed to contact one of the codirectors or another licensed psychologist at the earliest opportunity to review the decisions and obtain assistance whenever suicidality of any level is reported. Between January 1, 2010, and December 31, 2013, we had eight potential participants who were assessed as having serious or high suicide risk during the telephone screen (and were therefore not invited for an assessment) and three participants who were assessed as having serious or high suicide risk at the time of their in-person assessment. In all eight cases, the individual contracted not to take action and agreed to receive crisis intervention.

One unexpected challenge that arose was that some members of our psychology department without background training in mental health expressed initial misconceptions and fears that community participants with "mental illness" might be disruptive or evoke feelings of discomfort or safety concerns if they waited in the common research waiting area also used by undergraduate research participants. In response, we sent a note to all members of our department designed to raise awareness about the ASD and its mission, explaining the nature of anxiety disorders, assuaging fears that many people have about mental illness, and making ourselves available to address any questions and concerns. In addition, we clarify on our Web site and in our recruitment materials that the ASD is interested in recruiting people with and without anxiety difficulties for research. Thus, participants waiting in a designated spot within a designated waiting area need not be concerned that this alone might identify them as having an anxiety problem. Moreover, we ensure that the ASD coordinator receives explicit training on the ethical principle of confidentiality and the Canadian and Ontario standards and guidelines for professional practice in psychology (the graduate students receive this training within the context of our PhD program) so that all contact between the ASD participants and the ASD coordinator and graduate students is undertaken in a careful manner that aims to protect the confidentiality and privacy of the participants.

Finally, it is important to note that although the ASD does not provide any treatment services, it is clear that many of our participants would benefit from information about treatment resources and some may even express desire to find appropriate treatment. To this end, we routinely provide such participants with information about local healthcare institutions that offer evidence-based clinical services and with instructions on how to access them. We also maintain an up-to-date list of these service agencies on our Web site, along with basic psychoeducational material about the nature and treatment of anxiety disorders. We ensure that this information is accessible online to both ASD participants and members of the public who go to our Web site.

Resources

An important consideration for investigators in academic settings who may wish to develop a model like the one we use is the availability of resources. In addition to our graduate students, we needed an administrative office in which telephone screens and follow-up questions could be administered without interruption; a dedicated computer and printer; locked filing cabinets; office furniture; appropriate space in which students could conduct the interviews; a pool of bright, hard-working undergraduate students from which we could hire our coordinator to manage daily operations; and grant funding that we could use to pay for advertising and administrative costs, participant remuneration, and a stipend for the coordinator, who is expected to work approximately 10 to 15 hours per week, 46 weeks per year. The coordinator's primary tasks include acting as the liaison between the ASD directors, students, and participants; overseeing recruitment; developing and maintaining a participant tracking database; scheduling interviews; providing administrative support; updating our Web site; and maintaining up-to-date and organized spreadsheets of our questionnaire, diagnostic, and demographic data.

The coordinator works fairly independently and is accountable to the graduate students and the two directors. We have found it challenging to oversee the coordinator's work on a daily or even weekly basis because so much happens behind the scenes with respect to responding to participant e-mail and telephone calls, scheduling interview timeslots, and entering data. However, there can be considerable drift in adherence to ASD protocols and decision making if there is not more direct supervision. A related challenge has been ensuring a high level of continuity across coordinators. To address both challenges, it was essential for us to develop an ASD Procedures Manual that is updated regularly and carefully followed. Given the variety of clinical and research skills that are required to run the ASD, we have also found it essential that graduate students be involved in developing and updating the research database [e.g., labeling and coding variables, particularly diagnostic information, and defining missing values], procedures for data entry and the use of data sets, and the training manual, as well as directly overseeing the training of new coordinators. A new coordinator is typically hired either annually or biannually.

Budget

The total annual costs for the coordinator, materials, photocopying, advertising, site licenses, and participant remuneration are about $10,400 to $16,000 CDN. A breakdown of our costs per annum is presented in Table 1. All ASD costs are shared equally between the two directors. In the event that one of the directors does not have funds, the other carries expenses until funds are obtained. In this spirit of collaboration, the health and continuity of the ASD are preserved over time.

ASD Sample Characteristics and Comparison With Treatment-Seeking Samples

Using the described model, the ASD has been recruiting participants from the Region of Waterloo (population about 500,000) since 2010. Below, we present the demographic, diagnostic, and symptom severity of our sample and compare its characteristics with those of samples from large treatment centers.

METHODS

Participants

A total of 283 ASD participants were included in the final sample, of which 90.3% completed the questionnaires online and 9.7% completed paper versions of the questionnaires. Participants' ages ranged from 18 to 65 years, with mean (SD) age of 31.1 (12.59) years (14 participants did not report their age) and 15.1 (2.54) years of education (18 participants did not report their educational level). Most of the participants were women (74.3%), self-identified as white/European (72.7%), and were born in Canada (78.5%). Of those born outside Canada, 94.9% moved to Canada at or before the age of 18 years. Concerning marital status, most participants had never married (55.2%),

TABLE 1. Costs per Annum in the ASD (in Canadian Dollars)

	2010	**2011**	**2012**	**2013**	**Cumulative**
RA salary	$6,629.50	$4,686.77	$7,541.50	$6,148.50	$25,006.27
Participant payment	$6,500.00	$3,000.00	$5,000.00	$3,000.00	$17,500.00
Advertising	$1,684.11	$2,306.69	$2,890.64	$1,328.73	$8,210.17
Supplies/printing	$1,186.08	$398.23	$683.07	$310.51	$2,577.89
Total	$15,999.69	$19,391.69	$16,115.21	$10,787.74	$53,294.33

34.3% were married, 9.8% were separated or divorced, and 0.7% were widowed (six participants did not report their marital status).

Measures

The Mini-International Neuropsychiatric Interview, Version 6.0 (MINI; Sheehan et al., 1998) is a structured clinical interview for the major axis I disorders in the *DSM-IV-TR* (APA, 2000) and International Statistical Classification of Diseases, Tenth Revision (World Health Organization, 2004). The MINI takes significantly less time to administer than alternative diagnostic structured interviews such as the *Structured Clinical Interview for DSM-IV* (SCID-I; First et al., 1997); however, researchers have found that it has psychometric properties similar to lengthier structured interviews such as the SCID (Lecrubier et al., 1997; Pinninti et al., 2003).

To ensure the comprehensive coverage of symptoms that would facilitate effective differential diagnoses, we complemented the MINI modules for Social Phobia, Obsessive Compulsive Disorder, Specific Phobias, and Generalized Anxiety Disorder with several questions from the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown et al., 1994). These questions included checklists that were used to rate participants' levels of distress and interference associated with common social situations, obsessions and compulsions, and domains of worry, thus quantifying the severity level of each set of symptoms. Using the Diagnostic Summary Sheet from the ADIS-IV (p. 77), each diagnosis was assigned a clinical severity rating (CSR) ranging from 0 to 8, where ratings higher than 4 represent clinically significant diagnoses and ratings lower than 4 represent subclinical diagnoses. As prescribed by the ADIS, a rating of 4 corresponds with symptoms of "moderate" severity that are "definitively disturbing/disabling," a rating of 6 corresponds with "severe" symptoms that are markedly disturbing/disabling, and a rating of 8 corresponds with "very severely disturbing/disabling" symptoms.

The Beck Depression Inventory-II (Beck et al., 1996) is a 21-item self-report questionnaire that measures the severity of depressive symptoms in both adults and adolescents. Participants are asked about their symptoms in the past 2 weeks to reflect *DSM-IV-TR* major depressive disorder criteria and are queried on associated symptoms such as worthlessness, guilty feelings, and loss of interest. Items are rated using a 4-point Likert scale (0 to 3) and are summed to produce a final score, with a maximum score of 63 and higher scores representing more severe depression symptoms. This measure has shown good test-retest reliability, high internal consistency, and moderate to high convergent validity (Arnau et al., 2001; Dozois et al., 1998). Cronbach's alpha in this study was excellent, $\alpha = 0.91$.

The Vancouver Obsessional Compulsive Inventory (VOCI; Thordarson et al., 2004) is a 55-item self-report questionnaire that is used to assess symptoms and features of OCD. Participants are asked to rate how true each statement is using a 5-point Likert scale, ranging from 0 (not at all) to 4 (very much). Items are summed to derive a total score as well as five subscale scores: contamination, checking obsessions, hoarding, just right, and indecisiveness, with higher scores representing greater OCD symptoms. The VOCI has demonstrated high internal consistency and good test-retest reliability (Radomsky et al., 2006; Thordarson et al., 2004). In this study, Cronbach's alpha for the total score was excellent ($\alpha = 0.95$). Internal consistency for the subscales also was good, ranging from 0.80 to 0.96 in the full sample.

The Interpretations of Intrusions Inventory (III; Obsessive Compulsive Cognitions Working Group [OCCWG], 2001) is a 31-item self-report measure. It was developed to better understand appraisals and interpretations of thoughts, images, or impulses that are considered unwanted and distressing by the participant (OCCWG, 2003). Participants rate unwanted and intrusive thoughts using a scale ranging from 0 to 100: 0 = I did not believe that this idea is at all true, 50 = I was moderately convinced this idea was true, 100 = I was completely convinced this idea was true. Responses on this questionnaire were summed to create a total score, as well as three subscales: control of thoughts, importance of thoughts, and responsibility, with higher scores on each scale representing greater endorsed control, importance, and responsibility, respectively. Initial reliability and validation studies demonstrated that these subscales, as well as the scale in general, have good internal reliability and validity (OCCWG, 2001). Internal consistency in the current study was good (Cronbach's $\alpha = 0.96$ total score, 0.90 control of thoughts, 0.89 importance of thoughts, and 0.92 responsibility).

The Social Phobia Inventory (SPIN; Connor et al., 2000) is a 17-item self-report instrument that measures the severity of social phobia. Individuals are asked to rate how much they were bothered by particular symptoms and situations in the past week on a 5-point Likert scale, ranging from 0 (not at all) to 4 (extremely). The SPIN is designed to measure three symptom dimensions: fear, avoidance, and physiological discomfort. The items were summed to derive a total score, with higher scores representing greater social anxiety. Researchers have demonstrated that the SPIN has good validity and reliability and is able to accurately distinguish between those with and without a diagnosis of social phobia (Antony et al., 2006; Connor et al., 2000). Cronbach's alpha in the current study was excellent, $\alpha = 0.92$.

The Liebowitz Social Anxiety Scale–Self-report (LSAS-SR; Fresco et al., 2001) is a 24-item self-report version of the original clinician-administered semistructured interview (Liebowitz, 1987). It measures fear and avoidance experienced in a variety of social and performance situations. Participants rate 24 social situations twice: once for how much they fear the situation and once for how frequently they avoid the situation. The fear ratings range from 0 (no fear) to 3 (severe fear); avoidance ratings range from 0 (never) to 3 (usually; 67%–100% of the time). Items on the LSAS-SR are summed to create a total score and separate fear and avoidance subscale scores. Higher scores represent greater fear and/or avoidance associated with social situations. Researchers have found that the LSAS-SR has psychometric properties that are highly similar to that of the clinician-administered LSAS, including high reliability and validity (Baker et al., 2002; Fresco et al., 2001; Oakman et al., 2003). In the current study, the total score and both subscales demonstrated excellent internal consistency (Cronbach's $\alpha = 0.92$ for both subscales and 0.95 for the total scale).

Procedure

Adult participants (≥18 years) were recruited from the Kitchener-Waterloo area using flyers, online advertisements (Google Ads, Kijiji), our ASD Web site (https://uwaterloo.ca/anxiety-studies/), and occasional short advertisements in local newspapers. Targeted recruitment flyers advertising research participation for people with symptoms of anxiety were posted and distributed in different neighborhoods at spaced intervals. A variety of flyers were used depending on whether recruitment efforts were geared toward people with specific symptoms of OCD or SAD or individuals with any kinds of anxiety difficulties. Similarly, a flyer was created and used as needed to recruit healthy control participants without any anxiety difficulties. Kijiji ads were posted weekly or biweekly; flyers were distributed approximately two to three times per year. A Google Ad was posted in August 2010 and has remained active since that time, with an imposed cap on the number of permitted clicks per day that is set not to exceed our predetermined daily budget of $10. Between January 1, 2010, and December 31, 2012, the coordinator administered the MINI Screen (Sheehan et al., 1998) to interested participants by telephone to assess eligibility. From January 1, 2013, to December 31, 2013, participants first completed an online screening questionnaire based on the MINI Screen to determine eligibility before the coordinator contacted these participants to administer the screener by telephone, focusing on the symptoms they endorsed in the online questionnaire.

After completion of the MINI Screen, eligible participants were invited to attend an in-person interview session conducted by one of the ASD-affiliated graduate students. During the in-person session, which was conducted in an interview room within the ASD codirectors' laboratory space, a graduate student obtained written consent from each participant and then administered the MINI supplemented by symptom checklists and CSRs from the ADIS-IV (Brown et al., 1994). Some demographic information was also collected during the interview, including birthdate, work status, living condition, significant medical history, psychological treatment history, and current medications.

After the interview, participants completed a demographics measure and battery of self-report questionnaires on a computer (or, if the participant preferred, in paper format). The questionnaires were always presented in a randomized order, with the exception of the demographic questions, which were always presented first. Most participants completed the diagnostic interview in 1 to 2 hours and the questionnaires in 1 hour. After the assessment, participants were asked whether they would consent to joining our ASD participant database, from which they could be recruited for future studies that were being conducted by ASD researchers. Participants were then provided with a feedback letter and remunerated $40 in appreciation of their time and participation.

Each week, all ASD members convened for a 1-hour meeting, during which time the clinical graduate students and the supervising faculty members reviewed each case to reach consensus on diagnoses and their respective CSRs (0–8 scale, as described above). Participants who endorsed significant symptoms of mania, psychosis, or substance dependence were deemed ineligible for inclusion in the database. Following diagnostic consensus, a final set of diagnoses, CSRs, and comments relevant for future recruitment were recorded on a standardized form and entered into the database by the ASD coordinator. The coordinator also shredded and removed information from participants who were deemed ineligible. Between January 1, 2010, and December 31, 2013, the ASD graduate students completed a total of 373 assessments, of which 283 participants were eligible for inclusion in the database. A flowchart is presented in Figure 1 depicting the participant sample size at each stage of recruitment in the ASD. As shown in Figure 1, approximately 55% of individuals who contacted the ASD were subsequently screened over the telephone, and 55% of these were subsequently considered eligible for an in-person interview. Approximately 73% of eligible individuals were assessed in person, and about 75% of these ultimately yielded data that were deemed eligible for analyses. (There were various reasons some participants who were eligible for an assessment did not ultimately receive an assessment, including no longer wishing to participate, cancelling their appointments and being unavailable to reschedule, and not showing for scheduled appointments multiple times.)

Approach to Data Comparison

For the present study, we compared the diagnostic composition and comorbidity rates of the ASD sample to data from two published studies on large outpatient samples at major treatment centers—one in the United States at the Centre for Anxiety and Related Disorders (CARD) at Boston University (Brown et al., 2001a) and one in Canada at the Anxiety Treatment and Research Centre (ATRC) at St. Joseph's Healthcare, Hamilton (Carleton et al., 2012).

To identify appropriate, nationally representative comparison data on symptom severity and demographic composition for our samples of ASD participants with principal diagnoses of SAD and OCD, respectively, we initially conducted a broad environmental scan of major Canadian research institutions, laboratories, and scholars whose work was focused on mental disorders and anxiety disorders specifically. Our scan was focused on research by psychologists, although we also examined research by psychiatry and medical departments when psychology was either not represented at a site or functioned primarily as part of larger multidisciplinary teams. Initially, our scan was guided by the Canadian Psychology Association's published list of accredited clinical psychology doctoral programs (available at http://www.cpa.ca/accreditation/cpaaccreditedprograms/) and the list of Canadian internship programs published by the Canadian Council of Professional Psychology Program (available at http://ccppp.ca/index.php/en/directory). Using these lists as a starting point, we next sought to identify the main sites in Canada conducting research specifically on OCD and/or SAD. We did not attempt to create an exhaustive list of SAD or OCD research published in Canada, but rather a representative one across regions of Canada (e.g., Western Canada, Central Canada, and Eastern Canada). At this stage, we conducted a more in-depth search of site/researcher Web sites and research databases for publications related to SAD and OCD. Once the sites and prominent researchers were identified, we then focused on identifying the representative studies.

Representative studies were selected by searching for articles from the identified sites using both Google Scholar and PsycInfo. We restricted our search to articles published between 2010 and 2014 and studies in which the method clearly indicated that a sample met *DSM-IV* diagnostic criteria for OCD or SAD. When multiple articles from a site were available, we chose the study with the clearer or more comprehensive method section and/or the larger sample size. Based on this search, four articles were selected with participants who met diagnostic criteria for SAD (see Table 6) and four articles were selected with participants who met diagnostic criteria for OCD (see Table 7). For each article, we extracted information related to methodology, sample characteristics, diagnostic profile, and symptom severity to serve as comparison points with the ASD methods and sample information.

RESULTS

Preliminary Analyses

Preliminary analyses revealed that six of the ASD participants had not completed any of the questionnaires and eight participants did not respond to more than 25% of the self-report items. These participants were included in the sample characteristics and diagnostic profile but excluded from all self-report questionnaire analyses. We screened the data for both univariate and multivariate outliers as well
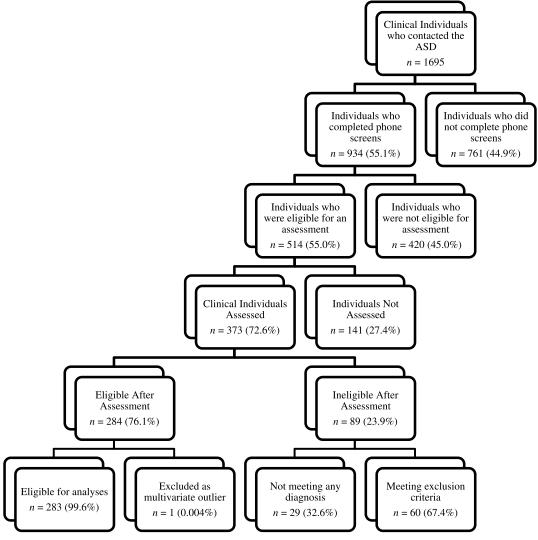
FIGURE 1. Participant flowchart depicting the sample size at each stage of recruitment in the ASD between January 1, 2010, and December 31, 2013. The final eligible sample (*n* = 283) is described in the *Results* section.

as large deviations in skew and kurtosis both for the total sample and for the OCD and SAD diagnostic subgroups separately. All of the data were relatively normal. One significant multivariate outlier was removed from the data, resulting in a final sample size of 283. Two participants without a diagnosis of OCD provided responses that were flagged as univariate outliers on VOCI scale scores; we adjusted their scores on the relevant scales by adding 1 to the next highest score to maintain rank but decrease the impact of these scores.

Next, we examined missing data on scale scores. Missing data ranged from 1.3% on the LSAS-SR total score to 26.0% on the III total score. A missing values analysis using participant sex, survey format, and OCD or SAD diagnosis along with the self-report measures did not reveal any clear patterns to the missing data (Little's MCAR $\chi^2 = 328.1$, $p > 0.05$). To calculate missing values for total and subscale scores, we used expectation maximization with 50 iterations.

Diagnostic Profile and Comparisons With Representative Data From Previous Studies

Of the 283 participants with diagnostic data who qualified for initial inclusion in the study, 10 participants were diagnosed with only subclinical principal diagnoses (CSRs < 4), including seven subclinical

SAD, one other anxiety disorder, one mood disorder, and one other axis I disorder. Moreover, severity ratings were missing for the principal diagnosis for four participants (one other anxiety, three mood disorders). These 14 participants were removed from further examination, leaving 269 participants with clinical level principal diagnoses. Overall, 36.8% of the sample was diagnosed with a single principal diagnosis and no comorbid diagnoses, and 18.6% of participants met criteria for coprincipal diagnoses (*i.e.*, identical CSR ratings for each of the two most interfering/distressing diagnoses). A detailed overview of the diagnostic profile of the sample is presented in Table 2. Comorbidity rates and odds ratios for ASD participants with a principal diagnosis of SAD or OCD are reported in Table 3. As illustrated in Table 3, additional diagnoses of SAD were somewhat overrepresented among participants with principal diagnoses of OCD or other axis I disorders, likely owing to our particular recruitment strategies.

Comparisons of ASD comorbidity rates with representative samples of treatment-seeking outpatients with anxiety disorders are presented in Tables 4 and 5 for principal diagnoses of SAD and OCD, respectively. As shown in Table 4, the rates (percentages) of each type of additional diagnoses received by ASD participants with a principal diagnosis of SAD were strikingly similar to those reported by Brown et al. (2001a) in their large sample of outpatients from CARD at

TABLE 2. Diagnostic Profile of the ASD Participant Sample

	SAD Principal Diagnosis	OCD Principal Diagnosis	SAD and OCD Coprincipal Diagnoses	Other Principal *DSM-IV* Axis I Diagnoses
N (%) of sample	123 (45.7)	48 (17.8)	10 (3.7)	88 (32.7)
Mean (SD) CSR for the principal diagnosis	5.22 (0.82)	5.35 (0.79)	5.6 (0.52)	5.56 (0.83)
	Range, 4–7	Range, 4–7	Range, 5–6	Range, 4–7
N (%) with a coprincipal diagnosis[a]	23 (18.7)	9 (18.8)	N/A	8 (9.1)
N (%) with only one diagnosis	53 (43.1)	17 (35.4)	N/A	29 (33.0)
N (%) with any additional clinical diagnoses	70 (56.9)	31 (64.6)	5 (50)	59 (67.0)
N (%) with three or more total diagnoses	19 (15.5)	11 (23.0)	6 (60.0)	29 (33.0)
Mean number of diagnoses	1.8 (0.8)	2.0 (1.0)	2.7 (0.7)	2.2 (1.1)

Note: *N* = 269. Other principal diagnoses include panic disorder with and without agoraphobia, specific phobia, GAD, posttraumatic stress disorder, anxiety disorder not otherwise specified (NOS), MDD, dysthymia, depressive disorder NOS, bulimia nervosa, eating disorder NOS, substance abuse, adjustment disorder.

[a]Coprincipal diagnoses are those with identical CSR ratings for each of the two most interfering/distressing diagnoses

Boston University. Across both the ASD sample and the sample of Brown et al., about half of participants with a principal diagnosis of SAD received any additional axis I diagnosis, slightly more than 10% received additional diagnoses of major depressive disorder (MDD) and generalized anxiety disorder (GAD), slightly less than 10% received an additional diagnosis of OCD, and exactly 3% received an additional panic disorder with Agoraphobia (PDA) diagnosis. In contrast, overall comorbidity rates reported by Carleton et al. (2012) in their study of outpatients with a principal diagnosis of SAD at the ATRC at St. Joseph's Healthcare, Hamilton (Canada), were significantly higher than in both our ASD sample and the Brown et al. (2001a) sample, with over three quarters (83%) of their participants with a principal diagnosis of SAD receiving any additional axis I diagnosis. This discrepancy between samples may be due to the greater average impairment of patients at the ATRC (indeed, to obtain government-subsidized clinical services there, patients would have first had to receive a referral from their family doctor and then often be willing to wait for several months before treatment would commence). Alternatively, it is possible that the discrepancy between samples may be driven by methodological differences in diagnostic procedures across sites. For example, clinicians at the ATRC typically employ CSR ratings for principal but not additional diagnoses, perhaps leading them to diagnose comorbid problems reported by participants more liberally as clinically significant diagnoses relative to the ASD and Brown et al.

diagnosticians, who may have been more likely to label such problems more conservatively as subclinical diagnoses.

With respect to ASD participants with a principal diagnosis of OCD, as shown in Table 5, comorbidity rates across *DSM-IV* diagnostic categories were somewhat less similar to those reported by Brown et al. (2001a) than they were for those participants with a principal diagnosis of SAD described above. Across both the ASD and Brown et al. samples, slightly more than 55% of participants with a principal diagnosis of OCD received any additional axis I diagnosis. However, much fewer ASD participants with a principal diagnosis of OCD had an additional diagnosis of MDD than the outpatients of Brown et al. (8% *vs.* 22%, respectively). Conversely, many more ASD participants with a principal diagnosis of OCD had an additional SAD diagnosis relative to those in the sample of Brown et al. (39% *vs.* 26%, respectively), perhaps reflecting an artifact of our recruitment strategies. There was somewhat more resemblance between the two samples for participants with OCD and additional diagnoses of PDA (3% *vs.* 8%, respectively) and GAD (15% *vs.* 12%, respectively). Here, too, the overall comorbidity rates reported by Carleton et al. (2012) at the ATRC were significantly higher than in both our ASD sample and the Brown et al. (2001a) CARD sample, with 82% of their participants with OCD receiving any additional axis I diagnosis. In both the ASD and Brown et al. samples of participants with a principal diagnosis of OCD, the percentage of those with an additional diagnosis of SAD was markedly higher than in the Carleton et al. sample (39% in ASD, 26% in Brown et al., and only 13% in

TABLE 3. Percentages (and Odds Ratios) of Current Additional *DSM-IV-TR* Axis I Diagnoses in the ASD Participant Sample

Principal Diagnosis	Additional *DSM-IV-TR* Axis I Diagnosis								
	None	MDD	Dysthymia	PDA	GAD	SAD	OCD	Other Anxiety Disorders	Other Axis I Disorders
SAD (*n* = 100)	53% (1.4)	12% (1.06)	0% (0.08)[†]	3% (0.49)	12% (0.93)	–	9% (1.04)	5% (0.91)	8% (0.38)
OCD (*n* = 39)	44% (0.94)	8% (0.65)	3% (0.45)	3% (0.42)	15% (1.24)	39% (2.11)*	–	3% (0.45)	5% (0.86)
Other axis I (*n* = 80)	36% (0.69)	13% (1.12)	3% (0.44)	11% (2.01)[††]	13% (0.98)	44% (2.63)*	13% (1.50)	8% (1.40)	4% (0.41)
Total (*N* = 219)[a]	45%	11%	6%	6%	13%	23%	9%	6%	6%

Note: Participants who were diagnosed with coprincipal disorders were excluded (*n* = 50). Other axis I disorders include impulse control disorder, anorexia nervosa, bulimia nervosa, eating disorder NOS, and alcohol/substance abuse.

[a]Total *N* reported represents 81.4% of overall sample.

*$p < 0.05$.

[†]$p = 0.08$.

[††]$p = 0.13$.

TABLE 4. Comparison of Percentages (and Odds Ratios) of Current Additional *DSM-IV-TR* Axis I Diagnoses Among Participants With a Principal Diagnosis of SAD in the ASD Sample and Two Treatment-Seeking Outpatient Samples from the Scientific Literature

Comparative Studies	Additional *DSM-IV-TR* Axis I Diagnosis When SAD Is the Principal Diagnosis								
	Any Axis I	MDD	Dysthymia	PDA	GAD	SAD	OCD	Other Anxiety Disorders	Other Axis I Disorders
ASD[a]	53% (0.74)	12% (1.06)	0% (0.08)	3% (0.49)	12% (0.93)	–	9% (1.04)	5% (0.91)	8% (1.38)
Brown et al., 2001a[b]	46% (0.78)	14% (0.66)	13% (1.75)	3% (0.24)	13% (1.10)	–	8% (1.29)	N/A	N/A
Carleton et al., 2009[c]	83% (N/A)	32% (N/A)	N/A (N/A)	13% (N/A)	21% (N/A)	–	6% (N/A)	N/A	13% (N/A)

Note: N/A indicates not reported.

[a]Non–treatment-seeking sample from the ASD of the University of Waterloo Centre for Mental Health Research described in the present study (*n* = 219, excluding participants with coprincipal diagnoses).

[b]Large American treatment-seeking outpatient sample (*n* = 1127) at the Center for Anxiety and Related Disorders at Boston University (Brown et al., 2001a).

[c]Large Canadian treatment-seeking outpatient sample (*n* = 376) at the Anxiety Treatment and Research Centre at St. Josepha's Healthcare, Hamilton (Carleton et al., 2009).

Carleton et al.). The percentage of people with a comorbid diagnosis of GAD was similar across the three samples among participants with a principal diagnosis of OCD (15% in ASD, 12% in Brown et al., 12% in Carleton et al.).

Interestingly, rates of MDD were quite a bit higher in the Carleton et al. sample relative to both the ASD and Brown et al. samples for participants with principal diagnoses of either OCD or SAD. Finally, base rates of diagnosing *DSM-IV* dysthymia were exceptionally low in the ASD sample, making it difficult to make any meaningful comparisons with other samples. The low frequency of this diagnosis in the ASD sample relative to those from the ATRC and CARD may be related to differences in the sensitivity of the semistructured diagnostic interviews used across the sites to detecting dysthymia (the MINI was used in the ASD, whereas the SCID and ADIS were used at the ATRC and CARD, respectively). It is also worth noting that the reliability of the diagnostic category of dysthymia has long been associated with problems (see Brown et al., 2001b), which led, at least in part, to its exclusion from *DSM-5* (APA, 2013).

Background Characteristics and Symptom Severity

Participant demographic characteristics for the full sample are reported in the *Methods* section. Because of changes to the ASD assessment over time, not all participants were asked the same set of background characteristics; thus, the sample size for background questions varied. Of the 140 participants who responded to questions about past and current treatment experiences, 91 (33.8%) reported having received treatment in the past and 48 (17.8%) reported currently receiving treatment outside the ASD. Participants provided a wide range of answers regarding the types of treatment received, including psychopharmacology or medication; attending individual, group, or relationship counseling or talk therapy with unspecified providers, unregulated providers (*e.g.*, Canadian Mental Health Association support coordinator), or regulated providers (*e.g.*, family doctor, psychiatrist, psychologist); as well as specific approaches to therapy (*e.g.*, cognitive behavior therapy (CBT) and mindfulness). Of the 168 participants who were asked about medication, 109 (38.5%) reported currently being prescribed at least one psychotropic medication, 9 reported other medications, and 50 reported no current medications.

Tables 6 and 7 provide a descriptive summary of demographic and background information, clinical characteristics, and symptom severity data for ASD participants in comparison with the selected representative samples from Canadian studies with principal diagnoses of SAD and OCD, respectively. (Of note, 10 participants who had coprincipal diagnoses of SAD and OCD appear in both tables. Within the ASD sample, 56 participants met criteria for a secondary *DSM-IV-TR* diagnosis of SAD and 20 for a secondary diagnosis of OCD; these participants are represented in the tables according to their principal diagnosis.) As shown across both tables, the demographic and clinical characteristics of ASD participants generally resembled those of other samples reported in studies at Canadian sites, irrespective of recruitment incentives or associated treatment provision. A qualitative examination of the data reveals that relative to participants in these representative studies, more ASD participants with principal diagnoses of either SAD or OCD identified as female, Caucasian or Asian, and ASD participants were slightly younger overall; however, the similarities between the

TABLE 5. Comparison of Percentages (and Odds Ratios) of Current Additional *DSM-IV-TR* Axis I Diagnoses Among Participants With a Principal Diagnosis of OCD in the ASD Sample and Two Treatment-Seeking Outpatient Samples From the Scientific Literature

Comparative Studies	Additional *DSM-IV-TR* Axis I Diagnosis When OCD Is the Principal Diagnosis								
	Any Axis I	MDD	Dysthymia	PDA	GAD	SAD	OCD	Other Anxiety Disorders	Other Axis I Disorders
ASD[a]	56% (1.07)	8% (0.65)	3% (0.45)	3% (0.42)	15% (1.24)	39% (2.11)	–	3% (0.45)	5% (0.86)
Brown et al., 2001a[b]	57% (1.01)	22% (1.14)	10% (1.26)	8% (0.88)	12% (0.93)	26% (1.21)	–	N/A	N/A
Carleton et al., 2009[c]	82% (N/A)	32% (N/A)	N/A (N/A)	12% (N/A)	12% (N/A)	13% (N/A)	–	N/A	13% (N/A)

Note: N/A indicates not reported.

[a]Non–treatment-seeking ASD sample at the University of Waterloo Centre for Mental Health Research described in the present study.

[b]Large American treatment-seeking outpatient sample at the Center for Anxiety and Related Disorders at Boston University (Brown et al., 2001a).

[c]Large Canadian treatment-seeking outpatient sample at the Anxiety Treatment and Research Centre at St. Josepha's Healthcare, Hamilton (Carleton et al., 2009).

ASD sample and the representative samples seemed to outweigh their differences.

DISCUSSION

The results of the present study highlight the viability of the ASD model for recruiting clinical samples of individuals with anxiety disorders from the community for research purposes without concurrent provision of clinical services. Our relatively cost-effective recruitment strategies succeeded in attracting large numbers of potential research participants to initiate contact with us, even without offering treatment at our site. It is clear that while attracting large numbers of people to initiate contact with us may be relatively easy, we do lose a substantial number of people along the way. Only 55% of the initial contacts subsequently completed a telephone screen and only 55% of potential participants who completed a telephone screen were deemed eligible for an in-person assessment. Such attrition is unfortunate, but it is not unique to the ASD nor is it confined to non–treatment-seeking samples. For the sake of comparison, in a previous treatment study by Huppert et al. (2003), only 33% of potential research participants with SAD who completed a telephone screen were deemed eligible to receive a diagnostic assessment. In the present study, approximately 73% of those who were eligible for an assessment actually came in for their assessment (compared with 49% in Huppert et al., 2003), and about 76% of those who came in for their assessment were then eligible to enter our pool (compared with 63% in Huppert et al., 2003). Unfortunately, so many potential ASD participants are lost at first contact even before they complete a telephone screen typically because they opt not to respond to our coordinator's frequent attempts to reach them at the telephone numbers or e-mail addresses that they provide. Moreover, many participants who do complete the screen tend not to meet our particular inclusion criteria.

Our data highlight the essential role of a well-trained coordinator for helping to exclude interested but ineligible individuals at the telephone screen level. Of the 934 people who completed the telephone screen, 420 (45%) were deemed ineligible for an assessment based on our inclusion criteria. Thus, the completion of telephone screens helped to save considerable ASD time, money, and associated resources. Moreover, well-trained and highly motivated graduate students also are an essential and highly valued part of the system, both for their central role in conducting the clinical assessments and for their role in helping to screen out ineligible individuals at the level of the in-person assessment. Almost a quarter (89/373, or 24%) of the individuals assessed in person met exclusion criteria ($n = 60$) or received no clinical diagnoses ($n = 29$) at that time. Crucially, although the ASD model relies on graduate students to function effectively, it also provides high-quality clinical training to such students in return, including specialized expertise in assessment, diagnosis, and case conceptualization; exposure to a diverse array of clinical cases that highlight the heterogeneity of psychopathology in the nature of symptom expression and presentation across anxiety and related disorders; and mentorship roles for senior students working alongside junior ones—all of which are valuable experiences that help to enhance students' internship applications and curricula vitae.

In the end, of the 1695 people who contacted the ASD between January 1, 2010, and December 31, 2013, only 283 (~17%) were eligible for data analyses (compared with only ~5% in Huppert et al., 2003). Thus, across the 48 months of data collection for the present study, the total number of individuals who were assessed and eligible, respectively, amounted to an average assessment and eligibility rate of about eight and six people per month, respectively. Thus, the overall power of the final sample for conducting clinical research may be strong, but the process of obtaining sufficient numbers can be lengthy and the monthly flow can be relatively weak. Improving flow and decreasing the time required to recruit eligible participants are important

considerations, which we are constantly discussing. One avenue for doing so is to increase our advertising efforts by trying to attract even more participants to the ASD at the telephone screen level, which in turn might help to increase participant flow. However, this approach also would place added financial pressure on the ASD directors to pay for advertising and additional coordinator hours. Another way to improve flow would be to increase the number of available timeslots by admitting more graduate students to the ASD, which could be costly in terms of participant remuneration and difficult to achieve within the current structure of our doctoral training program. Yet another option would be to require that ASD students assess more than one person per week, which likely would feel burdensome to them, erode the excellence of our training, and increase the length of our weekly meetings. Therefore, the ASD model represents a somewhat delicate ecosystem that requires careful decision making and problem solving that balances a variety of factors in consideration of the big picture, particularly as research needs evolve.

A major aim of this article was to determine to what extent individuals with anxiety disorders who are recruited from the community to participate in research for monetary incentives—but not offered any clinical services concurrent with their participation in such research—actually resemble treatment-seeking outpatients who participate in research studies alongside receiving treatment for their difficulties. Unfortunately, there is no easy or clear way to answer this important question based on the existing literature. The descriptive and quantitative comparisons we were able to make between the ASD diagnostic and comorbidity data and those from large treatment centers in both Canada (ATRC; Carleton et al., 2012) and the United States (CARD; Brown et al., 2001a) revealed some important differences and many striking similarities. Given that the ASD sample largely resembled the comparison studies in terms of demographic and clinical characteristics, it is likely that this recruitment method generates samples similar to those generated by other approaches to clinical research represented in the literature. Thus, it may not be far-fetched to conclude that the characteristics of the "invisible majority" of individuals with anxiety disorders who are recruited from the community, but who may not be actively seeking treatment, generalize relatively well to clinical outpatients recruited from waitlists at large treatment centers in North America. As such, the ASD model represents a viable way for Canadian researchers to recruit large, representative samples of community-based clinical participants for research purposes without having to rely on providing on-site treatment, collaborating with large treatment centers for access to clinical samples, or using strictly analog samples of undergraduate students.

CONCLUSIONS

The ASD has achieved its goal of facilitating clinical research on mental health difficulties. To date, several manuscript publications (or in press papers) and conference presentations have been completed based on ASD data. We continue to work on developing the efficiency of our recruitment strategies and the reliability and validity of our diagnostic system. To this end, we have recently updated our materials and databases to be fully compatible with *DSM-5* diagnostic criteria. All ASD personnel have received intensive training in and practice with the new criteria, and as of September 2014, ASD diagnoses are now based on the MINI 7.0 (Sheehan, 2014) and ADIS-5 (Brown and Barlow, 2014), both of which assess for *DSM-5* diagnoses. Moreover, we are seeking to implement a system for establishing interrater diagnostic reliability within the current constraints of our ASD resources and structure. Another continuing challenge is ensuring that the ASD has a consistent funding source. For now, we rely on the research grants of the codirectors, whose grant timelines are staggered. In the future (particularly if we encounter challenges obtaining grant funding), we may need to move to providing limited clinical services,

TABLE 6. Descriptive Comparison of Recruitment Procedures and Demographic and Symptom Characteristics of the ASD Sample and Samples from Representative Studies in Canada for Participants With a Principal *DSM-IV-TR* Diagnosis of SAD

	ASD	Ashbaugh and Radomsky, 2011	Collimore and Asmundson, 2014	Alden and Taylor, 2011	Koerner et al., 2013
Recruitment location	Department of Psychology, University of Waterloo, Kitchener-Waterloo, ON	Department of Psychology, Concordia University, Montreal, QC	Department of Psychology, University of Regina, Regina, SK	Department of Psychology, University of British Columbia, Vancouver, BC	Anxiety Treatment and Research Centre, St. Joseph's Healthcare, Hamilton, ON
Recruitment process	Community and online advertisements	Newspaper advertisements	Media appeals; advertisements; psychology pool	Community advertisements; letters to health providers	Patients at an outpatient anxiety treatment center
Treatment study	No	No	No	Yes	Yes
Incentive for participating	Cash remuneration ($40)	Cash remuneration, partial course credit, or entrance into a draw for cash prizes	Course credit or a small honorarium ($20 CDN)	Not specified; possibly offered free or reduced-cost treatment	Not specified; treatment provided at no cost regardless of participation
Inclusion criteria	Principal or coprincipal *DSM-IV-TR* diagnosis of SAD	Principal or additional diagnosis of SAD using *DSM-IV-TR* criteria	Principal diagnosis of SAD based on *DSM-IV-TR* criteria; age 18–55 yrs	Principal diagnosis of generalized SAD using *DSM-IV-TR* criteria; age 18–65 yrs	Principal diagnosis of SAD using *DSM-IV-TR* criteria; scored above 19 on the SPIN
Exclusion criteria	Psychotic disorder or psychotic symptoms, bipolar or mania/hypomania symptoms, current substance and/or alcohol dependence within the past 6 mos, unreliable data due to noncompliance or unreliable reporting	Psychosis, bipolar disorder, panic disorder, change in medication in past month	Mental retardation, psychiatric disorder due to a general medical condition, substance abuse/dependence, psychosis, serious suicidal ideation	Psychotic disorder, substance abuse/dependence, bipolar disorder; suicidality, axis II disorder, change in medication in past 3 mos, concurrent psychotherapy	None described
N (Social Anxiety)[a]	130	33	37	56	77
% female	70	64	59.5	41	55
Mean (SD) age	29.1 (11.2)	34.7 (11.9)	31.6 (12.9)	34.0[b]	35.0 (12.3)
Ethnicity	70.8% Caucasian 18% Asian/South Asian/Southeast Asian	Not reported	86% Caucasian[c]	Not reported	99% Caucasian
Education	Mean years of education = 15.1 (2.7) 4.6% no high school 10.0% high school 44.6% some college or university 23.1% completed 2- or 4-yr college or university degree 17.7% part or completed graduate/professional school	3% elementary school 24% high school 72% college or university	53.8% attended college or university[d]	Mean years of education = 15.1	Not reported

Marital status	63.8% never married 28.5% married or common-law 6.9% divorced or separated	Not reported	Not reported	65.8% single, 30.8% married or common-law 3.4% divorced or separated	53% single, 42% married or cohabitating, 5% divorced, separated, or widowed
% Using medication	37.7%	27.3%	22.9%	38%	Not reported
Prestudy screening?	Online and telephone MINI Screen	None	Telephone interview— Modified MINI Screen	Telephone interview	None
Diagnostic assessment tool	MINI 6.0 plus selected supplements from ADIS-IV	ADIS-IV	SCID-IV	ADIS-IV	SCID-IV
Assessor information	Graduate students	Graduate students	Graduate student	Graduate students	Staff clinicians and graduate students
Mean (SD) scores of relevant symptom measures[e]	CSR for SAD = 5.25 (0.79) LSAS total = 78.34 (24.63) LSAS fear = 41.56 (11.64) LSAS avoid = 36.78 (13.76) SPIN = 40.93 (13.42) BDI-II = 21.31 (10.85)	CSR for SAD = 4.70 (0.81) SPS = 37.35 (13.68) SIAS = 46.65 (13.50) BDI-II = 16.82 (11.04)	SPIN = 38.51 (10.96)	CSR for SAD = 5.3 (0.9) SPS = 28.50 (14.99) SIAS = 50.93 (11.87) BFNE = 50.77 (5.29)	SPIN = 44.92 (10.68)

Note: Sample sizes for demographic questions in the ASD sample vary because of the changes over time in the background questions that participants were asked.
SPS indicates Social Phobia Scale; SIAS, Social Interaction Anxiety Scale; BFNE, Brief Fear of Negative Evaluation Scale; BDI-II, Beck Depression Inventory-II.
[a]Unless otherwise noted, information is presented only for the social anxiety group, excluding any other groups (e.g., control groups or group with other diagnoses) reported in the study.
[b]SDs not reported.
[c]Demographic information was not reported separately for the SAD group; includes the control group(s) as well as the SAD group.
[d]Statistics reported here are for the largest, randomly assigned group (CBT) pretreatment (n = 31).
[e]For treatment studies, pretreatment symptoms and mean scores are reported.

TABLE 7. Descriptive Comparison of Recruitment Procedures and Demographic and Symptom Characteristics of the ASD Sample and Samples from Representative Studies in Canada for Participants With a Principal *DSM-IV-TR* Diagnosis of OCD

	ASD	De Luca et al., 2011	Parrish and Radomsky, 2010	Purdon et al., 2011	Whittal et al., 2010
Recruitment location	Kitchener-Waterloo, ON	Clinic for OCD & Related Disorders, Sunnybrook Health Sciences Centre, Toronto, ON	Department of Psychology, Concordia University, Montreal, QC	Anxiety Treatment and Research Centre, St. Joseph's Healthcare, Hamilton, ON	University of British Columbia Hospital, Vancouver, BC
Recruitment process	Community and online advertisements	Patients assessed at the Clinic for OCD & Related Disorders	Clinical participant registry; newspaper advertisements	Patients at an outpatient anxiety treatment center	Media appeals; letters to mental health providers; study Web site; physician referral
Treatment study?[a]	No	No	No	No	Yes
Incentive for participating	Cash remuneration ($40)	Not specified	Remuneration (amount unspecified)	Cash remuneration ($25)	Not specified; possibly offered free treatment
Inclusion criteria	Principal or coprincipal *DSM-IV-TR* diagnosis of OCD	Met *DSM-IV-TR* criteria for OCD	Met *DSM-IV-TR* criteria for OCD	Principal *DSM-IV-TR* diagnosis of OCD	Principal *DSM-IV-TR* diagnosis of OCD and functional impairment for >12 mos, few/no overt compulsions, no change in medications for >3 mos; 18–65 yrs of age
Exclusion criteria	Psychotic disorder or psychotic symptoms, bipolar or mania/hypomania symptoms, current substance and/or alcohol dependence within the past 6 mos; unreliable data due to noncompliance or unreliable reporting	None specified	Current MDD; bipolar or psychotic disorders; current alcohol and/or substance dependence	Psychotic disorder; substance abuse/dependence; panic disorder; manic or hypomanic episode within the past 6 mos; ever received CBT for OCD or panic disorder	Severe MDD with suicidal intent; organic mental disorder; thought disorder, alcohol/drug dependence; concurrent psychotherapy; previous CBT for OCD
N (OCD)[b]	54	196	15	25	73
% Female	72.2%	56.1%	53.3%	52%	46.6%
Mean (SD) age	31.2 (11.7)	38.75 (12.0)	41.4 (15.2)	34.46 (13.09)[c]	31.5 (9.7)
Ethnicity	70.4% Caucasian, 20.5% Asian/South Asian/ Southeast Asian	86.7% Caucasian	Not reported	92% Caucasian[c]	84.9% Caucasian; 10.9% Asian; 4.2% Other
Education	Mean years of education = 15.4 (2.3) 3.7% no high school 5.6% high school 29.6% some college or university 26.0% completed 2- or 4-yr college or university degree 33.3% part or completed graduate/professional school	Not specified	Mean years of education = 16.4 (3.8)	30% completed university[c]	Mean years of education = 14.7 (2.5)
Marital status	51.9% never married 37.0% married or common-law 9.3% divorced or separated	52.5% single	26.7% married	56% single, 36% married or cohabitating, 8% divorced	50.6% single, 42.5% married or cohabitating, 6.9% divorced
% Using medication	35.2%	96.3%	26.7%	Not reported	52.0%
Prestudy screening?	Online and telephone MINI Screen	No, but participants had been previously recruited for another OCD study	Telephone interview—adapted from ADIS-IV	None	Telephone interview

Diagnostic assessment tool	MINI 6.0 plus selected supplements from ADIS-IV	SCID-IV	ADIS-IV	SCID-IV	SCID-IV
Assessor information	Graduate students	Not specified	Graduate student	Staff clinicians	Psychologists and postdoctoral fellows
Mean (SD) scores of relevant symptom measures	CSR for OCD = 5.4 (0.74)	None reported	Y-BOCS obsession = 9.13 (1.81)	Y-BOCS obsession = 12.08 (2.86)	Y-BOCS obsession = 11.27 (2.78)
	III Total = 47.6 (19.5)		Y-BOCS compulsion = 10.27 (1.91)	Y-BOCS compulsion = 13.20 (2.75)	Y-BOCS total = 18.03 (6.29)
	III control of thoughts = 50.8 (19.6)		Y-BOCS Total = 19.40 (3.31)	Y-BOCS Total = 25.28 (4.95)	III = 60.28 (20.56)
	III importance of thoughts = 38.1 (21.1)		VOCI total = 62.14 (34.86)	III Total = 1769.2 (644.64) (equivalent to mean 57.07 on scale)	BDI-II = 18.62 (9.63)[d]
	III responsibility = 53.5 (23.7)		VOCI checking subscale = 16.13 (6.31)	CFTQ = 73.65 (21.08)	
	VOCI total = 84.8 (33.1)		OBQ = 149.87 (56.41)		
	VOCI contamination subscale = 18.2 (13.0)		IUS = 69.87 (29.33)		
	VOCI checking subscale = 13.7 (6.7)		BDI-II = 12.60 (7.41)		
	VOCI obsession subscale = 11.5 (7.7)				
	VOCI hoarding subscale = 8.2(7.2)				
	VOCI just right subscale = 21.6 (10.2)				
	VOCI indecisiveness subscale = 11.7 (5.9)				
	BDI-II = 20.5 (10.8)				

Note: Sample sizes for demographic questions in the ASD sample vary because of the changes over time in the background questions that participants were asked. Y-BOCS indicates Yale-Brown Obsessive Compulsive Scale; BDI-II, Beck Depression Inventory-II.

[a]For treatment studies, pretreatment symptoms and mean scores are reported.

[b]Unless otherwise noted, this information is presented only for the OCD group, excluding any other groups (*e.g.*, control groups).

[c]Demographic information was not reported separately for the OCD group; includes the control group(s) as well as the OCD group.

[d]Statistics reported here are for the largest, randomly assigned group (CBT) pretreatment ($N = 37$).

OBQ indicates Obsessional Beliefs Questionnaire-44; CFTQ, Concern Over Failures in Thought Control Questionnaire; IUS, Intolerance of Uncertainty Scale.

such as a formal assessment report, in lieu of remunerating participants monetarily. Eventually, we may be able to offer treatment services that are fully integrated with the ASD.

For the time being, though, the ASD model has proven to be a valid and effective means of recruiting people with clinically significant anxiety problems for research. Our findings offer significant promise to researchers in both Canada and beyond who wish to recruit large clinical research samples but are unable to provide concurrent clinical services. These findings may also be of particular value for doctoral training programs in clinical psychology that may wish to adopt or adapt the ASD model to enhance the training experiences of their students.

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