**Supporting healthy outcomes in individuals with FASD:**

**How do professional psychology programs across Canada support FASD-related learning?**

by

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A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Education

in

SCHOOL AND CLINICAL CHILD PSYCHOLOGY

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## Abstract

Psychologists have a unique role in diagnosing, assessing, and providing intervention for a variety of disorders, including fetal alcohol spectrum disorder (FASD), a complex disorder that affects individuals prenatally exposed to alcohol. Each individual with FASD is unique. Thus, it is imperative that psychologists are well-equipped with FASD-related knowledge, so that they can provide the best evidence-based care. Previous research has found that psychologists around the world feel unprepared to support individuals with FASD, and that they did not receive FASD-related training in graduate school. Therefore, the current study aimed to get a first look into the knowledge, attitudes, and practices of faculty members in professional psychology programs across Canada using a Knowledge, Attitudes, and Practices survey. The results demonstrated unbalanced FASD-related knowledge; participants answered fact-based questions accurately but had difficulties with more nuanced questions about clinical outcomes and prevalence. Most participants endorsed the importance of teaching students about FASD, but they did not feel adequately prepared to teach it or that they have enough time. Additionally, FASD was the least taught disorder compared to other disorders in the same diagnostic category (e.g., autism, ADHD, learning disorders). It is imperative to support faculty members in their FASD-related knowledge and attitudes so that professional psychology students receive high quality training for clinical practice with this complex and systematically marginalized population.

## Preface

This thesis is original work by Devon S. Heath. The thesis research presented here received research ethics approval from the University of Alberta Research Ethics Board, Project Name "UNDERSTANDING FASD: FACULTY PERSPECTIVES", No. Pro00107110, June 9, 2021. No part of this thesis has been previously published.

## Dedication

"Women don't make new eggs. Your child is already in your body. You aren't even pregnant. Don't drink. Don't smoke. I don't even drink coffee. Why would you put drugs in your body? I refuse to serve you. I'm calling CPS. Where is your husband? Don't let him tell you what to do. Don't let the world shame you. Shame on you. Being a mother is so difficult. Moms need a break. There is no day off in parenting. What's the harm in a glass of wine? Don't be so dramatic. Your mother had a glass. She turned out fine. He turned out fine. I turned out fine. You turned out fine. Roll the dice. Don't take any risks. Everything is a risk. Don't live in fear. Why chance it? Follow the right advice. Don't eat sushi. Don't clean litter boxes. Don't eat certain cheeses. Don't look at rabbits. Don't listen to them. Just Google it. Talk to your doctor. Get a doctor. Get a midwife. Don't give birth that way. Don't bottle-feed. Don't get a C-section. Women die during childbirth. One in three undetected pregnancies will be a miscarriage. I wonder what she did wrong. I wonder what I'm doing wrong. Having kids is worth it. Having kids wasn't worth it. I hate my kids. I would never say I hate my kids. Above all else, I am a mother. I am more than just a mother. You're too young to have kids. You're too old to have kids. Have you thought about kids yet? Some people shouldn't have kids. Having kids is a part of life. There should be a mandatory test to be a parent. How far along are you? Do you know the sex? Did you test their genetics? Are you two trying yet? Get on birth control. No birth control is perfect. Use at least two. Our baby was an accident. Our baby was a blessing. What do I do? I thought I was infertile. I didn't know to follow the rules. What are the rules? It's too late. You're too late. What a bad mom."

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## Acknowledgements

Thank you to my committee members, Dr. Lia Daniels and Dr. Kaitlyn McLachlan, for taking the time to review and provide feedback on my thesis. I appreciate everything I have learned from you two throughout this process and my graduate training.

To my supervisor, Dr. Jacqueline Pei. Thank you for all the support and guidance you have given me over the last few years. I appreciate your authenticity and dedication to leaving the world a better place. Under your supervision, I had the best opportunity to grow and learn about what it means to be a researcher, clinician, and citizen. Most importantly, you introduced me to the FASD community, and now I will never leave!

I would like to acknowledge and thank the Social Sciences and Humanities Research Council and the Faculty of Graduate Studies and Research for financially supporting my research and graduate training. This thesis research draws on research supported by the Social Sciences and Humanities Research Council.

Thank you to my family, friends, colleagues, and cohort for supporting me through all the ups and downs. Gaby: your friendship and mentorship has been invaluable, and I sincerely thank you for all the support you have given me. Raeann: I am endlessly inspired by your perseverance and devotion to supporting those around you. I'm not sure how I would've survived this journey without your support. Ben: thank you for protecting, loving, and caring for me. Anywhere is better when you know a thing or two about string theory. ♥

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## List of Abbreviations

CPA – Canadian Psychological Association

DH – Devon Heath

EF – Executive functioning

FASD – Fetal alcohol spectrum disorder

IQ – Intelligence Quotient

JP – Dr. Jacqueline Pei

KAP – Knowledge, attitudes, and practices

KM – Dr. Kaitlyn McLachlan

MRA – Mutual Recognition Agreement

PAE – Prenatal alcohol exposure

SDL – Self-directed learning

**Supporting healthy outcomes in individuals with fetal alcohol spectrum disorder (FASD): How do professional psychology programs across Canada support FASD-related learning?**

Fetal alcohol spectrum disorder (FASD) is a neurodevelopmental disorder that affects individuals prenatally exposed to alcohol. Psychologists are key health professionals who diagnose, assess, and support individuals with FASD across the lifespan. A psychologist's ability to provide evidence-based services and improve client outcomes depends on their knowledge, attitudes, and skills developed throughout their professional training experiences. However, without FASD-related training experiences, graduates are unprepared to provide services to this unique and complex population. Understanding the foundational characteristics of FASD will aid psychologists in various clinical activities. The present study conducted an online survey to gain a first glance into the FASD-related knowledge, attitudes, and teaching practices of faculty members from professional psychology programs across Canada.

FASD is estimated to be the most prevalent neurodevelopmental disorder in Canada (Popova et al., 2019). The global prevalence of FASD is 7.7 of 1000 births, with these numbers increasing 5.2 to 67.7 times among specialized populations (Lange et al., 2017). In Canada, the economic costs of FASD are estimated to be between $1.3 and $2.3 billion annually (Popova et al., 2016). Despite these statistics, FASD remains a highly stigmatized and inadequately prioritized disability in public and professional communities (Bell et al., 2016). Psychologists are instrumental in supporting and advocating for individuals with FASD at various levels of society (i.e., government, health care, research, etc.), especially when they have thorough and accurate training on the intersectionality and biological outcomes of prenatal alcohol exposure (PAE).

FASD is a term that describes a range of PAE-related diagnoses including fetal alcohol syndrome, partial fetal alcohol syndrome, alcohol-related neurodevelopmental disorder, and

neurobehavioural disorder associated with prenatal alcohol use. In general, diagnosing and identifying FASD has been complex and evolving. Although different models have advanced over the years, Canada has adopted a consistent approach to diagnosis (Cook et al., 2016). The Canadian FASD diagnostic algorithm uses a multidisciplinary approach to diagnosis and relies on three primary factors: (i) known or unknown PAE, (ii) CNS impairment (measured across ten domains of neurocognitive functioning), and (iii) three sentinel facial features (Cook et al., 2016). Each of these factors are not sufficient on their own to confirm an FASD diagnosis. Given the nuanced process of diagnosing FASD, applying consistent approaches to diagnosis allows for the potential to attain a shared understanding of potential outcomes.

## Outcomes in FASD

It is important for psychologists to understand the nuances and effects of PAE, how PAE can impact brain development, and most importantly, how PAE affects brain health. Evidence suggests that PAE has a dose-dependent effect (i.e., level of exposure and impairment are parallel), including the timing of consumption which can affect the prognosis of impairments seen in individuals with FASD across the lifespan (Mattson et al., 2019). This, combined with the many different mechanisms by which alcohol can impact the developing brain, leads to a very high level of diversity within the population; each individual with FASD has unique strengths, vulnerabilities, and interactions within their environments.

### Strengths

Historically, FASD has been discussed in terms of deficits, which perpetuates a "fatalistic" perspective. Fatalism, as it pertains to FASD, posits that individuals with FASD are permanently damaged and interventions will not help (which is incorrect; Fond et al., 2017). Therefore, many have advocated for an established strengths-based profile for FASD (e.g.,

Flannigan et al., 2021; Kully-Martens et al., 2022). On one hand, acknowledging FASD as a lifelong disability validates challenges individuals with FASD experience and helps direct where resources should be allocated for support services. On the other hand, it maintains the fatalistic perspective of FASD and contributes to the stigmatization of this vulnerable population. Individuals with FASD have the potential and capacity to life fulfilling and productive lives.

Most research has focused on deficits associated with FASD. However, more research is beginning to look at the strengths and positive qualities that individuals with FASD possess. For example, a recent narrative review generalized strengths into four broad themes: (i) receptiveness to support, (ii) capacity for human connection, (iii) perseverance through challenges, and (iv) hope for future (Flannigan et al., 2021). In general, individuals with FASD having positive social relationships makes them more comfortable reaching out for support, which symbolizes qualities such as humility and integrity (Flannigan et al., 2021). These individuals are also known for being helpful, affectionate, empathetic, and selfless (Flannigan et al., 2021). Although some of these qualities can lead to individuals with FASD to be socially vulnerable, they ultimately provide a foundation to developing and maintaining fulfilling and positive social relationships across their lifespan. This population can experience significant adversity and trauma, yet demonstrate considerable amounts of perseverance, resilience, and determination (Flannigan et al., 2021). Qualities that help them overcome challenges are paired with hope for the future (Flannigan et al., 2021). Individuals with FASD are optimistic, motivated, and set clear, tangible goals for themselves to achieve (Flannigan et al., 2021). To promote healthy outcomes for this complex and diverse population, it is important to leverage and provide them opportunities to hone their personal strengths, especially as health care providers.

**Vulnerabilities**

Despite having several strengths, people with FASD also face challenges and barriers, and are at a higher risk for experiencing adverse outcomes (Streissguth et al., 2004). Two broad areas of vulnerability include some facets of neurocognitive functioning and stigmatization of FASD.

### *Neurocognitive Functioning*

Although a distinct neurocognitive profile has not been identified for this population, research has found trends in the strengths and challenges that a person with FASD experiences. General intelligence, commonly measured as an IQ score, has been used to gauge functioning level, particularly when it comes to government funding. The most common finding is that individuals with FASD tend to have borderline to low average IQ scores compared to normative samples (Mattson et al., 2019), but are not typically intellectually disabled (Kully-Martens et al., 2022). There are also nuanced differences between verbal and nonverbal intelligence, with some studies finding no difference between verbal and nonverbal reasoning (Kully-Martens et al., 2022). Therefore, given the vast variation in the literature, general intelligence may not be an effective predictor of functioning or domain-specific performance, or a useful indicator of an individual's overall ability.

Executive function (EF) is a term that encompasses a variety of higher-order cognitive functions such as inhibition, interference control, working memory, and cognitive flexibility (Diamond, 2013), and has been identified as central to the challenges experienced by individuals with FASD. In individuals with FASD, there can be challenges with verbal and nonverbal fluency, problem-solving, planning, cognitive flexibility, inhibition, and working memory, compared to normative groups (Kully-Martens et al., 2022; Mattson et al., 2019). However, there can be nuanced strengths in EF abilities, including category fluency, problem-solving and

planning, simple visual-motor skills, less inhibition errors on tasks, simple auditory attention, and nonverbal learning and memory (Kully-Martens et al., 2022). Additionally, the evidence better supports the notion that individuals with FASD have more difficulty completing tasks as they become more complex, rather than difficulty with the task overall (Kully-Martens et al., 2022).

### *Stigma*

FASD is highly stigmatized (Bell et al., 2016). Stigma is defined as the endorsement of negative stereotypes and prejudice, including emotional-based reactions and possible discrimination or devaluation of a person (Bell et al., 2016). Stigma is perpetuated through individual and institutional levels of culture and society, which can persist across generations (Bell et al., 2016; Wolfson et al., 2021). Researchers have recently developed a descriptive model that outlines three overarching themes of stigma in the FASD population (Bell et al., 2016): (1) personal responsibility and blame towards biological mothers, (2) felt and enacted stigma experienced by children and families, and (3) anticipated life trajectories for individuals with FASD.

There is a significant amount of stigma against biological mothers and a propensity to "blame" biological mothers for their alcohol use during pregnancy. Perpetual negative judgment, overt or self-perceived, leads women with addictions to incorporate negative stereotypes into their self-concept (Gueta & Addad, 2013). The negative self-concept may evolve into or include feelings of self-blame, guilt, and shame, further isolating women from society and social support (Kenny & Barrington, 2018). Additionally, women who use alcohol or drugs during pregnancy fear negative judgment from members of society, including health professionals. The fear of negative judgment is especially true for women of colour, women who are Indigenous, or for

women who live with low socioeconomic status (Harvey et al., 2015; Stengel, 2014). Due to the fear of negative or punitive judgment, women who use alcohol or drugs during pregnancy are less likely to see medical treatment or prenatal care (Harvey et al., 2015; Stengel, 2014). The way that health care professionals, including psychologists, navigate alcohol use during pregnancy is a delicate matter with great consequences for mother and child if handled inappropriately. It is important for clinicians to be well-informed on the clinical complexities of PAE in addition to having the attitudes and skills to empathetically discuss these topics with their clients, especially for health outcomes and FASD prevention (Bell et al., 2016; Hanlon-Dearman, 2021; Rutman et al., 2014).

There has not been any research that highlights how stigma is perceived by children and adolescents and their lived experiences. Rather, researchers draw from comparable populations such as children with ADHD or autism. Overall, children and adolescents with NDDs tend to internalize negative stereotypes and attitudes into their self-image and have a propensity to feel "stupid" or have social difficulties with their peers and other adults due to challenges with cognitive abilities or "out-of-the-norm" behaviours (Bell et al., 2016). It is important to understand how stigma affects children and youth, and how it affects their lived experiences within educational and social settings; this remains a gap in current literature.

Lastly, there is additional stigma associated with inaccurate expectations or assumptions that individuals with FASD have inherently poor outcomes and differentiated life trajectories; the stereotypes depict individuals with FASD as misusing drugs and alcohol and being persistently justice-involved (Bell et al., 2016). When in reality, these outcomes are better explained by the systematic barriers and neurocognitive challenges individuals with FASD experience throughout their lifetime. For example, individuals with FASD who experience chronic academic and social

challenges throughout their school years tend to be more isolated as adults or dropping out of school altogether, and experience mental health challenges (Bell et al., 2016; Salmon & Buetow, 2012). Therefore, they are more likely to use drugs and alcohol to cope with negative experiences (Bell et al., 2016; Salmon & Buetow, 2012). Furthermore, individuals with FASD are vulnerable and often become increasingly marginalized once *inside* the justice system. It is generally accepted (albeit not necessarily practiced within the justice system; Salmon & Buetow, 2012) that criminal cases involving individuals with FASD require special considerations due to complex interactions between biological, environmental, and social issues, including differences in neurocognitive functioning (Flannigan et al., 2019; Sessa et al., 2022). It is important for psychologists to know the truths and myths of FASD-related developmental trajectories, secondary outcomes, and risk factors to prevent perpetuating stigma in this population.

## Psychological Training in Canada

To understand the connection between FASD and psychological training, it is helpful to first understand the general structure and training models used for Canadian professional psychology training programs. The level of training required to become a psychologist in Canada varies between provinces. The minimum standard for some provinces, like Alberta, requires psychologists to hold a two-year master's degree. In other provinces, psychologists must obtain a doctorate degree (Ph.D., four years minimum; Psy.D. five years minimum). Trainees also participate in a one-year pre-doctoral internship and optional post-doctoral fellowships. It stands to reason that some psychologists are exceptionally trained and spend a significant amount of time in graduate school.

### Accreditation Standards

Only doctorate-level programs are allowed to apply and receive accreditation status from the Canadian Psychological Association (i.e., master's programs are not accredited in Canada; Canadian Psychological Association, n.d.). As of 2022, there are 33 clinical psychology, two clinical neuropsychology, five counselling psychology, and four school psychology CPA accredited programs (Canadian Psychological Association, n.d.). Each accredited program ensures graduates are competent in four general areas including: (1) understanding the science of psychology, (2) having a foundation in professional practice, (3) be able to functionally engage in professional practice, and (4) integrate science and practice (Canadian Psychological Association, n.d.). There are no specific CPA training mandates that require programs to include training on particular topics; there is no Canada-wide standard requiring programs to teach students about depression or FASD. Rather, accredited doctoral programs meet the broad expectations of CPA and provincial licensing bodies (Canadian Psychological Association, n.d.). In other words, professional psychology programs, despite being accredited, have considerable latitude in the design and implementation of curricula for future psychologists. The presented problem with training and licensure standards is a double-edged sword. Flexibility allows programs to have freedom in their program design, which is important when considering the unique needs of Canada's diverse populations and the vastness of psychologist's role in society (McFall, 2006). However, broad standards enable immense *variability* in the quality of trainees and their ability to meet the needs of the communities they will serve after graduation.

**Entry to Practice**

Although the provincial regulatory bodies work together based on the parameters laid out in the Mutual Recognition Agreement (MRA; Association of Canadian Psychology Regulatory Organizations, n.d.), they do not have any official policies on content-specific competency.

Rather, the MRA agrees that graduates must achieve competency in (1) interpersonal relationships, (2) assessment and evaluation, (3) intervention and consultation, (4) research, and (5) ethics and standards, in addition to passing the Examination for Professional Practice in Psychology (EPPP; Association of Canadian Psychology Regulatory Organizations, n.d.). Through CPA program accreditation and provincial regulatory bodies, one would hope that psychologists are well-equipped to handle the evolving nature of individuals and the society in which they exist. However, without a standardized model for psychological training that includes content-specific competency, it is impossible to make concrete conclusions on the preparedness of graduates and whether they will successfully engage in evidence-based practice. Even if a trainee obtains additional training in specific disorders, there are still no valid method of assessing whether trainees have the necessary knowledge to ethically engage in clinical practice in that content-area (McFall, 2006), or in this case, competency to provide clinical care to individuals with FASD.

**Training Models in Professional Psychology**

There are three program-level training models in professional psychology: the scientist-practitioner model, scholar-practitioner model, and clinical scientist model (Figure 1; Foley & McNeil, 2014; Ready & Veague, 2014). The scientist-practitioner model was developed in recognition that professional training should include both research and practical training (Baker & Benjamin Jr, 2000; Jones & Mehr, 2007). It is the scientist-practitioner model that drives the *core content areas* that CPA and provincial regulatory bodies enforce, including the requirement of competency in particular areas such as biological bases of behaviour or history systems of psychology (Jones & Mehr, 2007). Overall, the scientist-practitioner model continues to be a popular training model for professional psychology programs.

**Figure 1**

*Training models and weight of clinical practice versus research*


The scholar-practitioner model is the foundational training model for Psy.D. or Doctor of Psychology programs and has historically been a training model in American schools (Murray, 2000; Stoltenberg et al., 2000). Canada has adopted this training model with a few Psy.D. programs being available to date. The scholar-practitioner model was developed to reduce the emphasis on the research activities of a psychologist. In the scholar-practitioner model, psychologists have a solid foundation in science, but are primarily trained for clinical practice (Murray, 2000; Stoltenberg et al., 2000). The clinical scientist model rejects the dichotomy between science and clinical practice and asserts that a psychologist must be equally competent in both areas, and only practice within scientific evidence (McFall, 1991). Whether a psychologist has a Ph.D. or Psy.D., they are considered to be eligible for registration and professional practice in Canada.

## Learning Theory in Professional Training

The way people learn can be described by a number of different theories based on cognitive, humanistic, behaviourist, and social learning perspectives. Students obtain information from their teachers through course content and materials, assessment methods, teaching methods, and clinical experiences (i.e., practicum experiences). Through these various learning experiences, students gain knowledge, attitudes, and skills (Kaufman, 2018). The goal is for the student to have the appropriate knowledge, attitudes, and skills necessary to engage in best

practices with their clients, leading to better client outcomes. Some of the popular theoretical frameworks that are relevant to psychological training include social cognitive theory (Bandura, 1986), reflective practice (Moon, 1999; Schön, 2017), self-directed learning (Candy, 1991), and constructivism (Gergen, 1995).

## Social Cognitive Theory

Social cognitive theory, also known as social learning theory, was developed by Albert Bandura, and describes how learning occurs through the environment (Bandura, 1986). More specifically, "our actions, learning, and functioning are the result of a continuous, dynamic, reciprocal interaction among three sets of determinants: personal, environmental (situational), and behavioural conditions. Personal factors include the individual's attitudes, perceptions, values, goals, knowledge, and all previous experience" (p. 38, Kaufman, 2018). Bandura's social cognitive theory also posits that behaviour can be shaped by modelling, teaching, or social persuasion (Bandura, 1986). Social cognitive theory helps explain the relationship between a student and their environment, and how graduate school is an important period of time where psychologists develop and refine their knowledge, attitudes, and skills.

### *Self-efficacy*

Self-efficacy is a central aspect of social cognitive theory defined as an individual's belief about their ability to perform tasks, affecting behaviour, decision-making, and goal setting (Bandura, 1977). Self-efficacy helps explain (1) what people choose to do (i.e., their practice or behaviour), how much effort they invest in the activity, how they handle disappointment or failure, and how the individual approaches tasks (Bandura, 1977; Kaufman, 2018). Overall, self-efficacy can explain how an individual perceives their competency in an area of specialty. For example, a psychologist who has several decades of experience in counselling may have high

self-efficacy in counselling-related tasks but may feel low self-efficacy in other psychology-related activities, like cognitive assessments.

The most common way for students to develop self-efficacy is through performance attainments. The outcomes of their performance and the experience of success or failure directly contributes to increasing or decreasing one's self-efficacy (Bandura, 1977). It is also important that educators have self-efficacy toward teaching students. Educators that have high self-efficacy in teaching may feel more confident teaching students topics that they may not have expertise in. Not only is developing student self-efficacy important throughout their learning, but also affects their future practice. In general, individuals who have high self-efficacy are (1) more likely to be motivated to learn and set goals towards their professional development, and (2) better equipped to provide evidence-based services to clients (Kaufman, 2018). For example, consider a psychologist in a rural practice. A rural psychologist may be the only available resource for an entire community, which means they must feel confident in their ability to serve a diverse clientele. Comparably, psychologists in urban settings may feel assured that they are able to refer complex or unfamiliar cases to other professionals in their community.

It is important to have comprehensive psychological training programs because students can learn and build self-efficacy through a wide variety of learning experiences. For example, students may learn through vicarious experiences; even if the student does not directly provide services to an individual with FASD, simply seeing another professional provide services (i.e., role modelling), can make students feel more confident performing similar tasks themselves (Bandura, 1977; Kaufman, 2018).

**Reflective Practice**

Another way that people gain knowledge, attitudes, and skills is through reflective practice. Reflective practice argues that conventional teaching cannot prepare students for the complexity of real life (Moon, 1999; Schön, 2017). A reflective clinician is able to relate theory and practice bi-directionally (Kaufman, 2018). There are two types of reflection: reflection-in-action and reflection-on-action (Schön, 2017). Reflection-in-action occurs during an event. While reflecting, an individual will (1) reframe and rework the problem in their mind, (2) relate the event to their previous experiences (including previously obtained knowledge and attitudes), and (3) be able to dissect the problem, solution, and potential consequences (Kaufman, 2018; Schön, 2017). Reflection-on-action describes reflective practice after an event. Here, an individual thinks about what they learned from the experience, things that could have been different, and how their actions led to the outcome (Kaufman, 2018). Reflection is expected in psychological training because psychologists are their own "tools" that promote change and health in their clients. For example, in counselling, the way that the therapist interacts with their clients directly correlates with the outcomes seen in therapy. In reflective practice, a psychologist can reflect on their sessions with clients, and improve their practice for next session. Reflective practice contributes to deep learning, the development of self-regulated learning, and the development of professional identity, and is mediated by characteristics such as maturity, environment, and mentorship (Kaufman, 2018; Moon, 1999).

**Self-directed Lifelong Learning**

Self-directed lifelong learning (SDL) is a central concept associated with adult education and describes ways in which adult students are motivated and assume self-responsibility for their learning (Candy, 1991; Garrison, 1997). A common misconception is that SDL is only self-study, however, SDL is meant to capture the process underlying various types of learning,

including problem-based learning (Silén & Uhlin, 2008). For psychologists, SDL relates to the learning experiences that occur throughout graduate training and beyond as professional development opportunities. Overall, SDL is necessary to developing, and most importantly, maintaining professional competency. Compared to other learning experiences, SDL is unique because the learner is in control of how and what they learn about (Garrison, 1997).

Currently, there are no studies that evaluate the effectiveness or use of SDL in professional psychology programs. However, SDL has been researched in medical education, especially in relation to problem-based learning curricula development and continuing education. According to a recent systematic review, SDL can provide a moderate increase in knowledge acquisition, compared to traditional didactic teaching (Murad et al., 2010). However, SDL and traditional teaching methods have the same effect on the skills and attitudes of learners (Murad et al., 2010). These results suggest that SDL is most helpful in supporting knowledge development and demonstrates the usefulness of professional development. Additionally, SDL is most effective when educators guide their students to resources and materials for self-learning (Murad et al., 2010).

There are several factors that influence the success of SDL. First, the student's self-perception determines whether they feel competent to self-direct their learning (Kaufman, 2018). Second, SDL may not be possible in routine situations or when the student is expected to regurgitate information (i.e., through formal assessments; Kaufman, 2018). Third, SDL requires some basic understanding in a subject-matter (Kaufman, 2018). Not only are learners more confident when they have a foundational understanding, but they can easily engage in novel tasks when they can refer to old learning experiences (Kaufman, 2018). These factors of SDL success have been made into an "SDL readiness" assessment tool, albeit heavily debated whether

it is useful given the current theoretical model of SDL (Hendry & Ginns, 2009; Hoban et al., 2005). Regardless, SDL is a useful model that explains adult learning processes in professional psychology programs.

### Constructivism

Constructivism as a learning experience posits that students acquire knowledge, attitudes, and skills through constructing meaning and making sense of their own experiences (Gergen, 1995). There are two notable types of constructivism: cognitive constructivism and social-cultural constructivism (Kaufman, 2018). Cognitive constructivism was developed by Piaget and describes learning as a process of association; learning occurs by associating new knowledge with prior knowledge (Kaufman, 2018; Piaget, 1972). Social constructivism based on Vygotsky's theories of learning posits that learning is mediated through interactions between people (e.g., student and teacher; Kaufman, 2018; Vygotsky, 1978). In social constructivism, learning always includes the integration of new and prior knowledge. Therefore, learning experiences are wholly subjective and uniquely constructed based on an individual's social and cultural context (Jaramillo, 1996; Kaufman, 2018; Vygotsky, 1978). In professional training, constructivist learning experiences would situate the teacher as a facilitator or role-model, and support or challenge their student's knowledge, attitudes, and practices through activities such as classroom discussions, peer collaboration, group projects, and other social-based learning methods (Kaufman, 2018; Rillo et al., 2020).

## Current Study

Psychologists acquire knowledge, attitudes, and skills through their professional training and learning experiences. At the core of their learning experiences are faculty members and educators who facilitate learning by using pedagogy from a variety of educational theories.

Although “how” psychologists are trained is well established and defined, “what” psychologists learn in graduate school is largely diverse and unstandardized across Canada. Therefore, there are potential gaps in a psychologist’s learning experiences that ultimately affect their ability to provide evidence-based services to their clients. These statements are particularly true for clients with FASD, as psychologists generally have low self-efficacy in supporting clients with FASD (McLachlan et al., 2020). FASD is a complex neurodevelopmental disorder and lifelong disability that requires psychologists to be especially skilled at clinical activities such as prevention, diagnosis, assessment, and intervention. As the most prevalent neurodevelopmental disorder in Canada (Popova et al., 2019), it is important that psychologists are well-equipped to support their clients affected by FASD. Even more so, educators who train future psychologists must be aware of the nuances of FASD and prepared to teach student clinicians about FASD. Given the absence of research in FASD-related psychological training, the current study aimed to explore the knowledge, attitudes, and practices of faculty members across Canada through a quantitative knowledge, attitudes, and practices (KAP) survey.

Previous research studies have used FASD-related KAP surveys in a variety of professional populations such as teachers (Chu et al., 2022), midwives (Payne et al., 2014), pediatricians (Elliott et al., 2006; Gahagan et al., 2006; Payne et al., 2011b), professionals who work in the criminal justice system (Mutch et al., 2013; Passmore et al., 2018), psychiatrists (Tough et al., 2003), medical training directors (Zoorob et al., 2010), and psychologists (Wedding et al., 2007). There have also been two studies that studies who used large, diverse samples of professionals who may encounter individuals with FASD (Johnson et al., 2010; Payne et al., 2005; Payne et al., 2011a). Across the multitude of FASD-related KAP survey studies, professionals demonstrate varying, but often lacking, FASD knowledge, and have low

confidence in their ability to engage in clinical practice with individuals with FAS. Previous research has shown that some clinicians hold stigmatizing beliefs about FASD. For example, some clinicians have reported believing that all people with FASD have particular facial features (Passmore et al., 2018), and that FASD is an identifiable syndrome (Tough et al., 2003). As of to date, there have been no studies evaluating the KAPs of post-secondary educators who train future psychologists.

## Research Questions and Hypotheses

### *Research Question One*

What FASD-related knowledge do faculty members of professional psychology programs across Canada possess? I expect that faculty members will have an adequate level of knowledge, but that this will vary between subjects.

### *Research Question Two*

Do faculty members of professional psychology programs across Canada feel prepared to teach students about FASD? What are some possible barriers or perceptions preventing FASD from being a frequently taught topic? I expect that faculty members will not feel prepared to teach students about FASD, and that low self-efficacy and low perceived importance are barriers to teaching FASD.

### *Research Question Three*

How often is FASD being taught by faculty members? Are the FASD-related knowledge levels and attitudes towards teaching FASD related to whether faculty teach students about FASD? I expect that low self-efficacy and lack of FASD teaching practices are related. I suspect that the level of FASD-knowledge a faculty member possesses, ultimately affects their teaching practices and self-efficacy.

## Method

The goal of the current study was to use a KAP survey to explore whether faculty members of professional psychology programs across Canada have knowledge gaps or misconceptions about FASD, and whether these factors affect their teaching practices. These questions cannot be answered through experimental design because there is no way to randomly assign participants to groups, so a nonexperimental design was warranted. Overall, this cross-sectional online survey aims to provide foundational information to guide future inquiries into faculty knowledge, attitudes, and practices with FASD community members.

### Study Design

A quantitative approach, using a cross-sectional survey design was administered online through emails, newsletters, and other electronic communication platforms. Traditionally, KAP surveys use qualitative or mixed-method approaches (Muleme et al., 2017). However, there are two main reasons why the survey used a quantitative approach rather than a qualitative or mixed method. First, the non-demographic survey questions were binary (Yes/No) and Likert-scale response formats; therefore, nominal and ordinal data were collected. Second, a quantitative survey (i.e., no short answer questions) was more likely to be completed by participants and took less time for respondents to complete. Given that the study population consisted of faculty members in professional programs, it was expected that participants would be preoccupied with clinical, academic, and administrative duties throughout the recruitment period. Therefore, a short, quantitative survey was designed to provide the highest completion rates within this population group and produce sufficient data to answer the research questions.

The study used a nonexperimental survey design to identify trends in knowledge, attitudes, and practices in faculty members. Instead of an experimental design, a survey was

chosen because an experimental design would not sufficiently answer the research question and did not fit the research purpose. Online surveys are advantageous because they can reach a wide range of people relatively fast, especially during a global pandemic. KAP surveys are useful because they are relatively easy to design and interpret, but still provide information for understanding relationships between people and their knowledge, attitudes, and how their behaviour/practices influence others in their environments (Andrade et al., 2020). For example, in this case, how faculty member's knowledge and attitudes affect outcomes for trainees and clients.

**Inclusion and Exclusion Criteria**

Participants were eligible to participate in this study if they were a core faculty member in a professional psychology graduate program in Canada. Additionally, participants can be from any demographic group (i.e., participants are not selected by gender or age). There were no exclusion criteria.

**Recruitment Procedure**

Invitations for participation were sent to administrative assistants of professional psychology programs across Canada, and electronic recruitment posters were posted on the Canada Fetal Alcohol Spectrum Disorder Research Network's social media platforms (i.e., Twitter) and the Canadian Psychological Association's Research Recruitment portal. The program administrative assistants sent the survey invitation information to faculty members. Faculty members who chose to participate were prompted to complete a consent form, then were directed to complete the survey questions. Participants did not receive an incentive for completing the survey. The current study was approved by the University of Alberta Research Ethics Board (Pro00107110).

**Sampling Strategy**

The current study used non-probability convenience sampling to recruit participants. The survey was widely distributed online, so participants were ultimately selected based on their willingness to participate. Convenience sampling was used because it is generally the easiest and most logical method for choosing participants in online survey research studies, especially considering limitations caused by the COVID-19 pandemic. Additionally, the survey automatically ended if individuals did not meet inclusion criteria or refused consent (achieved through branching logic within the survey instrument). Therefore, the final sample (n=11) included whomever "passed" these screening questions and completed the survey by pressing "submit."

**Measures**

A KAP survey was used to explore trends between the explanatory variables, knowledge and attitudes, and the response variable, practices for faculty members of professional psychology programs. A KAP survey is a type of survey that can be used for any discipline or topic. The main components of a KAP survey are that it measures a population's knowledge, attitudes, and practices of a particular construct, such as FASD. KAP surveys can be adapted to measure any construct. As a recent example, researchers have used KAP surveys to measure the general populations knowledge, attitudes, and practices for COVID-19 protocols (Lee et al., 2021). Overall, KAP surveys offer researchers a flexible and valid tool to measure behaviours and opinions in a population of interest.

The explanatory variable, knowledge, was defined as the extent to which faculty members know concepts about prenatal alcohol exposure, how and when alcohol affects the fetus, and some strengths and challenges individuals with FASD experience. The explanatory

variable, attitude, characterized the participant's feelings, opinions, perceived importance, and perceived risks associated with FASD and teaching students about FASD. For example, is it important to train students on FASD versus other disorders? Furthermore, questions on attitudes also demonstrated implicit biases or stereotypes faculty have. Finally, the response variable was the practices variable, defined as actions faculty members take to train students about FASD, teach FASD-related content in their courses, and their approaches to assessing, diagnosing, and providing intervention for clients with FASD.

## Survey Design

The survey was designed and distributed using REDCap, a secure web platform for building and managing online surveys available to members of the Women and Children's Research Institute at the University of Alberta. The survey questions were designed by the principal investigator (DH). As previously described, KAP surveys can be uniquely adapted to gather information in populations of interest. In this KAP survey, each KAP domain (i.e., knowledge, attitude, and practices) was comprised of questions derived from and supported by the most recent research evidence and based on the expertise of two academic and clinical experts on FASD (JP and KM). Questions were modified based on expert feedback, then resubmitted until final approval. The survey was additionally reviewed and tested by a handful of volunteer graduate students to ensure there were no technical errors in the survey code and design. Ultimately, expert review and survey testing increased the survey's rigor and improved the quality of the survey. The full survey is presented under Appendix D.

### *Participant Characteristics*

Participants were asked questions about their teaching and clinical careers. Questions were designed to gather information about their position, education background, clinical practice,

and target age groups for teaching and clinical practice. Additional information about the participants programs was also collected. Data about program characteristics was collected to identify any patterns related to individual characteristics and their knowledge, attitudes, and practices.

***Knowledge Domain***

The knowledge domain was divided into three subsections. The first section included eight *True* or *False* questions. These eight questions broadly covered clinical facts about FASD such as prevalence, risk factors, intervention, health outcomes, and diagnosis. The second subsection asked participants to estimate the frequency of 24 different physical and psychiatric outcomes and comorbidities in individuals with FASD, such as facial anomalies, childhood growth delay, various psychiatric disorders, and attempted suicide. The third and final section asked participants to indicate the amount of alcohol that is safe to drink during pregnancy within each trimester. Outside of these three subsections, there were two final Yes-No questions near the end of the survey that asked participants if they were aware of the importance of multidisciplinary diagnosis and the Canadian diagnostic guidelines.

***Attitude Domain***

The attitude domain obtained additional information about participant attitudes and perceptions towards FASD, and whether they feel prepared to teach students about FASD or provide psychological services to individuals with FASD. There were three Likert-scale questions (*Strongly Agree* to *Strongly Disagree*) that aimed to understand the participants attitude towards teaching students about FASD and whether they believed an FASD diagnosis was stigmatizing. Next, there were nine Likert-scale questions (*Very Unprepared* to *Very*

*Prepared*) that asked participants about their self-efficacy in teaching students about FASD and providing services to individuals with FASD.

### *Practices Domain*

In the practices domain, participants were asked how often they prepare coursework on various disorders, including FASD. The frequency was reported as a Likert scale, ranging from *Never* to *Always*. If participants indicated that they maintain a clinical practice outside of their faculty position, they were asked how often they provide education about prenatal alcohol-use to their clients. Participants were asked the number of clients they have worked with in the last year that have diagnosed or suspected FASD. Finally, participants were asked six Likert-scale questions (*Strongly Disagree* to *Strongly Agree*) about reasons why they think FASD is not included in many professional psychology program curricula.

### *Additional Questions*

The current study also asked participants about which form of dissemination would be most beneficial for students in their program (e.g., lectures, online tutorials, professional development, etc.). Next, participants reported where they obtain information about FASD (e.g., colleagues, academic journals, lived experiences, etc.). Finally, participants were asked in an open-response format about the barriers and opportunities they have about teaching FASD within their current training role.

## Data Analysis

Initially, the plan was to use multiple linear regression analysis with knowledge and attitudes (the explanatory variables) as predictors for practices (the response variable), however, there were not enough participants to meet statistical assumptions. Therefore, the data was approached in an exploratory manner. Trends will be discussed, along with an examination of

individual characteristics as they relate to complete survey responses. Available data explored was using SPSS statistical software (IBM Corp. Released 2021. IBM SPSS Statistics for Mac, Version 28.0. Armonk, NY: IBM Corp). The data from the Participant Characteristics and Program Information sections will be examined and reported using descriptive statistics.

## Results

### Participant Characteristics

There were 23 participants who started the survey, and 11 participants who completed the survey; the data from the 11 completed surveys will be explored (see Table 1). Ten of the participants were tenure-track faculty members, and one participant was a clinical professor/instructor. Out of these participants, five participants were in their early career (zero to nine years), four were in their mid-career (ten to 19 years), and two were in their late career (20 years plus). All participants held a doctorate degree. All participants reported having specialized training; clinical psychology (n=9), school psychology (n=2), neuropsychology (n=1), and marriage and family therapy (n=1). Furthermore, nine participants were registered psychologists, one was a registered marriage and family therapist, and the last participant was a provisional psychologist. Five participants engage in clinical practice outside of their teaching responsibilities. These five practitioners focus their clinical work with children (n=3), adolescents (n=4), and adults (n=4). The two non-accredited programs offered master's level training, while the other nine programs offered either masters and doctoral training, or doctoral training alone. Majority of the programs admit around six to eight students per year, with one program admitting 30 to 40 students per year (non-accredited, marriage and family therapy program). Information on program characteristics is presented in Table 2. Participants reported to

focus their teaching on children (n=3), adolescents (n=4), adults (n=2), and lifespan (n=6) demographic groups.

**Table 1**

*Faculty Characteristics*

| Variable | n |
|---|---|
| Position | |
| Tenure-track | 10 |
| Clinical Professor/Instructor | 1 |
| Career Stage | |
| Early Career (0-9 years) | 5 |
| Mid-career (10-19 years) | 4 |
| Late Career (20+ years) | 2 |
| Graduate Training Specialty | |
| Clinical Psychology | 9 |
| School Psychology | 2 |
| Neuropsychology | 1 |
| Marriage and Family Therapy | 1 |
| Licensure | |
| Registered Psychologist | 9 |
| Provisional Psychologist | 1 |
| Registered Marriage and Family Therapist | 1 |
| Teaching Demographic Focus | |
| Children | 3 |
| Adolescents | 4 |
| Adults | 2 |
| Lifespan | 6 |

**Table 2**

| *Program Characteristics* | |
|---|---|
| Variable | n |
| Program CPA Accreditation | |
| Accredited | 9 |
| Non-Accredited | 2 |
| Program Specialty | |
| Clinical Psychology | 8 |
| Counselling Psychology | 3 |
| School Psychology | 2 |
| Neuropsychology | 1 |
| Program Type Options | |
| Thesis-based | 11 |
| Course-based | 6 |
| Program CPA Accreditation | |
| Accredited | 9 |
| Non-Accredited | 2 |
| Program Specialty | |
| Clinical Psychology | 8 |
| Counselling Psychology | 3 |
| School Psychology | 2 |
| Neuropsychology | 1 |
| Program Type Options | |
| Thesis-based | 11 |
| Course-based | 6 |

**Knowledge Domain**

Participants were presented several true-false questions to identify common misconceptions about FASD. The majority of participants correctly answered the questions, although some questions had more response variation (Table 3). The prevalence rate for FASD had the most variation; less than half of the participants were able to identify FASD as the most prevalent neurodevelopmental disorder in Canada. In response to yes-no questions, all

participants (n=11, 100%) were aware of the importance of multidisciplinary diagnosis in FASD, but only 63.6% (n=7) of participants were aware of the Canadian diagnostic guidelines.

**Table 2**

*Knowledge Domain*

| Question (Desired Response) | True | | False | | Don't Know | |
|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % |
| FASD is the most prevalent neurodevelopmental disorder in Canada (T) | **5** | **45.5** | 3 | 27.3 | 3 | 27.3 |
| People with FASD are more likely to encounter legal situations relative to same age peers (T) | **9** | **81.8** | 2 | 18.2 | 0 | 0 |
| Alcohol withdrawal in a baby at birth is the worst outcome of prenatal alcohol exposure (F) | 0 | 0 | **9** | **81.8** | 2 | 18.2 |
| Autism Spectrum Disorder is more prevalent than FASD (F) | 3 | 27.3 | **7** | **63.6** | 1 | 9.1 |
| FASD intervention is only needed in childhood (F) | 0 | 0 | **11** | **100** | 0 | 0 |
| You can identify a client with FASD just by looking at them (F) | 0 | 0 | **11** | **100** | 0 | 0 |
| There is no known safe amount of alcohol to consume during pregnancy (T) | **9** | **81.8** | 1 | 9.1 | 1 | 9.1 |
| FASD is considered a whole-body diagnosis (T) | **11** | **100** | 0 | 0 | 0 | 0 |

Next, participants were asked to identify the frequency of various outcomes and co-occurring conditions for individuals with FASD (Table 4). Majority of the participants correctly reported the frequency of low weight across the lifespan, growth trajectory as a child, autism, parasomnias, narcolepsy, panic disorder, schizophrenia, oppositional defiance disorder, obsessive compulsive disorder, psychosis, and early onset dementia.

Less than half of participants received the correct answer for: facial anomalies (n=2, 18.2%), vision difficulties (n=1, 9.1%), hearing challenges (n=5, 45.5%), difficulties falling and staying asleep (n=4, 36.4%), early onset dementia (n=5, 45.5%), bipolar disorder (n=5, 45.5%),

**Table 4**

*Outcomes and comorbidities associated with FASD*

| Outcomes and comorbidities | Not a characteristic of FASD (0% of cases) | | Rarely (less than 25% of cases) | | Sometimes (26-50% of cases) | | Often (around 51-75% of cases) | | Almost all of the time (76-100% of cases) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % |
| Facial anomalies | 0 | 0 | **2** | **18.2** | 9 | 81.8 | 0 | 0 | 0 | 0 |
| Low weight | 1 | 9.1 | **1** | **9.1** | **7** | **63.6** | 2 | 18.2 | 0 | 0 |
| Growth delay as child | 0 | 0 | 3 | 27.3 | **7** | **63.6** | 0 | 0 | 1 | 9.1 |
| Autism spectrum disorder | 2 | 18.2 | **6** | **54.5** | 3 | 27.3 | 0 | 0 | 0 | 0 |
| Vision difficulties | 0 | 0 | 4 | 36.4 | 6 | 54.5 | **1** | **9.1** | 0 | 0 |
| Hearing challenges | 0 | 0 | **5** | **45.5** | 5 | 45.5 | 1 | 9.1 | 0 | 0 |
| Parasomnias | 1 | 9.1 | **2** | **18.2** | **7** | **63.6** | 1 | 9.1 | 0 | 0 |
| Narcolepsy | 1 | 9.1 | **7** | **63.6** | 2 | 18.2 | 1 | 9.1 | 0 | 0 |
| Difficulties falling and staying asleep | 0 | 0 | 0 | 0 | 6 | 54.5 | **4** | **36.4** | 1 | 9.1 |
| Early onset dementia | 3 | 27.3 | **5** | **45.5** | 3 | 27.3 | 0 | 0 | 0 | 0 |
| Bipolar disorder | 4 | 36.4 | **5** | **45.5** | 2 | 18.2 | 0 | 0 | 0 | 0 |
| Depression | 0 | 0 | 2 | 18.2 | 3 | 27.3 | **5** | **45.5** | 1 | 9.1 |
| Anxiety or agitation | 0 | 0 | 1 | 9.1 | 4 | 36.4 | 5 | 45.5 | **1** | **9.1** |
| Panic disorder | 0 | 0 | 5 | 45.5 | **6** | **54.5** | 0 | 0 | 0 | 0 |
| ADHD | 0 | 0 | 0 | 0 | 1 | 9.1 | 8 | 72.7 | **2** | **18.2** |
| Schizophrenia | 3 | 27.3 | **7** | **63.6** | 1 | 9.1 | 0 | 0 | 0 | 0 |
| Personality disorder | 2 | 18.2 | **4** | **36.4** | 4 | 36.4 | 1 | 9.1 | 0 | 0 |
| Oppositional defiant disorder | 0 | 0 | 0 | 0 | **6** | **54.5** | 4 | 36.4 | 1 | 9.1 |
| OCD | 0 | 0 | **8** | **72.7** | 3 | 27.3 | 0 | 0 | 0 | 0 |
| Psychosis | 2 | 18.2 | **7** | **63.6** | 2 | 18.2 | 0 | 0 | 0 | 0 |
| Attempted suicide | 0 | 0 | 5 | 45.5 | **4** | **36.4** | 2 | 18.2 | 0 | 0 |
| Dyslexia | 0 | 0 | **2** | **18.2** | 3 | 27.3 | 4 | 36.4 | 1 | 9.1 |
| Executive function challenges (any) | 0 | 0 | 0 | 0 | 1 | 9.1 | 5 | 45.5 | **5** | **45.5** |
| Substance use disorders (any) | 0 | 0 | 1 | 9.1 | **5** | **45.5** | 5 | 45.5 | 0 | 0 |

depression (n=5, 45.5%), anxiety or agitation (n=1, 9.1%), ADHD (n=2, 18.2%), personality disorders (n=4, 36.4%), attempted suicide (n=4, 36.4%), dyslexia (n=2, 18.2%), executive functioning challenges (any; n=5, 45.5%), and substance use disorders (any; n=5, 45.5%). The overall trends of the data show that participants overestimated the frequency of facial anomalies, personality disorders, dyslexia, and substance use disorders. Participants underestimated the frequency of vision difficulties, difficulties falling and staying asleep, bipolar disorder, depression, anxiety, ADHD, attempted suicide, and executive function challenges.

Participants were asked the number of standard drinks a pregnant individual could safely consume in the first, second, and third trimester. One participant reported that pregnant individuals can safely consume one standard drink during the first trimester, two standard drinks during the second trimester, and four standard drinks during the third trimester. Otherwise, all of the other ten participants indicated that pregnant individuals should consume zero units of alcohol during pregnancy.

**Attitude Domain**

Participants were asked whether they *Agree* or *Disagree* with presented statements (Table 5). When asked whether they had enough time to teach students about FASD in their courses, 72.7% participants disagreed and 27.3% agreed. Next, 54.5% of participants agreed that it is important to teach professional psychology students about FASD, and 45.5% participants strongly agreed. Lastly, participants were asked whether an FASD was stigmatizing for a child and family; 54.5% disagreed, while 36.4% agreed and 9.1% strongly agreed.

**Table 5**

*Attitudes about FASD*

| Statement | Strongly Disagree | | Disagree | | Agree | | Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % |
| I do not have enough time to teach students about FASD in my courses. | 0 | 0 | 8 | 72.7 | 3 | 27.3 | 0 | 0 |
| It is important to teach professional psychology students within your training program about FASD in their courses. | 0 | 0 | 0 | 0 | 6 | 54.5 | 5 | 45.5 |
| Making a diagnosis of FASD may stigmatize the child and family. | 0 | 0 | 6 | 54.5 | 4 | 36.4 | 1 | 9.1 |

Self-efficacy was measured by asking participants how prepared they feel performing various teaching and clinical tasks regarding FASD (Table 6). There were one or two participants who consistently reported feeling *Very Prepared*. Otherwise, responses varied equally between *Not Prepared at All* to feeling *Somewhat Prepared*. Overall, faculty members feel less prepared to actively provide clinical services, such as diagnosis and assessment, to clients suspected of having FASD, and teaching students about FASD. However, the most agreement between participants was seen with supporting clients with FASD, their families, and students (*Somewhat Prepared*, n=7, 63.6%).

**Table 3**
*Attitudes, self-efficacy, and teaching*

| Statement | Not prepared at all | | Very unprepared | | Somewhat unprepared | | Somewhat prepared | | Very prepared | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % |
| Teach students about FASD in courses | 0 | 0 | 3 | 27.3 | 2 | 18.2 | 4 | 36.4 | 2 | 18.2 |
| Teach students about FASD in clinical settings | 0 | 0 | 2 | 18.2 | 3 | 27.3 | 4 | 36.4 | 2 | 18.2 |
| Identify clients with FASD | 1 | 9.1 | 1 | 9.1 | 3 | 27.3 | 4 | 36.4 | 2 | 18.2 |
| Diagnose clients with FASD | 2 | 18.2 | 1 | 9.1 | 4 | 36.4 | 3 | 27.3 | 1 | 9.1 |
| Assess clients with FASD | 2 | 18.2 | 2 | 18.2 | 2 | 18.2 | 4 | 36.4 | 1 | 9.1 |
| Provide intervention for clients with FASD | 1 | 9.1 | 3 | 27.3 | 2 | 18.2 | 3 | 27.3 | 2 | 18.2 |
| Support families | 0 | 0 | 1 | 9.1 | 1 | 9.1 | 7 | 63.6 | 2 | 18.2 |
| Support students who encounter clients with FASD during their clinical training | 0 | 0 | 1 | 9.1 | 1 | 9.1 | 7 | 63.6 | 2 | 18.2 |
| To use the Canadian diagnostic guidelines. | 2 | 18.2 | 1 | 9.1 | 3 | 27.3 | 3 | 27.3 | 2 | 18.2 |

**Practices Domain**

Participants were asked a variety of questions about their teaching practices. There were no faculty members who *Always* prepare specific coursework on FASD (Table 7). There were two participants who *Often* prepare FASD-related coursework. Additionally, two participants indicated that they *Never* prepare FASD-related coursework. The types of disorders that participants cover in their teaching practices vastly varied; only depression and anxiety were consistently taught in courses.

**Table 7**

*Frequency of taught topics*

| Topic | Never | | Rarely | | Sometimes | | Often | | Always | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % |
| ADHD | 0 | 0 | 2 | 18.2 | 3 | 27.3 | 4 | 36.4 | 2 | 18.2 |
| Specific learning disorders | 0 | 0 | 2 | 18.2 | 3 | 27.3 | 4 | 36.4 | 2 | 18.2 |
| Autism spectrum disorder | 0 | 0 | 4 | 36.4 | 4 | 36.4 | 2 | 18.2 | 1 | 9.1 |
| FASD | 2 | 18.2 | 4 | 36.4 | 3 | 27.3 | 2 | 18.2 | 0 | 0 |
| Anxiety disorders, including OCD | 0 | 0 | 1 | 9.1 | 2 | 18.2 | 5 | 45.5 | 3 | 27.3 |
| Depressive disorders | 0 | 0 | 1 | 9.1 | 2 | 18.2 | 6 | 54.5 | 2 | 18.2 |
| Bipolar disorder | 1 | 9.1 | 4 | 36.4 | 4 | 36.4 | 2 | 18.2 | 0 | 0 |
| Schizophrenia | 0 | 0 | 5 | 45.5 | 4 | 36.4 | 1 | 9.1 | 0 | 0 |
| PTSD, Trauma | 0 | 0 | 2 | 18.2 | 4 | 36.4 | 3 | 27.3 | 2 | 18.2 |
| Substance use disorders | 2 | 18.2 | 1 | 9.1 | 5 | 45.5 | 0 | 0 | 3 | 27.3 |
| Personality disorders | 2 | 18.2 | 5 | 45.5 | 2 | 18.2 | 1 | 9.1 | 1 | 9.1 |
| Eating disorders | 1 | 9.1 | 3 | 27.3 | 5 | 45.5 | 1 | 9.1 | 1 | 9.1 |
| Gender dysphoria | 1 | 9.1 | 6 | 54.5 | 2 | 18.2 | 2 | 18.2 | 0 | 0 |
| Disruptive mood dysregulation disorder | 2 | 18.2 | 5 | 45.5 | 3 | 27.3 | 1 | 9.1 | 0 | 0 |
| Sleep-wake disorders | 4 | 36.4 | 4 | 36.4 | 3 | 27.3 | 0 | 0 | 0 | 0 |
| Neurocognitive disorders | 5 | 45.5 | 3 | 27.3 | 1 | 9.1 | 2 | 18.2 | 0 | 0 |

There were five participants who maintain a private practice outside their teaching career. These participants were asked questions about how FASD fits into their clinical practice. Participants reported to *Often* (n=2, 40%), *Rarely* (n=2, 40%), and *Never* (n=1, 20%) provide clients with education about alcohol consumption during pregnancy. Additionally, majority of participants did not report encountering clients with suspected or confirmed FASD in their clinical practice. One participant consistently provided clinical services to individuals with FASD and noted at the end of the survey that they maintain an FASD-focused clinical practice.

Participants were asked to identify potential barriers that all professional psychology programs face when it comes to teaching FASD (Table 8). Participants were divided between *Disagree* (n=5, 45.5%) and *Agree* (n=5, 45.5%), with one person who responded with *Strongly Disagree* (n=1, 9.1%). Majority of participants indicated that programs likely do not have qualified faculty to teach students about FASD (n=6, 54.5% *Agree*), while five participants

maintained that there are no qualified mentors in clinical placements (n=5, 45.5% *Agree*). Participants do not believe that students get enough exposure to FASD in their clinical placements (n=3, 27.3% *Strongly Disagree*; n=7, 63.6% *Disagree*). Furthermore, participants reported that students encounter clients with FASD in their training more frequently than other types of neurodevelopmental disorders (Table 8).

**Table 8**

*Program-level barriers to teaching FASD*

| Statement | Strongly Disagree | | Disagree | | Agree | | Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % |
| There is not enough time to teach students about FASD in their courses. | 1 | 9.1 | 5 | 45.5 | 5 | 45.5 | 0 | 0 |
| There is no one in the department who would be qualified to teach students about FASD in their courses. | 1 | 9.1 | 4 | 36.4 | 6 | 54.5 | 0 | 0 |
| Students do not encounter any clients with FASD while they are students in the program. | 5 | 45.5 | 3 | 27.3 | 3 | 27.3 | 0 | 0 |
| Students encounter other neurodevelopmental disorders, like autism, more frequently than FASD. | 2 | 18.2 | 5 | 45.5 | 4 | 36.4 | 0 | 0 |
| Students gain enough exposure to FASD in clinical placements (i.e., practicum). | 3 | 27.3 | 7 | 63.6 | 1 | 9.1 | 0 | 0 |
| There is no one qualified to mentor students about FASD in their clinical placements (i.e., practicum). | 1 | 9.1 | 5 | 45.5 | 5 | 45.5 | 0 | 0 |

**Additional Questions**

At the end of the survey, participants were asked what would be most beneficial in establishing or implementing an FASD curriculum in their programs. Most participants reported that professional development opportunities (n=10, 90.9%), in-class lectures (n=9, 81.8%), and case-based discussions (n=9, 81.8%) would be the most beneficial. Participants were asked where they receive FASD-related information, and majority of participants use research journals and books (n=9, 81.8%) and their colleagues (n=8, 72.7%) to learn about FASD.

## Discussion

The current study aimed to identify the knowledge, attitudes, and practices of faculty members of professional psychology programs across Canada through a knowledge, attitudes, and practices (KAP) survey. Overall, the study findings suggest that faculty members recognize the importance of teaching FASD to professional psychology students, yet FASD was not frequently taught. First, the data indicate that faculty members had difficulty identifying the prevalence rate of FASD and were more likely to overestimate or underestimate health outcomes and co-occurring features. Second, faculty members believed that FASD was an important topic, and most agreed that there was enough time to teach it. However, there was notable within-group variation regarding self-efficacy and whether faculty felt prepared to teach students about FASD. Lastly, FASD was the least likely neurodevelopmental disorder to be taught to professional psychology students, and there was no clear explanation for this trend. The current study was the first to explore faculty members' FASD-related knowledge, attitudes, and practices in professional psychology programs.

### Knowledge of FASD

Within the survey's knowledge domain, participants answered questions about FASD. In line with the hypothesis of the first research question, most participants correctly answered true-false questions. However, the data showed that participants had difficulty identifying the prevalence of FASD in Canada. Previous research has shown that health, justice, and education professionals also have challenges identifying the prevalence of FASD (Gahagan et al., 2006; Wedding et al., 2007) and often think other disorders such as Down Syndrome and autism are more prevalent (Zoorob et al., 2010). Contrary to Gahagan et al. (2006), ten out of eleven participants indicated that zero alcoholic beverages were safe during pregnancy. Although there

are some difficulties identifying prevalence, the current sample seemed to have a good understanding of basic FASD facts.

Historically, FASD has been known as an 'identifiable syndrome,' with many studies illustrating that professionals in education, health, and justice settings believe you can 'see' whether someone has FASD (Mutch et al., 2013; Passmore et al., 2018; Tough et al., 2003). However, FASD is considered an invisible disability because the majority of individuals with FASD do not show apparent facial dysmorphology (Loock et al., 2020). The results mostly agreed with the most up to date information about facial features in FASD. All participants correctly answered that you cannot 'see' whether someone has FASD, but 81.8% of participants overestimated how often facial features occur.

Sentinel facial features can help identify and diagnose individuals without confirmed PAE. However, it is quite rare to solely rely on sentinel facial features to make a diagnosis due to the absence of other information. In most cases, neurodevelopmental challenges are considered the key feature and impairment in FASD (Cook et al., 2015; Loock et al., 2020). These neurodevelopmental challenges often translate to higher risk for adverse outcomes compared to other populations (Himmelreich et al., 2020; Loock et al., 2020; Streissguth et al., 2004).

In the current study, participants tended to incorrectly overestimate or underestimate common secondary outcomes and characteristics. For example, participants overestimated the frequency of co-occurring personality disorders, substance use disorders, and oppositional defiance disorder, which may demonstrate a bias towards negatively stigmatized disorders (Beltrán et al., 2021; Ring & Lawn, 2019; Zwick et al., 2020). Participants underestimated the frequency of co-occurring outcomes such as anxiety, ADHD, attempted suicide, sleep difficulties, and executive function challenges, all of which are notable challenges for individuals

with FASD (Himmelreich et al., 2020). Moreover, individuals with FASD are diagnosed with psychiatric disorders and experience mental health challenges at a significantly higher rate than the general public. For example, the rate of attempted suicides in the general population is 0.6%, but the attempted suicide rate in individuals with FASD is 29.7%, 49.5 times higher than the general population (Himmelreich et al., 2020). After ADHD, oppositional defiant disorder is the most frequently diagnosed comorbid disorder in individuals with FASD (Lange et al., 2018). The prevalence of oppositional defiant disorder in the general population is 9.7% and 27.3% in individuals with FASD (Himmelreich et al., 2020). Many feel that oppositional defiant disorder diagnoses are not appropriate for individuals with FASD, and it has been estimated that the diagnostic rates for some comorbid disorders have been inflated due to overlapping diagnostic criteria and referral bias (Lange et al., 2018). Youth with oppositional defiant disorder diagnoses are treated pessimistically and are referred to social and psychiatric evaluations less often (Beltrán et al., 2021). Furthermore, individuals with oppositional defiant disorder tend to become more marginalized within public institutions, leading to higher rates of school drops outs and encounters with the justice system (Beltrán et al., 2021). Altogether, it is important for psychologists to have foundational knowledge of how PAE affects development and how individuals with FASD may interact with their environment. Competent psychologists are critical in fostering healthy outcomes in individuals with FASD across the lifespan. Without adequate FASD knowledge, psychologists can risk causing harm to their clients.

**Attitudes about FASD**

The attitude domain explored faculty members perceived self-efficacy in teaching, and potential barriers they perceive when it comes to teaching students about FASD. Majority of the participants believed that there was enough time to teach students about FASD, and that it was

an important topic. However, contrary to the hypothesis, there was a divide between participants who felt prepared and unprepared to teach students about FASD; over half of the participants felt some level of preparedness to teach FASD. It was expected that majority of the participants would feel unprepared to teach FASD, especially considering participants reported FASD as an important topic to teach.

When it came to providing clinical services to individuals with FASD (i.e., diagnosis, assessment, and intervention), participants generally felt less prepared. The data does not provide a clear explanation for why faculty members would feel more prepared to teach students about FASD but perceive lower self-efficacy when applying that knowledge to real-world situations. It could be possible that it is "easier" to relay the facts about FASD to students. Another possible explanation is that, even though all participants were licensed psychologists, less than half of them maintained a clinical practice. Regardless, these perspectives would be problematic because they create a circular situation where students gain knowledge and attitudes through their learning experiences, but they are not learning the skills and practices needed to engage in FASD-related work. Not only is this trend seen in the current study sample but has been found in previous research with practicing clinicians (McLachlan et al., 2020; Wedding et al., 2007).

**FASD-related Teaching Practices**

Clinicians continue to feel unprepared to provide clinical services to individuals with FASD. The current study aimed to explore whether graduate-level training experiences were contributing to this phenomenon. Compared to other neurodevelopmental disorders such as ADHD, autism, and learning disorders, FASD was the only neurodevelopmental disorder topic where some participants reported *Never* teaching it, and the only neurodevelopmental disorder topic where no participants reported *Always* teaching it. Despite participants indicating that they

value and see the importance of teaching FASD, their teaching practices did not reflect this sentiment. Furthermore, most participants reported feeling some level of preparedness to teach students about FASD, yet still do not engage in FASD-related teaching practices. Participants reported having enough time, but perhaps do not feel that qualified to teach students about FASD. Participants feel that their students do not get enough exposure to clients with FASD, and simultaneously believe that students eventually encounter some clients with FASD throughout their training. Additionally, participants believed that their students encounter clients with FASD just as much as they encounter clients with other neurodevelopmental disorders. Due to low statistical power, it was not possible to answer the last research question. Descriptive statistics alone does not show a clear explanation for why FASD is not taught in professional psychology programs, and demonstrates a mismatch between knowledge, attitudes, and teaching practices.

**Limitations**

While the current study provides primarily exploratory data, it is the first study to investigate FASD-related knowledge, attitudes, and practices in faculty members who teach and train future psychologists. Albeit preliminary, the current study found meaningful data trends that can guide future research in this understudied population. The main limitation was the low sample size and poor statistical power; only descriptive statistics were performed. There were several challenges with recruiting faculty. First, research recruitment was largely prohibited at majority of the programs, and the survey did not reach many potential participants. Second, participant recruitment occurred during the COVID-19 pandemic. Third, recruitment occurred during the summer months. With these barriers in mind, future studies may try different methods for recruitment, including directly contacting participants or program directors (albeit contacting program directors at some programs was also ineffective in this study). Without statistical

analyses, it is difficult to pin-point causal relationships between knowledge, attitudes, and teaching practices.

## Implications

Despite knowing that learning experiences directly relate to a professional's self-efficacy, clinical practices, and healthy outcomes in clients there continues to be a lack of FASD-related training experiences for psychologists. The current study along with previous research continue to show that psychologists feel unprepared to provide clinical services to individuals with FASD (McLachlan et al., 2020; Wedding et al., 2007). Without having FASD-related learning opportunities in graduate school, clinicians may never receive FASD-relevant training, even though FASD is the most prevalent neurodevelopmental disorder in Canada and a persistently marginalized population. When psychologists are equipped with the appropriate knowledge, attitudes, and skills, they are more likely to engage in the best evidence-based practices, ultimately, leading to better outcomes for their clients.

### *What about Post-Graduate Professional Development?*

Professional development is the most common suggestion for improving clinician self-efficacy and FASD-related clinical practices (Elliott et al., 2006; Mutch et al., 2013; Payne et al., 2014; Tough et al., 2003; Zoorob et al., 2010). However, the question remains whether post-graduate professional development opportunities are *enough* to convince individuals to teach FASD to their students, or whether these opportunities lead to real-life, long-term improvements self-efficacy to engage in clinical practice with individuals with FASD.

To date, two studies by the same research group have investigated the effects of post-graduate training opportunities in health professionals (Payne et al., 2011a; Payne et al., 2011b). The studies conducted a pre-post design where they measured the knowledge, attitudes, and

practices of health professionals before and after giving them an FASD educational resource package. In one publication, the results showed a significant increase in the knowledge the practitioners had about FASD (Payne et al., 2011a). Furthermore, practitioners begun to counsel female patients about abstaining from alcohol as the safest choice. Therefore, the study showed a positive impact of professional development on the knowledge, attitudes, and practices of health care professionals (Payne et al., 2011a). However, the second publication painted a different story (Payne et al., 2011b). The first study's sample included Aboriginal health workers, allied health professionals, community nurses, general practitioners, and obstetricians (Payne et al., 2011a), and had an overall positive message regarding the success of sharing resources and subsequent changes in knowledge, attitudes, and practices. The second (identical) study looked specifically at pediatricians and the conclusion was that these resources were ineffective (Payne et al., 2011b). The second study found no change in pediatricians knowledge about FASD, and the recommendation was that pediatricians should have additional standards within their formal training (i.e., professional programs, medical school). Overall, the research is inconclusive and does not clearly show whether post-graduate professional development is efficacious. Even if evidence-based professional development opportunities exist, clinical competency is not guaranteed. FASD is clinically heterogenous, and FASD-relevant training should be prioritized in graduate training when professionals learn foundational knowledge, attitudes, and practices.

***Recommendations***

The crucial first step would be to understand the relationship between learning experiences (i.e., through faculty members) and a student's knowledge, attitudes, and practices. Efforts should be made to ensure faculty members in professional psychology programs have the necessary resources to become FASD-informed. As of yet, there are no studies investigating the

efficacy of professional development in faculty members. Future studies may wish to target this population to see how we can improve FASD-related KAPs in faculty members. For example, future studies may wish to test the efficacy of guest lectures, resource packages (similar to Payne et al., 2011a; Payne et al., 2011b), and additional professional development opportunities such as courses offered by professional or non-profit organizations.

Next, it would be important to explore whether having strong foundations in FASD-related knowledge affects attitudes and teaching practices in faculty members. Specifically, whether there is a relationship between self-efficacy and how often faculty members teach FASD. It would be helpful to explore how FASD-related content is being delivered to students (i.e., type of learning materials, delivery methods, and language-use). Researchers could develop sample lectures and case studies to provide professional psychology programs. Additionally, FASD organizations and universities could negotiate partnerships to provide students with opportunities for guest lectures or professional development.

***Should Accredited Programs be Mandated to Teach about FASD?***

The issue of standardizing content-specific teaching practices is multifaceted. Although implementing standardization for content-specific competency may "solve" some challenges we face in the psychology profession, it must be acknowledged that it would be impossible for CPA or provincial regulatory bodies to mandate course content due to the constraints and balances required at a systematic level. First, mandating the content in courses impedes the intellectual rights and academic freedom of university faculty members. There must be a balance between academic freedom and the responsibility we owe to students and members of the public. At a minimum, students should have the opportunity to access accurate scientific content on whatever topic they desire. However, the opportunity to access information may not be sufficient, further

contributing to knowledge gaps. Second, once we say one topic must be covered, then how is it decided which other topics are mandated? Who decides the topics that are mandatory? Therefore, there are certain caveats to mandating content-specific curricula. It may be helpful for members of the professional psychology community to discuss and pilot innovative methods of training programs, especially to balance intellectual freedom of faculty members and preparing students to service their communities.

## Conclusion

The current study demonstrates diversity in the knowledge, attitudes, and teaching practices of faculty members in professional programs across Canada, and further supports the need for FASD-specific professional development opportunities. Additionally, the study demonstrates the need for continued efforts to reduce the stigma of FASD. Clinicians' training experiences directly relate to how they engage in their independent clinical practice after graduation. To create clinicians that are FASD-informed, there must be faculty members who feel prepared to provide FASD education and training opportunities to their students. Future efforts should be made to create accessible information about FASD to faculty members and students in professional psychology programs across Canada.

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## Appendix A

**Title of the study:** Understanding fetal alcohol spectrum disorder: Perspectives from faculty members in Canadian psychology programs

**Principal Investigator:** Devon Heath, Graduate student, Department of Educational Psychology, University of Alberta, Edmonton, AB, dheath@ualberta.ca

**Supervisor:** Dr. Jacqueline Pei, Professor, Department of Educational Psychology, University of Alberta, Edmonton, AB, jpei@ualberta.ca

**Invitation to Participate:** You are invited to participate in this research study about fetal alcohol spectrum disorder because you are a faculty member of a professional psychology program in Canada.

**Purpose of the Study:** As a first-of-its-kind study, we wish to understand fetal alcohol spectrum disorder graduate training within context of other developmental disorders such as autism spectrum disorder. A recent global survey found that psychologists tend to feel unprepared to support clients with FASD. Building upon those findings, we would like to identify any potential origins of this lack of preparedness as targets for future curriculum development or professional development opportunities.

**Participation:** If you wish to participate in this study, please complete the attached survey. The survey should take you approximately 10-15 minutes to complete. You do not have to answer any questions that you do not want to answer. Once you have completed the survey, please press the "submit" button.

**Benefits:** There are no direct benefits to you by participating.

**Risks:** While completing this survey, you might be bored, or you may have challenges answering some of the questions. To mitigate these risks, we have tried to shorten the survey as much as possible. Additionally, at the end of the survey, there are several resources to learn about FASD and participate in professional development activities that are vetted and provided by the Canada FASD research network.

**Confidentiality and Anonymity:** This survey is completely anonymous. No identifying information about you will be collected. The information that you will share will remain strictly confidential and will be used solely for the purposes of this research. The only people who will have access to the research data are the principal investigator and supervisor. Your answers to open-ended questions may be used verbatim in presentations and publications but neither you (nor your organization) will be identified. In order to minimize the risk of security breaches and to help ensure your confidentiality we recommend that you use standard safety measures such as signing out of your account, closing your browser and locking your screen or device when you are no longer using them / when you have completed the study." Results will be published in pooled (aggregate) format. Again, anonymity is guaranteed since you are not being asked to provide your name or any personal information.

**Data Storage:** Survey responses will be saved to REDCap, which is locally hosted within the University of Alberta's Faculty of Medicine & Dentistry's data center. When data is ready to be analyzed, the raw responses will be downloaded to an offline document that is stored on a password-protected and encrypted computer. Any electronic copies of the survey will be encrypted and stored on a password protected computer in the department of Educational Psychology at the University of Alberta.

**Voluntary Participation:** You are under no obligation to participate and if you choose to participate, you may refuse to answer questions that you do not want to answer. Should you choose to withdraw midway through the electronic survey simply close the link and no responses will be included. Given the anonymous nature of the survey, once you have submitted your responses it will no longer be possible to withdraw them from the study.

**Information about the Study Results:** Any findings from this research can be made available to you by emailing the principal investigator or supervisor.

**Contact Information:** If you have any questions or require more information about the study itself, you may contact the researcher or her supervisor the email addressed mentioned above. The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have any questions regarding your rights as a research participant or how the research is being conducted, you may contact the Research Ethics Office at 780-492-2615. Please keep this form for your records. You may print this page as a PDF from your web browser. Completion and submission of the survey means your consent to participate. Please indicate that you have read and agree to the statements above.

## Appendix B

Notification of Approval

**Date:** June 9, 2021

**Study ID:** Pro00107110

**Principal Investigator:** Devon Heath

**Study Supervisor:** Jacqueline Pei

**Study Title:** Understanding fetal alcohol spectrum disorder: Perspectives from faculty members in Canadian psychology programs

**Approval Expiry Date:** Wednesday, June 8, 2022

Thank you for submitting the above study to the Research Ethics Board 2. Your application has been reviewed and approved on behalf of the committee.
Approved Documents:

**Recruitment Materials:** Recruitment Blurbs.docx

**Questionnaires, Cover Letters, Surveys, Tests, Interview Scripts, etc.:** Survey with Information Letter and Debrief.docx

Any proposed changes to the study must be submitted to the REB for approval prior to implementation. A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application. Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities, or resources of local institutions for the purposes of the research.

Sincerely,
Kimberley Kordov, REB Specialist, on behalf of
Ubaka Ogbogu, LLB, BL, LLM, SJD
Chair, Research Ethics Board 2

Note: This correspondence includes an electronic signature (validation and approval via an online system).

## Appendix C

Notification of Approval (Renewal)

**Date:** May 12, 2022

**Amendment ID:** Pro00107110_REN1
Principal Investigator: Devon Heath

**Study ID:** Pro00107110

**Study Title:** Understanding fetal alcohol spectrum disorder: Perspectives from faculty members in Canadian psychology programs

**Supervisor:** Jacqueline Pei

**Approval Expiry Date:** May 11, 2023

Thank you for submitting this renewal application. Your application has been reviewed and approved. This re-approval is valid for one year. If your study continues past the expiration date as noted above, you will be required to complete another renewal request. Beginning at 30 days prior to the expiration date, you will receive notices that the study is about to expire. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application. Approval by the REB does not constitute authorization to initiate the conduct of this research.

The Principal Investigator is responsible for ensuring required approvals from other involved organizations (e.g., Alberta Health Services, Covenant Health, community organizations, school boards) are obtained, before the research begins.

Sincerely,
Mary-Jane Sykes, REB Specialist, on behalf of
Theresa Garvin, Ph.D., MUA, BA
Chair, Research Ethics Board 2

Note: This correspondence includes an electronic signature (validation and approval via an online system).

## Appendix D

Survey

**Demographics**

1. Are you an educator or clinician teaching in a professional psychology program (i.e., school, clinical, counselling psychology, forensic, or neuropsychology psychology)? [M/C, select one]
    a. I am a tenure-track professor
    b. I am a non-tenure track professor
    c. Adjunct professor
    d. I am a clinical professor
    e. Other (please specify)
    f. None of the above [*Terminates Survey*]
2. What is your highest earned degree? [M/C, select one]
    a. Masters
    b. Doctoral (Ph.D.)
    c. Doctoral (PsyD)
3. Which specialty did you primarily receive your training in? Select more than one if applicable to you. [Checkboxes, select multiple]
    a. Clinical psychology
    b. Counselling psychology
    c. School psychology
    d. Neuropsychology
    e. Forensic psychology
    f. Other (please specify)
4. Are you a licensed/registered psychologist in Canada? [M/C, select one]
    a. Yes
    b. No
    c. I am a provisional psychologist
5. Do you currently engage in clinical practice (e.g., private practice outside your program)? [M/C, select one]
    a. Yes
    b. No
6. What age group does your teaching practice focus on? Check all that apply. [Checkboxes, select multiple]
    a. Children
    b. Adolescents
    c. Adults
    d. Geriatric
7. *If answered Yes on Question 5:* What age group does your clinical practice (e.g., private practice outside your program) focus on? Check all that apply. [Checkboxes, select multiple]
    a. Children and youth (0-24 years)
    b. Adults (25- 64 years)
    c. Elderly (65+)
8. How many years ago did you obtain your highest degree? [S/A]
9. How many years have you been teaching in a professional psychology program? [S/A]

10. Please identify whether you consider yourself to be: [M/C, select one]
    a. Early career (0-9 years)
    b. Mid-career (10-19 years)
    c. Late career (20+ years)

**Program Information**

11. Is your program currently accredited by the Canadian Psychological Association? [M/C, select one]
    a. Yes [*Selecting Yes takes participant to Question 13*]
    b. No [*Selecting No takes participant to Question 12*]
12. Is your program currently seeking accreditation by the Canadian Psychological Association? [M/C, select one]
    a. Yes
    b. No
13. Does your program focus on master's or doctoral level training? [M/C, select one]
    a. Doctoral
    b. Masters
    c. Both
14. To the best of your knowledge, approximately how many students does your program admit per year (i.e., how many students are in each cohort)? [S/A]
15. Which specialty best describes your program focus? Select all that apply. [checkboxes, select multiple]
    a. Clinical psychology
    b. Counselling psychology
    c. School psychology
    d. Neuropsychology
    e. Forensic psychology
    f. Other (please specify)
16. Is your program thesis-based or course-based? [M/C, select one]
    a. Thesis-based
    b. Course-based
    c. We offer both
17. Are your program courses (not including practicum or clinical placements) primarily delivered online or in-person? *Not including the changes made by COVID-19. [M/C, select one]
    a. Online
    b. In-person
    c. Combination of both
18. What age group is your program geared towards? [checkboxes, select multiple]
    a. Children
    b. Adolescents
    c. Adults
    d. Geriatric

| **Question 19 (Knowledge Domain)** | |
|---|---|
| Statement | Desired Response (True, False, or Don't Know) |
| FASD is the most prevalent neurodevelopmental disorder in Canada. (Gahagan et al., 2006; Wedding et al., 2007) | True |
| People with FASD are more likely to encounter legal situations relative to same age peers. (Tough et al., 2003) | True |
| Alcohol withdrawal in a baby at birth is the worst outcome of prenatal alcohol exposure. (Gahagan et al., 2006; Wedding et al., 2007) | False |
| Autism Spectrum Disorder is more prevalent than FASD. (Adapted from Zoorob et al., 2010) | False |
| FASD intervention is only needed in childhood. (Chu et al., 2022; Johnson et al., 2010; Mutch et al., 2013; Passmore et al., 2018) | False |
| You can identify a client with FASD just by looking at them. (Mutch et al., 2013; Passmore et al., 2018; Tough et al., 2003) | False |
| There is no known safe amount of alcohol to consume during pregnancy. (Gahagan et al., 2006) | True |
| FASD is considered a whole-body diagnosis. | True |

| **Question 20 (Knowledge Domain)** | | |
|---|---|---|
| How often do these outcomes and comorbidities occur in FASD?<br><br>(Question adapted from: Gahagan et al., 2006; Chu et al., 2022; Elliot et al., 2006; Gahagan et al., 2006; Johnson et al., 2010; Mutch et al., 2013; Payne et al., 2005; Payne et al., 2014; Tough et al., Zoorob et al., 2010) | Correct Response | Actual Prevalence (%; Himmelreich et al., 2020) |
| Facial anomalies (e.g., short palpebral fissures, flat upper lip, flattened philtrum, and flat midface) | Rarely (less than 25% of cases) | 2.6 |
| Low weight (at or below 10th percentile for age) | Rarely (less than 25% of cases) ***OR*** Sometimes (26-50% of cases) | 14.7-21.5 |
| Growth delay as child | Sometimes (26-50% of cases) | 38.2 |
| Autism spectrum disorder | Rarely (less than 25% of cases) | 14.7 |

| | | |
|---|---|---|
| Vision difficulties | Often (around 51-75% of cases) | 65 |
| Hearing challenges | Rarely (less than 25% of cases) | 14.6 |
| Parasomnias (including night terrors, sleep talking, sleep walking, and nightmares) | Rarely (less than 25% of cases) ***OR*** Sometimes (26-50% of cases) | 1.7-19.4 |
| Narcolepsy | Rarely (less than 25% of cases) | 0.45 |
| Difficulties falling asleep and staying asleep | Often (around 51-75% of cases) | 57.6 and 70, respectively |
| Early onset dementia | Rarely (less than 25% of cases) | 0.9 |
| Bipolar disorder | Rarely (less than 25% of cases) | 17 |
| Depression, including MDD | Often (around 51-75% of cases) | 67.4 |
| Anxiety or agitation | Almost all of the time (76-100% of cases) | 88.4 |
| Panic disorder | Sometimes (26-50% of cases) | 46.2 |
| ADHD/ADD | Almost all of the time (76-100% of cases) | 79.7 |
| Schizophrenia | Rarely (less than 25% of cases) | 3.1 |
| Personality disorder | Rarely (less than 25% of cases) | 16.5 |
| Oppositional defiant disorder | Sometimes (26-50% of cases) | 27.3 |

| | | |
|---|---|---|
| OCD | Rarely (less than 25% of cases) | 4.4 |
| Psychosis | Rarely (less than 25% of cases) | 7.9 |
| Attempted suicide | Sometimes (26-50% of cases) | 29.7 |
| Dyslexia | Rarely (less than 25% of cases) | 13.9 |
| Executive function challenges (any) | Almost all of the time (76-100% of cases) | 70-90 |
| Substance use disorders (any) | Sometimes (26-50% of cases) | 31.5-37.1 |

| **Question 21 (Knowledge Domain)** | |
|---|---|
|  <br>Image from: Rethink Your Drinking. (n.d.). *What's a standard drink?* Retrieved May 5, 2021, from https://www.rethinkyourdrinking.ca/what-is-a-standard-drink/ | |
| A diagram of standard drinks is presented above. Based on the diagram, how many standard drinks is it safe for someone to drink while pregnant? Please indicate a number for each trimester of pregnancy.<br>(Gahagan et al., 2006; Johnson et al., 2010; Payne et al., 2011a; Payne et al., 2011b; Payne et al., 2014; Tough et al., 2003; Wedding et al., 2007; Zoorob et al., 2010) | Correct answer |
| Trimester | |
| First trimester (Months 1-3 or Weeks 1-13) | 0 |
| Second trimester (Months 4-6 or Weeks 14-27) | 0 |
| Third trimester (Months 6-9 or Weeks 28-40) | 0 |

| **Question 22 (Attitude Domain)** | |
|---|---|
| Statement | Desired Response **(**Strongly disagree**,** Disagree**,** Agree**,** Strongly agree**)** |
| I do not have enough time to teach students about FASD in my courses. | Strongly Disagree |
| It is important to teach professional psychology students within your training program about FASD in their courses. | Strongly Agree |
| Making a diagnosis of FASD may stigmatize the child and family. (Gahagan et al., 2006; Payne et al., 2005; Payne et al., 2011a; Payne et al., 2011b) | **No particular response was expected** |

| **Question 23 (Attitude Domain)** | |
|---|---|
| In general, how prepared do you feel to... (Adapted from: Gahagan et al., 2006; Mutch et al., 2013; Payne et al., 2011a; Payne et al., 2011b; Payne et al., 2014; Wedding et al., 2007) | Desired response (Not prepared at all, Very unprepared, Somewhat unprepared, Somewhat prepared, Very prepared) |
| Teach students about FASD in courses | Very prepared |
| Teach students about FASD in clinical settings (i.e., practicums) | Very prepared |
| Identify clients with FASD | Very prepared |
| Diagnose clients with FASD | Very prepared |
| Assess clients with FASD | Very prepared |
| Provide intervention for clients with FASD | Very prepared |
| Support families (i.e., caregivers) affected by FASD | Very prepared |
| Support students who encounter clients with FASD during their clinical training | Very prepared |
| To use the Canadian diagnostic guidelines. | Very prepared |

| **Question 24 (Practices Domain)** | |
|---|---|
| How often do you prepare coursework on the following? (Adapted from Zoorob et al., 2010) | Desired Response (Never, Rarely, |

| | |
|---|---|
| | Sometimes, Often, Always) |
| ADD/ADHD | |
| Specific learning disorders (e.g., dyslexia, dysgraphia, etc.) | |
| Autism spectrum disorder | |
| FASD | Always or Often |
| Anxiety disorders, including OCD | |
| Depressive disorders | |
| Bipolar disorder | |
| Schizophrenia | |
| PTSD, Trauma | |
| Substance use disorders | |
| Personality disorders | |
| Eating disorders | |
| Gender dysphoria | |
| Disruptive mood dysregulation disorder | |
| Sleep-wake disorders | |
| Neurocognitive disorders (e.g., Dementia) | |

| **Question 25 (Only shown if answered Yes to Question 5; Practices Domain)** | |
|---|---|
| Statement | Desired Response (Never, Rarely, Sometimes, Often, Always) |
| I provide education to my clients about the consequences of drinking alcohol while pregnant or trying to become pregnant. (Payne et al., 2005; Elliot et al., 2006; Gahagan et al., 2006; Payne et al., 2011a; Payne et al., 2011b; Payne et al., 2014; Wedding et al., 2007; Zoorob et al., 2010) | Always |

| **Question 26 (Knowledge Domain)** | |
|---|---|
| Statement | Desired Response (Yes, No) |

| | |
|---|---|
| I am aware of the importance of multidisciplinary FASD diagnosis in clinical practice. | Yes |
| I am aware of the Canadian diagnostic guidelines to diagnose clients with FASD. (Adapted from Gahagan et al., 2006; Tough et al., 2003) | Yes |

| **Question 27 (Only shown if answered Yes to Question 5; Practices Domain)** |
|---|
| In the past 12 months, how many clients have you…<br><br>**Response Choices:**<br>• 0<br>• 1-5<br>• 6-10<br>• 11+<br><br>(Adapted from: Gahagan et al., 2006; Mutch et al., 2013; Payne et al., 2005; Payne et al., 2011a; Payne et al., 2011b; Tough et al., 2003; Zoorob et al., 2010) |
| Suspect as possible FASD? |
| Recognized as having FASD? |
| Diagnosed with FASD? |
| Referred out to confirm a diagnosis of FASD? |
| Provided care for a client with FASD? |

| **Question 28 (Practices Domain)** | |
|---|---|
| Many professional psychology programs do not cover FASD in their curriculum. Why do you think this is? Please answer in terms of ALL professional psychology programs, not just yours.<br><br>(Adapted from Gahagan et al., 2006; Payne et al., 2014; Tough et al., 2003; Zoorob et al., 2010) | Desired Response **(**Strongly disagree**,** Disagree**,** Agree**,** Strongly agree**)** |
| There is not enough time to teach students about FASD in their courses. | Strongly disagree |
| There is no one in our department who is qualified to teach students about FASD in their courses. | Strongly disagree |
| Students do not encounter any clients with FASD while they are students in our program. | Strongly disagree |

| | |
|---|---|
| Students encounter other neurodevelopmental disorders, like autism. | Strongly disagree |
| Students gain enough exposure to FASD in clinical placements (i.e., practicum). | Strongly disagree |
| There is no one qualified to teach students about FASD in their clinical placements (i.e., practicum). | Strongly disagree |

**Additional Questions**

26. What would be most beneficial in establishing or implementing an FASD curriculum at your program? Select all that apply. (Elliot et al., 2006; Mutch et al., 2013; Payne et al., 2005; Payne et al., 2014; Tough et al., 2003; Zoorob et al., 2010)
    a. In-class lectures
    b. Professional development opportunities
    c. Online tutorials or courses
    d. Case-based discussions
    e. Role-play/videotaped encounter between health care provider and client
    f. Other (please specify)
27. What sources do you use for FASD information? Select all that apply. (Adapted from Gahagan et al., 2006; Payne et al., 2011a; Payne et al., 2011b; Tough et al., 2003)
    a. Colleagues
    b. Research journals and books
    c. My previous coursework from graduate school
    d. My previous experience in graduate-level clinical practicums
    e. My previous experience in graduate-level clinical internships
    f. My own clinical practice
    g. Families/caregivers who are affected by FASD
    h. Individuals who have FASD
    i. None
    j. Other (please specify)

**Open-ended Exit Question**

Your feedback is appreciated. The purpose of this survey was to gain information that will improve current practices so that future clinicians may be better equipped to support the needs of individuals with FASD. As a final comment, we would be interested in your opinion on the following statement.

Explain what you identify as barriers and opportunities for teaching about FASD within your current training role.

[End of Survey]