Where is the Science in Professional Psychology?

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Table of Contents

Supplemental Material *(refer to separate file)*

Manuscript 1 – Database Search Protocol

Manuscript 2 – Database Search Protocol

Manuscript 2 – Survey

List of Tables

List of Figures

Chapter 2

Chapter 3

Glossary of Key Terms / Abbreviations

Term	Definition
American Psychological Association (APA)	The professional organization of psychologists in the United States (APA, 2022).
Canadian Psychological Association (CPA)	The primary organization representing psychologists throughout Canada (CPA, 2022).
Continuing Education (CE)	Training that is intended to provide psychologists or psychotherapists with new information, research, and skills in their area of focus (CPA, 2022).
Empirically Supported Treatments (ESTs)	Clearly specified psychological treatments shown to be efficacious in controlled research with a delineated population (Chambless et al., 1996).
Evidence-Based Practice (EBP)	An approach to clinical decision making that encompasses three components, namely the best available research, clinical expertise, and patient characteristics (e.g., CPA, 2012; DiMeo, Moore, Lichtenstein, 2012; Lee & Hunsley, 2015).
National Institute for Health and Care Excellence (NICE) guidelines	Evidence-based recommendations for the care and services that are suitable for specific populations and presenting problems. All guidelines are based on the best available evidence existing at the time of its development, and updates are published as needed (National Institute for Health Care Excellence, 2015).

Ordre des Psychologues du Québec (OPQ)	The College of Psychologists of Quebec. The professional order and regulatory body for psychologists and psychotherapists in Quebec (OPQ, 2022).
Practice Research Networks (PRNs)	Networks enabling partnerships between researchers and clinicians with the aim of improving clinical practice while simultaneously informing clinical research (Lucock et al., 2017; Tasca, Grenon, Fortin-Langelier, & Chyurlia, 2014).
Regulatory Body	Holds the general duty to serve and protect the public interest with respect to the exercise of a profession, professional governance, and the conduct of registrants (CPA, 2022).
Science-practice gap	The discrepancy between research findings and their application in routine clinical practice (Lilienfeld et al., 2013).
Value	The importance, worth, or usefulness of something (Oxford Languages).

Abstract

The science-practice gap in psychology refers to the discrepancy between the availability of scientific evidence and its routine use in clinical practice (Cautin, 2011; Lilienfeld et al., 2013). This gap negatively affects the quality of psychotherapeutic services offered to the public and the credibility of professional psychology. Notable efforts have been made to bridge this gap, and several facilitators encouraging the use of science by professionals in psychology exist. However, there are also numerous attitudinal and practical barriers that hinder the ultimate integration of science and practice.

Training opportunities are one of the important facilitators (e.g., Bearman, Wadkins, Bailin, & Doctoroff, 2015; Beck et al., 2014). However, little research has examined the quality of training opportunities that are offered to professionals in psychology post-graduation (i.e., continuing education (CE)). The first objective of the present thesis was thus to examine the extent to which CE workshops promote science-based practice. As such, Manuscript 1 presents a study in which we focus on the CE workshops offered and promoted by the psychology regulatory body in Quebec (i.e., l'Ordre des Psychologues du Québec (OPQ)). The results indicate that nearly half of the psychotherapies promoted in the OPQ-approved workshops are not yet supported with research. Not only does this potentially diminish the value of psychotherapy providers' ongoing education, but this certainly contributes to the maintenance of the science-practice gap.

The second objective of the present thesis was to develop a richer understanding of the attitudinal barriers maintaining the science-practice gap. In Manuscript 2, we were interested in how professionals in psychology perceive the value of science in psychotherapeutic practice. We conducted a first study, a scoping review, to gather the wide range of opinions and attitudes on

this topic in the literature. We then conducted a second study, a survey, using the data from the scoping review. The survey focused on the Quebec population of psychotherapy providers. We were interested in determining if the opinions about the value of science in psychotherapy expressed in the literature were shared by the clinicians actively conducting psychotherapy in Quebec. Moreover, we wanted to examine if personal and professional characteristics (e.g., age, primary therapeutic approach, etc.) of respondents are related to their responses on the survey. Our results revealed important differences in how Quebec practitioners conceptualize the value of science in psychotherapy, compared to those writing the papers included in the scoping review. Moreover, this study identified ways in which science can become more valuable to psychotherapy, which are vital suggestions to be considered in solving the science-practice gap.

Overall, this thesis examined the science-practice gap from different angles, while focusing especially on the Quebec population of psychotherapy providers and their regulatory body. The first manuscript reveals important issues in the quality of the CE trainings promoted by the OPQ. There is an opportunity to help bridge the science-practice gap if the OPQ considers revising the procedures currently in place to evaluate, accredit, and advertise these workshops. The second manuscript reveals how Quebec practitioners perceive the value of science in psychotherapy, how this value may be improved, and which personal and professional characteristics lead practitioners to rely more on science in their work. These findings allow us to make specific recommendations concerning the science-practice gap to the regulatory body responsible for these professionals. Implications for future research and the detailed recommendations based on our findings are discussed.

Résumé

Il existe un écart entre la science et la pratique en psychologie, c'est-à-dire, un écart entre la disponibilité des preuves scientifiques et leur utilisation dans la pratique clinique (Cautin, 2011; Lilienfeld et al., 2013). Cet écart affecte négativement la qualité des services psychologiques offerts au public et la crédibilité de la psychologie. Des efforts notables ont été faits pour combler cet écart, et plusieurs facilitateurs encourageant l'utilisation de la science par les professionnels en psychologie existent. Cependant, il existe également de nombreux obstacles qui entravent l'intégration finale de la science et de la pratique.

Les opportunités de formation sont l'un des facilitateurs importants (par exemple, Bearman, Wadkins, Bailin, & Doctoroff, 2015; Beck et al., 2014). Cependant, peu de recherches ont examiné la qualité des opportunités de formation qui sont offertes aux professionnels en psychologie après l'obtention de leur diplôme (c'est-à-dire, la formation continue (FC)). Le premier objectif de la présente thèse était donc d'examiner dans quelle mesure les ateliers de FC favorisent une pratique fondée sur la science. À cet effet, le Manuscrit 1 présente une étude dans laquelle nous nous concentrons sur les ateliers de FC offerts et promus par l'organisme de réglementation de la psychologie au Québec (l'Ordre des Psychologues du Québec (OPQ)). Les résultats indiquent que près de la moitié des psychothérapies promues dans les ateliers approuvés par l'OPQ ne sont pas encore soutenus par la recherche. Non seulement cela diminue potentiellement la valeur de la formation continue des psychologues et des psychothérapeutes, mais cela contribue définitivement au maintien de l'écart entre la science et la pratique.

Le deuxième objectif de la présente thèse était de développer une compréhension plus riche des barrières attitudinales qui maintiennent cet écart entre la science et la pratique. Dans le Manuscrit 2, nous nous sommes intéressés à la façon dont les professionnels de la psychologie

perçoivent la valeur de la science dans la pratique psychothérapeutique. Nous avons mené une première étude, un examen de la portée, pour recueillir le large éventail d'opinions et d'attitudes sur ce sujet dans la littérature. Nous avons ensuite mené une deuxième étude, un sondage, en utilisant les données de l'examen de la portée. L'enquête était axée sur la population québécoise de psychologues et de psychothérapeutes. Nous voulions déterminer si les opinions sur la valeur de la science en psychothérapie exprimées dans la littérature étaient partagées par les cliniciens qui pratiquent activement la psychothérapie au Québec. De plus, nous voulions examiner si les caractéristiques personnelles et professionnelles (par exemple, l'âge, l'approche thérapeutique principale, etc.) des répondants étaient associées à leurs réponses au sondage. Nos résultats ont révélé des différences importantes dans la façon dont les praticiens du Québec conceptualisent la valeur de la science en psychothérapie, par rapport à ceux qui écrivent les articles inclus dans la revue de la portée. De plus, cette étude a identifié des moyens par lesquels la science peut devenir plus utile et bénéfique pour la psychothérapie, ce qui constitue des suggestions essentielles à prendre en compte pour résoudre l’écart entre la science et la pratique.

Dans l'ensemble, cette thèse a examiné l’écart entre la science et la pratique en psychologie sous différents angles, tout en se concentrant particulièrement sur la population québécoise de psychologues et de psychothérapeutes et leur organisme de réglementation. Le premier manuscrit révèle des problèmes importants dans la qualité des formations continues promues par l'OPQ. Il est possible de contribuer à combler l'écart entre la science et la pratique si l'OPQ envisage de réviser les procédures actuellement en place pour évaluer, accréditer et annoncer ces ateliers. Le deuxième manuscrit révèle comment les praticiens québécois perçoivent la valeur de la science en psychothérapie, comment cette valeur peut être améliorée, et quelles sont les caractéristiques personnelles et professionnelles qui amènent les praticiens à

s'appuyer davantage sur la science dans leur travail. Ces résultats nous permettent de formuler des recommandations spécifiques concernant l’écart entre la science et la pratique à l'organisme de réglementation responsable de ces professionnels. Les implications pour les recherches futures et les recommandations détaillées basées sur nos résultats sont discutées.

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Contribution of Original Knowledge

This thesis is comprised of two manuscripts: (1) Continuing education: A Comprehensive Review of the Psychotherapy Training Offered to Quebec Psychologists and Implications for Evidence-Based Practice, and (2) The Value of Science in Psychotherapeutic Practice. Manuscript 1 was published in the *Canadian Psychology* journal in 2019. Manuscript 2 is currently under review for publication in the *Canadian Psychology* journal as well. Both manuscripts represent original scholarship and provide distinct contributions of knowledge.

Contribution of Authors

As first author, I reviewed the literature (Chapter 1) and established the research questions for this doctoral thesis. For both manuscripts (Chapter 2 and 3), I developed the research design, coordinated the data collection, ran the analyses, and led the interpretation of results. All these steps were completed in conjunction with my research supervisor, Dr. Martin Drapeau.

Both manuscripts were co-authored by Dr. Martin Drapeau. He contributed to the conception and design of the studies and provided important editorial support. The first manuscript (Chapter 2) was also co-authored by Bryan Butler and Daniel Parker who contributed to data collection and analysis, while also providing editorial suggestions for the manuscript. The second manuscript (Chapter 3) was co-authored by Despina Z. Artenie, who played a significant role in data collection and analysis. She also contributed significantly to the editing of the final drafts of the manuscript. The manuscript was also co-authored by Bryan Butler who contributed to the data collection of the scoping review (Phase I) and Gabrielle Ciquier who was responsible for the French translation of the survey (Phase II).

Chapter 1: Introduction

Development of Professional Psychology

Psychology, currently defined as "the scientific study of behavior and mental processes" developed from philosophy into an experimental science in 1879. Psychological research began when Wilhelm Wundt founded the first laboratory in Germany dedicated to the experimental study of psychology (Balance & Evans, 1975). Applied psychology, which uses the findings from research to solve practical problems, developed in the years thereafter. In 1896, Lightner Witmer established the first psychological clinic with the purpose of studying children who had either learning or behavior problems (McReynolds, 1997). In 1941, wanting to connect science with practice in psychology graduate training programs, David Shakow developed the Boulder model, also known as scientist-practitioner model. Specifically, this model urged clinicians and trainees to allow empirical research to influence their applied practice while simultaneously allowing their clinical experiences to shape their future research questions (Frank, 1986). Today, professional psychology represents an extensive field in which scientific research is used to maximize the efficacy and efficiency of psychological assessment and intervention, and for understanding and problem-solving human behaviour in general (Baker, McFall, & Shoham, 2009; Kazdin, 2008; Lilienfeld, 2010; Treat, Bootzin, & Baker, 2012). The assertion that professional psychology is based on the science of psychology is embedded in our codes of ethics, standards for professional conduct, and professional training accreditation criteria. In fact, the American Psychological Association (APA) proposed that doctoral-level psychologists be trained as both scientists and practitioners as early as 1947 (APA, 2006).

The Science-Practice Gap

While graduate training programs, codes of ethics, and standards for professional conduct claim that practice should be based on research, the relationship between scientists and practitioners has been plagued with tension for decades (Lilienfeld, Ritschel, Lynn, Cautin, & Latzman, 2013). As early as 1940, the importance of attending to research was disputed between these professionals. Today, the widely used term "science-practice gap" refers to the discrepancy between research findings and their application in routine clinical practice (Lilienfeld et al., 2013). In 2009, Baker, McFall, and Shoham released a report titled "Current Status and Future Prospects of Clinical Psychology", whereby they described professional psychology as operating in a pre-scientific manner. The report stated that psychologists disregard research in clinical practice, and patients are frequently treated with interventions that have yet to be deemed effective (Baker et al., 2009). According to the report, for various reasons, psychologists continue to value personal clinical experience over research evidence. One of the suggestions put forth by the authors of the report was to make changes to the accreditation system of the APA for training programs in psychology. Specifically, it was recommended that a new system, overseen by the Association for Psychological Science, be put in place. Undoubtedly, this report attracted the attention of regulatory bodies, scientists, and practitioners whom all had different viewpoints on the presence and impact of the science-practice gap.

Empirically Supported Treatments (EST's)

One of the earliest and most influential efforts to narrow the science-practice gap was the introduction of empirically supported treatments (ESTs) following the APA's Division 12 (Clinical Psychology) task force on the Promotion and Dissemination of Psychological Procedures in 1995. The goal of this task force was to debunk the idea that psychological treatments are ineffective or inferior to pharmacological treatments and to demonstrate that the

efficacy of psychotherapy can be comparable to the efficacy of pharmacotherapy (Task Force on Promotion and Dissemination of Psychological Procedures, 1995). ESTs were defined as clearly specified psychological treatments shown to be efficacious in controlled research with a delineated population (Chambless et al., 1996). A set of criteria were developed for evaluating and identifying ESTs, including having been tested in randomized controlled trials (RCTs), with a specific population, and having made use of a treatment manual (Chambless et al., 1996). At that time, 18 psychological treatments were identified as *well-established* and seven were identified as *probably efficacious*. In 1998, Chambless and Hollon updated the criteria and re-evaluated the list of ESTs. They deemed 16 psychological treatments to be *well-established* and 56 to be *probably efficacious* (Chambless & Hollon, 1998). Currently, the APA Division 12 maintains a section of their website that is dedicated to providing updated information on ESTs. Currently, there are 48 psychological treatments listed with the strength of the evidence reported for 30 diagnoses. The status of each treatment is reported as either *strong* (i.e., *well-established*), *modest* (i.e., *probably efficacious*), or *controversial* (i.e., if studies of a given treatment yield conflicting results or if a treatment is efficacious but claims about why the treatment works are at odds with the research evidence) for each diagnosis, based on Chambless and Hollons' (1998) criteria.

In addition, The APA Division 12 is currently in the process of re-evaluating the EST status for all psychological treatments and diagnoses listed on their website. The re-evaluation of all treatments is being conducted based on Tolin, McKay, Forman, Klonsky, and Thombs' (2015) updated criteria for ESTs. Specifically, Tolin and colleagues developed an updated model for evaluating ESTs in 2015, which proposes a two-stage process for evaluating and recommending treatments. The first stage of the process involves evaluating systematic reviews

of the treatment outcome literature, as opposed to examining individual studies (e.g., RCTs) as suggested by Chambless and colleagues (1996). The systematic reviews are evaluated according to population, intervention, comparison, outcome, timeline, and setting, while also assessing risk of bias. The second stage of the process involves a committee-based evidence review, whereby the systematic reviews are translated into practical recommendations using the GRADE system (Atkins et al., 2004; Guyatt et al., 2008) for treatment recommendations. The GRADE system rates evidence quality as high, moderate, or low based on the number of studies in the analyses (systematic reviews), the limitations, the variability in effect between studies, and the confidence intervals of the summary estimates (See Tolin et al., 2015 for further detail on this two-stage process of evaluating ESTs). At present, only a small number of psychological treatments and diagnoses on the APA Division 12 website have been re-evaluated based on Tolin et al's. (2015) criteria, though the process is ongoing.

The early work on ESTs was an important catalyst for the APA's movement towards evidence-based practice (EBP), and the Canadian Psychological Association's (CPA) thereafter. EBP can be broadly defined as an approach to clinical decision making that encompasses three components, namely the best available research, clinical expertise, and patient characteristics (e.g., Dozois et al., 2014; DiMeo, Moore, Lichtenstein, 2012; Lee & Hunsley, 2015). However, although the movement towards EBP allowed psychology to gain credibility by means of a stronger scientific footing, it did not resolve the science-practice gap. Many scholars argue that at this point, EBP can only be construed as an abstract concept that aims to inform the general decision making of clinicians rather than a concrete approach to service delivery or a clear means of bridging research and practice (e.g., Maier, 2012; Satterfield et al., 2009; Westen & Bradley, 2005). It appears that amidst the task forces on EBP that have been held by both the American

and Canadian Psychological associations, the published policy statements and promotion of EBP by professional organizations, the increased quantity and quality of outcome studies, and the resources developed to aid in the application of EBP, the role of science in professional psychology remains controversial.

This review seeks to further explore the extent to which professional psychology is currently based on science. It will investigate the promotion of science by regulatory bodies in psychology and the use of science by practitioners. More specifically, this literature review will examine the APA, CPA, Ordre des Psychologues du Quebec (OPQ), and other regulatory bodies' policy statements and efforts to encourage the use of science amongst its members. This review will explore the beliefs and concerns that mental health practitioners hold regarding the role of science in practice, the extent to which they are adopting EBP, and the barriers that may be hindering its adoption. Furthermore, a discussion of the impact that the current science-practice gap has on psychotherapy service users and some of the efforts that have been put in place to begin solving this problem will be presented. Finally, this review seeks to identify some of the remaining gaps in the literature in order to shed light on the opportunities and efforts that may be valuable in elucidating this gap between science and practice in professional psychology.

The Movement towards Evidence-Based Practice

American Psychological Association (APA)

As EBP was increasingly being emphasized across healthcare policies, the APA held a Presidential Task Force on Evidence-Based Practice in Psychology in 2005. Following a decade of dynamic debate ensuing from the seminal 1995 task force that developed ESTs, an important advancement accomplished by the 2005 task force report was the policy statement on EBP in

psychology. According to the APA (APA Presidential Task Force on Evidence-Based Practice, 2006, p. 273):

> Evidence-based practice in psychology (EBPP) is the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences. This definition of EBPP closely parallels the definition of evidence-based practice adopted by the Institute of Medicine (2001, p. 147) as adapted from Sackett and colleagues (2000): "Evidence-based practice is the integration of best research evidence with clinical expertise and patient values." The purpose of EBPP is to promote effective psychological practice and enhance public health by applying empirically supported principles of psychological assessment, case formulation, therapeutic relationship, and intervention.

This definition is comprehensive in that it presents research, clinical expertise, and client characteristics as equally important in informing clinical practice. This served to calm some of the debate that followed the initial task force on ESTs. Many argued that the introduction of ESTs was none other than a listing of treatments with empirical support, without considering other important variables that influence clinical outcomes (e.g., Norcross, Beutler, & Levant, 2006). That said, the APA's definition of EBP is also limited (e.g., Drapeau & Hunsley, 2014). A major limitation has been the inadequate operationalization of the three main tenets (i.e., research, clinical expertise, and client characteristics), leading to ambiguity and limited applicability. Moreover, researchers argue that the importance or priority of each of the three tenets is unclear (Levant, 2004; Lilienfeld et al., 2013). For example, in a case where research and clinical expertise diverge, it is unclear via the APA's definition which of the two should be accorded highest priority. Similarly, amongst patient characteristics that may influence

treatment, it is unclear which of these characteristics should be prioritized (Levant, 2004; Lilienfeld et al., 2013).

In sum, despite its limitations, the 2005 APA task force on EBP was an important advancement from the earlier work on ESTs which was plagued with controversy and greater resistance. Two books on EBP, published by the APA shortly after the task force report, elaborated on the topic while discussing the implications for mental health practice, training, and policy (Goodheart, Kazdin, & Sternberg, 2006; Norcross et al., 2006). For example, in Norcross and colleagues' (2006) book, nine fundamental questions on EBP are addressed via position papers written by respected psychologists. The goal of this resource was to provide a tool for teaching and discussion with balanced views of a controversial topic.

APA Division-Specific Initiatives towards EBP. The APA's Society of Clinical Psychology Division 12 has the mandate to represent the field of Clinical Psychology through the encouragement and support of the integration of clinical psychological science and practice in education, research, application, advocacy and public policy. Several resources are provided via the Division 12 website to aid practitioners in their adoption and understanding of EBP. For example, the list of ESTs discussed earlier on in this paper may help practitioners with the *best available research* component of EBP. Similarly, the APA's Society of Counselling Psychology (Division 17) has a mission statement advocating for a holistic psychological perspective (i.e., systems-oriented, contextually aware, etc.) in practice, research, education and training, advocacy, consultation, and leadership. "Producing science that is informed by practice and practice that is informed by science" (see https://www.div17.org/mission-values) is amongst the specific set of values that Division 17 espouses. This effort to connect science with practice is further reflected by the Division's recognition of the importance of clinical practice guidelines,

which are later discussed in this paper as facilitators to the adoption of EBP. The Division's website maintains over 20 practice guidelines on various topics to facilitate practitioners' access to research-based recommendations.

Canadian Psychological Association (CPA)

In 2011, the Canadian Psychological Association (CPA) launched a Task Force on Evidence-Based Practice of Psychological Treatments (Dozois et al., 2014). The goal of this task force was to define EBP, propose a comprehensive hierarchy of research evidence, to support and guide practice, as well as to inform stakeholders. The definition of EBP according to the CPA Presidential Task Force (see Dozois et al., 2014, p. 153-160) is:

> Evidence-based practice of psychological treatments involves the conscientious, explicit and judicious use of the best available research evidence to inform each stage of clinical decision making and service delivery. This requires that psychologists apply their knowledge of the best available research in the context of specific client characteristics, cultural backgrounds, and treatment preferences (p. 155).

While the CPA statement on EBP is generally similar to the APA's definition, it is also different in a number of ways. First, it emphasizes the importance of having convergent data, that is data that are drawn from a variety of research designs (e.g., studies with high internal validity and studies with high external validity) to conclude that a treatment is beneficial. More importantly perhaps, it proposes a hierarchy of evidence, with systematic knowledge syntheses providing the highest level of evidence, followed by primary research studies that collectively have high internal and external validity, then primary studies that collectively have limited internal validity and external validity, followed by expert consensus based on formal procedures to establish consensus, with unpublished data, professional opinion and prior professional experience

providing the lowest level of evidence. Finally, the CPA's definition of EBP includes progress monitoring, which implies that practitioners should regularly and systematically monitor clients' reactions as well as changes in their symptoms and functioning throughout treatment (Dozois et al., 2014).

To aid practitioners in applying this EBP approach, examples of clinical case vignettes are included in the CPA task force report. The goal of these clinical vignettes is to illustrate the use of the research evidence hierarchy in clinical practice, by means of a specific case example. Research has shown that case examples make research findings more compelling for clinicians and increases their interest in gaining training (Stewart & Chambless, 2010). That said, the utility of this resource and the degree to which it helps promotes EBP has yet to be investigated.

CPA Section-Specific Initiatives towards EBP. The CPA's Clinical Psychology Section, missioned to "promote clinical psychology in its broadest definition as a science and a profession to the public, other service providers, clinical psychologists, and the government", also advocates for the use of clinical practice guidelines. The section's website reminds professionals that practice guidelines are a specific set of recommendations developed via a transparent process that incorporate the best available evidence and the involvement of relevant stakeholders (Beauchamp, Drapeau, & Dionne, 2015). Though no specific guidelines are provided via the Section's website, information on how to find and retrieve guidelines is provided. Engaging in EBP would entail practitioners choosing to retrieve such guidelines as a means of guiding their clinical decision making in light of a specific client's characteristics and their own expertise.

Similar to the APA's Division 17, the CPA's Counselling Psychology Section includes a statement about research and practice within their description. Specifically, the CPA section

notes that research and practice are viewed as mutually informative and counselling psychologists conduct research in a wide range of areas. No other resources or tools beyond this statement are put forth.

Provincial Colleges and Associations

Provincial colleges and associations play an equally important role in the promotion of science to practitioners. First, most regulatory bodies in Canada endorse the Canadian Code of Ethics for Psychologists, which expects practitioners to select assessment tools, methods, interventions, and communication modalities that are based on the best available evidence in light of patient needs, characteristics, and contexts (CPA, 2017). Second, via their code of ethics, each college or association highlights the importance of research in informing the clinical decision making of their members. That said, the content of the statements embedded in the code of ethics differs across provinces, with more or less specificity depending on the regulatory body. For example, the College of Psychologists of Ontario's (CPO) Standards of Professional Conduct state that members providing information, advice or comments to the public via any medium must take precautions to ensure that the statements are accurate and supportable based on current professional literature or research (CPO, 2017). When addressing how practitioners should inform their clinical practice, the CPO expects members to be familiar with the evidence for the relevance and utility of the interventions and must only render professional opinions that are based on current, reliable, adequate, and appropriate information (CPO, 2017). The College of Psychologists of British Columbia (CPBC) upholds that registrants must rely on scientifically and professionally derived knowledge when making scientific or professional judgments or when engaging in research, clinical work, teaching, or other scholarly or professional endeavours (CPBC, 2014). Locally, in 2008, the Ordre des Psychologues du Québec (OPQ; the College of

Psychologists of Quebec), translated and adopted APA's policy statement on EBP. In 2018, the Order published a report further discussing EBP and highlighting its importance for the provision of responsible, effective and well-informed psychotherapy (OPQ, 2018). The document serves as a reminder about the efficacy and benefits of psychotherapy, while highlighting the fact that several therapeutic modalities are supported empirically, and the diverse needs and preferences of clients should always be respected. It is also embedded within the OPQ's code of ethics that psychologists are expected to practice based on validated scientific principles and theories.

In sum, the APA, CPA, OPQ and other provincial colleges and associations have made diverse efforts to promote the science in professional practice, namely via policy statements, codes of ethics, and specific resources. However, it has been argued that the "evidence" in EBP and the "science" that is referred to in codes of ethics are terms devoid of any real meaning (Drapeau & Hunsley, 2014). The APA's definition of EBP is limited by the fact that "evidence" was not defined nor operationalized, and while the CPA's definition addressed this limitation by providing a more detailed definition, the hierarchy of evidence that they developed assumes that individual practitioners will retrieve, read, and critically evaluate findings before choosing to adopt a particular practice. In other words, although these regulatory bodies claim to advocate for science-based practice, the extent to which their efforts are reaching practitioners is questionable. The value of policy statements and task forces may be exclusively at the policy level rather than at the level of the individual practitioner, as hypothesized by Drapeau and Hunsley (2014). As such, the next part of this paper will explore the use of science by practitioners.

The Use of Science by Practitioners

All training models in professional psychology recognize the importance of training future clinicians in scientific methods (Hunsley, 2007). Though the extent to which clinicians

choose to engage in research after their training may vary, all professional psychologists are expected to be competent consumers of research upon graduation (Hunsley, 2007). This, however, has not translated into a strong reliance on scientific literature amongst many practicing psychologists. In fact, resistance to research amongst practitioners is well documented and openly discussed (Dozois, 2013; Drapeau & Hunsley, 2014; Gallo & Barlow, 2012; Lilienfeld et al., 2013; Stewart, Stirman, & Chambless, 2012). The following section will review the beliefs and concerns that practitioners hold about applying research to practice, in addition to the practical barriers that are likely hindering the adoption of EBP by these professionals.

Beliefs

A widely held belief amongst many practitioners, that clinical evidence is more valuable than scientific evidence, plays a strong role in maintaining the science-practice gap (e.g., Dozois, 2013; Pagoto et al., 2007). Over three decades ago, a survey mailed to members of the APA (Division of Psychotherapy) identified that over half of the therapists viewed their clinical experience as being the most important source of information to guide treatment, with only 10% of therapists choosing research as the most important source (Morrow-Bradley & Elliott, 1986). Recent studies have identified a similar pattern, where therapists rely strongly on clinical experience at the expense of considering psychotherapy outcome research. A notable study, conducted by Stewart and Chambless in 2007, surveyed 519 psychologists in independent practice to investigate attitudes and beliefs towards EBP and research in general. The study concluded that clinicians strongly to moderately agreed that their clinical experience influences their treatment decisions, but only mildly agreed that research on treatment outcomes affects their treatment decisions (Stewart & Chambless, 2007). Several researchers have replicated these findings (e.g., Cook, Schnurr, Biyanova, & Coyne, 2009; Nelson, Steele, & Mize, 2006; Riley,

Schumann, Forman-Hoffman, Mihm, Applegate, & Asif, 2007), suggesting that practitioners prefer to rely on their previous experience rather than the recommendations provided by research. A 2020 national study recently confirmed these findings amongst psychotherapy service providers in Canada as well (Middleton, Kalogeropoulos, & Drapeau, 2020). Survey respondents indicated a heavy reliance on personal opinion, clinical intuition, and prior professional experience, with a lower reliance and consideration of the best available research (Middleton et al., 2020).

These beliefs may belong to a wider misconception that EBP (i.e., the process of integrating evidence, clinical judgment, and patient characteristics into clinical decisions) refers solely to the use of EST's (i.e., treatment protocols that are supported by research evidence) at the expense of clinical judgment (e.g., Pagoto et al., 2007; Thyer & Pignotti, 2011). In other words, there is confusion amongst professionals regarding the difference between EBP and ESTs (Thyer & Pignotti, 2011). ESTs are only one example of what may constitute evidence and may not always be the optimal treatment choice depending on the skill set of the clinician, available resources, and patient characteristics (Beidas & Kendall, 2010; Schlosser & Sigafoos, 2008; Westen, Novotny, & Thompson-Brenner, 2005). Thus, in contrast to what many practitioners believe, an EBP approach recommends the equal consideration of all the above-mentioned variables in the decision-making process. Practitioners who hold these misconceptions tend to perceive EBP as a means of forcing psychology to become a hard science, while diminishing the discipline's humanity (Pagoto et al., 2007). For example, a participant in Pagoto and colleagues (2007) qualitative study examining the facilitators and barriers to the implementation of EBP identified that "evidence-based practice is synonymous with work drained of individuality, creativity, warmth, humanity, and caring." (p. 699).

Other beliefs, including that all treatments are equivalent and therapeutic alliance is all that matters, help maintain the science-practice gap. Practitioners who subscribe to the latter belief hold strongly that the relationship with the therapist, hope, and expectation of change are the only requisites for effective treatment (Riley et al., 2007; Stewart, Chambless, & Baron, 2012). Moreover, the belief that EBP requires practitioners to solely follow treatment manuals in a robotic fashion when delivering services to clients (Stewart et al., 2012) certainly does not encourage practitioners to incorporate this approach into practice.

Concerns

Beyond some of the misconceptions and beliefs that practitioners may hold, specific concerns have been discussed in the literature as barriers to a greater adoption of EBP. Practitioners question the degree to which research findings are representative of patients in clinical settings (Hunsley, 2007; Kazdin, 2008; Shafran et al., 2009; Stewart et al., 2012). Specifically, it is argued that most treatment studies have tended to exclude participants with comorbid disorders, despite epidemiological studies demonstrating that comorbidity rates in the general population can exceed 40% (e.g., Van Loo & Romeijn, 2015). Moreover, it is believed that the severity of symptoms found in patients in research trials is lower than those obtaining services in clinical settings (Hunsley, 2007; Kazdin, 2008). Practitioners have thus argued that research based on less severe and less comorbid patients has a limited generalizability to their own practice (Shafran et al., 2009; Stewart et al., 2012). In fact, the use of randomized controlled trials as the gold standard for EBP research has generally been criticized for these reasons (Stewart & Chambless, 2007; Westen et al., 2005).

Although some of these concerns may be valid, other researchers have argued that the controlled setting in which research takes place is essential to safeguard against biases that may

skew practitioners' perceptions of patient outcomes. Though many practitioners are confident in their abilities to assess client improvement and deterioration, research suggests otherwise. Not just as psychologists, but as humans in general, we are prone to a range of biases that may interfere with our ability to accurately assess situations related to our performance. A consistent finding in the literature is not only that individuals see themselves as more able than statistically probable, but that their self-judgments surpass their ability (e.g., Elaad, 2003; Walfish, McAlister, O'Donnell, & Lambert, 2012). Indeed, scholars have repeatedly concluded that self-assessments of skill, expertise, and knowledge are likely to be inaccurate (e.g., Dunning, Heath, & Suls, 2004; Walfish et al., 2012). This positive self-assessment bias has implications on the practice of psychotherapy, particularly with regards to how mental health practitioners rate their abilities to help clients and assess their ongoing progress or deterioration. In 2005, Hannan and colleagues examined psychotherapists' ability to predict deterioration in a sample of patients undergoing psychotherapy. These researchers found clinicians were only able to identify 1 of 40 (2.5%) individuals who eventually left treatment worse off than when they began treatment. Therapist estimates of positive outcomes (91%) were more than double those actually found (40%) (Hannan et al., 2005). Other studies have replicated these findings demonstrating a positive self-assessment bias amongst professionals (e.g., Dunning et al., 2004; Walfish et al., 2012). Psychologists are also susceptible to confirmation bias, whereby they may favor information that confirms their previously existing beliefs or biases (Garb & Boyle, 2015). In other words, new information that contradicts one's belief about the efficacy of a specific intervention or the perceived progress of a client may be disregarded unintentionally. In sum, Garb and Boyle (2015) discuss how these cognitive biases make it difficult for practitioners to

learn from clinical experience and highlight the importance of objective measures and data within the practice of psychotherapy.

It is important to note that some of the literature on EBP presents opposing findings to those discussed above, whereby some studies have found that clinicians may not be as negative about research as previously suggested (e.g., Borntrager, Chorpita, Higa-McMillan, & Weisz, 2009; Stewart & Chambless, 2010). For example, Stewart and colleagues (2012) found that clinicians do not typically object to the general idea of empirical data. In fact, most of the clinicians surveyed for their study expressed a positive opinion about outcome research. Other researchers have replicated these findings, noting that many mental health professionals hold reasonably positive views of EBP and more generally, of the utility of research in informing clinical practice (e.g., Borntrager et al., 2009; Middleton et al., 2020). For example, in a very recent study investigating psychotherapy service providers' attitudes towards EBP in Canada, researchers determined that those surveyed in their study largely agreed with the importance of having many research knowledge sources for their practices (Middleton et al., 2020).

A possible explanation for these opposing findings may be the lack of research focus on the practical barriers to EBP adoption (Stewart et al., 2012; Stewart et al., 2012). In other words, some practitioners may be unwilling to consider an EBP approach due to certain beliefs, attitudes, or opinions, while other practitioners may be more open to the idea, yet constrained by practical factors such as time and training. Moreover, the demographics of the practitioners surveyed in studies about EBP adoption may also explain the contradicting findings, as age and training in particular seem to play a role in the espousal of EBP. As Gallo and Barlow (2012) point out, the adoption of EBPs is often seen as an all-or-nothing phenomenon in the literature, though the true picture may be more complex. The next section sheds light on the potential

practical barriers that may limit EBP adoption despite a practitioner's favorable view of research in practice.

Practical Barriers

Time and resources. Practitioners frequently mention time as a primary obstacle to engaging in EBP (Carstens, Panzano, Massatti, Roth, & Sweeney, 2009; Gallo & Barlow, 2012). According to Stewart and colleagues (2012), practitioners not only state that reading research is time consuming, but also that the reward in information is rarely worth the effort. Journal articles are often written for other researchers, replete with scientific language and statistics (Stewart et al., 2012). Clinicians have mentioned feeling overwhelmed by the sheer volume of information, thus limiting their interest and time dedicated to keeping up with the literature (Gallo & Barlow, 2012). According to Gallo and Barlow (2012, p. 97; see also Sackett et al., 1997):

> If clinicians subscribe to the EBP process, "they must first formulate questions about their patient's care. Second, they need to find the best information in the research literature to answer the questions. Next, they have to think critically about whether the information is valid and useful. Finally, they apply this information while evaluating the efficacy of their chosen strategies".

Many clinicians have described feeling overwhelmed by the steep learning curve associated with mastering this new approach (Gallo & Barlow, 2012) and many perceive that they do not have the time or money to "make the switch" to EBP (Carstens et al., 2009).

Clinical Decision Making. Dozois (2013), Past President of the CPA and Chair of the CPA's 2011 task force on EBP, pointed out that "EBP is a *process* by which the best evidence available is used to make optimal clinical decisions" (p. 5). Unfortunately, this process remains a challenge for many practitioners (Hunsley, 2007; Lilienfeld, Lynn, & Lohr, 2015; Norcross et

al., 2006). Both the APA and CPA task forces provide little to no guidance on how to integrate the individual components (i.e., best available research, patient preferences, and clinical experience) into the decision-making process (Lilienfeld et al., 2015). Clinicians are well aware that treatment should be tailored to meet the needs of individual patients (e.g., Kazdin, 2008), yet applying this decision-making process to each case seems vague and misunderstood. This confusion seemingly leads clinicians to rely on clinical experience exclusively as opposed to a more encompassing approach.

Training. One of the most frequently cited facilitators to EBP adoption is policy changes that increase the availability of training opportunities through graduate programs and continuing education workshops (Beidas & Kendall, 2010; Hershenberg, Drabick, & Vivian, 2012; Pagoto et al., 2007; Stewart et al., 2012). That said, there appears to be a dearth of these opportunities as many practitioners state that lack of training is restricting their ability to adopt an EBP approach (Lilienfeld et al., 2013; Pagoto et al., 2007; Stewart et al., 2012).

Graduate Training. Early training plays a critical role in the integration of science and practice (Hershenberg et al., 2012). Lilienfeld and colleagues (2013) found that resistance to EBP was notable for clinicians who were trained in graduate programs that did not value EBP and for clinicians who completed their training in the pre-EBP era. For example, Aarons and Sawitzky (2006) found that older practitioners were significantly more negative towards EBP than younger practitioners, and attributed this difference to training. Unfortunately, despite knowing that training has a strong impact on the later adoption of EBP, the integration of this type of training into master's and doctoral programs is still ongoing (Beck, Castonguay, Chronis-Tuscano, Klonsky, McGinn, & Youngstrom, 2014). Developing curriculums to teach EBP is no small task, and until a systemic and effective training curriculum is implemented across graduate

programs, young clinicians will continue to be undertrained in this approach and less likely to adopt it in their practice.

Continuing Education. Post-graduation, clinicians are expected to engage in continuing education that allows them to maintain, develop, and increase competencies applicable to their practice. As such, integrating EBP training within continuing education activities has of course been recommended as an effective means of reducing the science-practice gap. For example, according to the CPA task force report, it is recommended that CPA sections offering continuing education activities ensure that these offerings reflect EBP decision-making (Dozois et al., 2014). That said, little research has investigated to what extent continuing education offerings fit with the EBP approach, with the exception of a few studies. Stewart and Chambless (2010) found that only 4% of continuing education workshop offerings on the APA website were for ESTs (specifically). Similarly, Cook and colleagues (2008) examined the 261 advertisements for psychotherapy workshops in two bi-monthly clinical magazines, and found that the majority of advertisements were not for training in therapies that are known to have strong empirical support (i.e., ESTs). These studies (i.e., Cook et al., 2008; Stewart & Chambless, 2010) investigated the empirical status of the psychotherapies being taught specifically; however no studies investigating the degree to which continuing education workshops promote the general EBP approach were identified.

Perhaps, the statements put forth by regulatory bodies regarding the promotion of EBP via continuing education are inconsistent with the specific offerings being made to practitioners. Psychotherapy is sensitive to fads (Drapeau & Hunsley, 2014); therefore, regulatory bodies need to be careful not to promote training in therapies that do not have any empirical support. For example, in Quebec, psychologists and other health professionals who wish to offer training in

their areas of expertise apply for OPQ accreditation of their training, and these workshops are then promoted to practitioners by the OPQ. According to their accreditation policy, the OPQ requires that all psychotherapies offered for training be based on a recognized theoretical model of intervention, and involve either cognitive-behavioral, psychodynamic, systemic and theories of communication, or humanist psychotherapy (OPQ, 2018). Furthermore, when submitting their application for accreditation, trainers are required to report the evidence (described by the OPQ as peer-reviewed, empirical support) for the therapy, or mention that it is a novel therapy and provide references that demonstrate that it is nonetheless congruent with existing practices and in line with the field's current state of knowledge. That said, no research has yet examined if the psychotherapy workshops offered and promoted by the OPQ are indeed evidence-based.

Unfortunately, the overall resistance to EBP, stemming from specific beliefs, concerns and practical barriers, does not come without its consequences. The following section will discuss the impact that the science-practice gap has on psychotherapy service users.

Impact on Psychotherapy Service Users

According to Kazdin (2008), the greatest casualty of the science-practice gap is the public at large. Empirically supported psychological treatments have been developed for a range of disorders (e.g., Cognitive Behavioural Therapy for Major Depressive Disorder), yet research demonstrates that these treatments are not being provided to patients in routine clinical care (Harvey & Gumport, 2015; Lilienfeld et al., 2013; Shafran et al., 2009). Lilienfeld (2010) reviewed the literature and highlighted how most clients with depression and panic attacks do not receive scientifically supported treatments, most therapists who treat obsessive and compulsive disorder do not administer exposure and response prevention, the clear treatment of choice based on the literature, and approximately one third of children with autism receive non-scientific

interventions. It is without doubt that the provision of ineffective treatments can deter the public from seeking psychotherapy. This implies greater suffering on behalf of those who would benefit from psychotherapy and a greater reliance on pharmacology (Harvey & Gumport, 2015). In fact, there is evidence that medications are being prescribed for disorders for which a psychotherapy treatment is well established (Comer & Barlow, 2014). This is unfortunate given that patients tend to prefer psychotherapy over pharmacology (e.g., McHugh, Whitton, Peckham, Welge, Otto, 2013; Mergl et al., 2011; Van Schaik et al., 2004), and providing patients with their preferred treatment is associated with better treatment retention and clinical outcomes (e.g., Mergl et al., 2011; Swift, Callahan, & Collmer, 2011).

Moreover, as a fundamental principle of all health care professions, psychologists are expected to adhere to the ethical principal of nonmaleficence, which translates to "Above all, do no harm." That said, the safety and risks of psychotherapeutic interventions have often been neglected in research (Blease, Lilienfeld, & Kelley, 2016; Melchert, 2011). In 2007, Scott Lilienfeld proposed the idea of Potentially Harmful Therapies (PHT's), whereby he argued that some therapies can not only get in the way of service users benefiting from more effective interventions, they can also cause harm (Lilienfeld, 2007). Harm can be characterized in many ways, including symptom worsening, the appearance of new symptoms, heightened concern regarding existent symptoms, excessive dependency on the therapist, reluctance to seek future treatment and even physical harm (Lilienfeld, 2007). Lilienfeld (2007) argues that the effects of therapy are not at worse innocuous, but rather can do damage if used inappropriately.

This idea is especially pertinent to the emergence of "fad" therapies, which have not been examined empirically and have no data to support their use (Lilienfeld, 2007). As Drapeau and Hunsley (2014) point out, psychotherapy is sensitive to fads, and more often than not, no

consideration is given to demonstrating their efficacy and effectiveness. A national study conducted in 2016 determined that one in 20 patients who enter into psychological therapies report long-lasting negative effects of treatment. This deterioration in well-being may be explained by individual factors, though it may also be explained by the effects of the specific intervention. Little research has investigated the negative impact that psychotherapy can have (Blease et al., 2016; Melchert, 2011), which perpetuates the inaccurate assumption that psychotherapy carries negligible risk. Until this assumption is debunked, bridging the gap between science and practice may seem of lesser importance.

In a nutshell, a major impetus behind the EBP movement was the urgency to improve the quality of health care services offered to the public. Despite this, the beliefs and concerns of practitioners, in addition to practical barriers, have restricted the systemic reliance on science in professional psychology. As such, a significant gap remains between research and practice, and the harmful effects of non-researched or "fad" therapies remain under recognized. Service users may unfortunately be deprived of the high-quality evidence-based interventions that are best suited to help their condition and free of the side effects associated with pharmacological interventions.

Efforts to Encourage the Use of Science in Professional Psychology

Although the science-practice gap remains wide, significant efforts have been made to improve the situation and thus merit discussion. Supportive policies, training opportunities, and an adequate and relevant evidence base are listed as some of the most common facilitators to the adoption of EBP among practitioners (Pagoto et al., 2007). First, the quantity and quality of treatment outcome studies have increased dramatically (Thoma et al., 2012; Tolin et al., 2015; Yeomans, Levy, & Caligor, 2013), widening the availability of efficacy data for diverse

interventions and facilitating an evidence-based approach for practitioners. As described by Tolin et al., (2015, p. 332), “research evidence (including ESTs) forms the basis of clinical judgment, with additional selection and modification based on clinical expertise and patient characteristics.”

Another effort to disseminate research to practitioners has been via clinical practice guidelines published by various agencies and professional groups. For example, the National Institute for Health and Care Excellence (NICE) has been a leader in the development of guidelines. As previously discussed, clinicians lack the time and interest to retrieve and read journal articles, therefore NICE has aimed to facilitate this process. NICE guidelines make evidence-based recommendations for the care and services that are suitable for specific populations and presenting problems (National Institute for Health Care Excellence, 2015). All guidelines are based on the best available evidence existing at the time of its development, and updates are published as needed. Similarly, in recent years, the APA Advisory Steering Committee for the Development of Clinical Practice Guidelines was formed to provide research-based recommendations for the psychological treatment of particular disorders (Hollon et al., 2014). As such, clinicians wanting to adopt an EBP approach may consult practice guidelines to determine the appropriate interventions for their clients, as opposed to spending time scouring the literature.

Researchers “hypothesize that trainees whose early clinical and research experiences embody the integration of science and practice are likely to adopt and maintain this approach as they progress through subsequent stages of professional development” (Hershenberg et al., 2012, p. 2). Despite the claim that these kinds of training opportunities remain scarce, researchers have been working on providing an increasing number of practical recommendations related to

curriculum development, supervision, and practicum training (e.g., Beck et al., 2014; Hershenberg et al., 2012). Specifically, researchers have begun addressing training in the three components of EBP and deliver specific suggestions for curriculum development (e.g., Hershenberg et al., 2012). Moreover, specific models for training have been developed as well (e.g., Bearman, Wadkins, Bailin, & Doctoroff, 2015; Beck et al., 2014). For example, Norcross and Karpiak (2012) developed four seminal lessons that all psychology students can master, including 1) connecting to psychological science, 2) committing to evidence-based practice, 3) adapting treatment to the person, and 4) becoming all that a clinical psychologist can be (in contrast to providing only psychotherapy). Efforts such as these will undoubtedly facilitate the adoption of EBP and the bridging of science and practice amongst the future generations of practitioners.

Finally, practice research networks (PRNs), which have been in place in the United Kingdom and the Unites States for some time, are a relatively recent initiative in Canada to address the science-practice gap. PRNs aim to improve clinical practice while simultaneously informing clinical research. These networks enable partnerships between researchers and clinicians "thereby linking the realities of routine care with the methodological rigor required to successfully understand and overcome implementation issues" (Lucock et al., 2017, p. 919). PRNs require that practitioners and researchers overcome attitudinal, economic, and practical barriers to form collaborative relationships in order to reduce the translational gap between science and practice (Tasca, n.d.). Currently, two PRNs exist in Canada, namely the Psychotherapy Practice Research Network of the University of Ottawa and the Ottawa Hospital (PPRNet) and The Ontario Practitioner-Researcher Network (OPRN). The CPA encourages

researchers and clinicians to get involved in PRNs should they wish to collaborate on the initiative to ultimately improve the mental health of the population.

Summary and Gaps in Extant Scholarship

In summary, although practitioners are likely to agree that professional practice should be based on science (Drapeau & Hunsley, 2014; Lilienfeld, Ritschel, Lynn, Cautin, & Latzman, 2015; Ogrodniczuk, Piper, Joyce, Lau, & Sochting, 2010), the gap between science and practice is still very much alive. This gap holds important consequences for the credibility of professional psychology and for the service-users who may be deprived of the appropriate and best quality services in psychotherapy. The efforts to rectify the gap on behalf of regulatory bodies, both at the federal and provincial levels, have clearly fallen short. A continued examination of the science-practice gap is essential, and new approaches to solving this issue are more than necessary.

This review highlighted many of the barriers towards the better integration of science and practice, while also shedding light on some of the facilitators that may encourage the use of science by professionals in psychology. In terms of barriers, both practical and attitudinal causes were discussed. However, many of the attitudinal barriers were specific to the EBP approach as opposed to the use of science in general. Future research may want to broaden this question and investigate the perception that professionals in psychology have of science in general. There may be opinions or answers that have yet to be uncovered as most of the research in this area is EBP-specific. Moreover, much of the literature on this topic is quantitative, obtained mainly via surveys. Whereas quantitative research tends to isolate and tightly control variables, predict phenomena, and replicate truths (Roberts & Povee, 2014), qualitative research can allow for more flexibility when trying to understand phenomena. Future research should consider

qualitative studies to examine how professionals in psychology perceive the value of science in psychotherapy, as this approach may reveal important nuances moving forward and has yet to be explored in the literature thus far.

In terms of the facilitators that may encourage the use of science by professionals in psychology, in addition to better dissemination of research findings, one of the best opportunities appears to be via training opportunities. Researchers have begun working on curriculums and courses to be integrated into educational institutions and graduate programs, but research in the continuing education sphere is limited. Many clinicians opt to attend workshops as part of their continuing education. In fact, psychotherapy providers in Quebec are permitted to complete up to 85 of their 90 mandatory continuing education hours via OPQ-approved workshops (OPQ, 2018). As such, the content of these workshops can significantly influence the practice of these professionals. There is a dearth of research examining the quality of continuing education offerings, whereby the extent to which the content is based on research is still unknown. It would be important to examine the types of interventions and psychotherapies that are being trained to clinicians via these workshops, to determine if they are grounded in science. Ultimately, the organizations offering continuing education activities to professionals have a duty to promote science in psychology, therefore an investigation of the current state of practice is warranted.

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Brief Overview

Chapter 1 showed that the science-practice gap in psychology is maintained by several factors, such as attitudinal barriers (i.e., concerns and misconceptions) and practical barriers (e.g., time, resources). It discussed the efforts put forth by psychology regulatory bodies and associations to encourage the use of science in clinical practice and other facilitators that currently exist. For example, training opportunities are viewed as optimal ways in which the integration of science and practice can be taught and promoted. That said, the continuing education opportunities available to practitioners throughout their career and the extent to which they are grounded in science has yet to be investigated. Regarding the attitudinal and practical barriers maintaining this infamous gap, although the research on this topic is dense, much of it focuses on evidence-based practice (EBP) specifically, which is an approach to clinical decision making. Few studies have examined practitioners' perceptions of the value of *science* in psychotherapeutic practice, a broader question that may uncover important insights to bridging this gap.

The main objective of this research project is thus to address these gaps in the literature to advance our understanding of the science-practice gap. Moreover, based on our findings, we aim to make specific recommendations to a regulatory body responsible for the profession. We chose to focus this thesis on the Quebec population of psychotherapy providers, as nearly half of all Canadian psychologists are practicing in this province. As such, recommendations will be made to the Ordre des Psychologues du Québec (OPQ; the College of Psychologists of Québec).

This thesis includes three studies to achieve these objectives. In the following first manuscript (Chapter 2), we present the result of the first study examining the quality of the continuing education trainings advertised by the OPQ to its members. Specifically, we analyzed

the therapeutic modalities advertised for training, in one given year, to determine the extent to which they were evidence-based. The findings shed light on the role that these trainings may have in the maintenance of the science-practice gap in Quebec.

Manuscript 2 (Chapter 3) reports findings from a scoping review (Phase one) and a survey (Phase two). The scoping review gathered the range of opinions that professionals in psychology have on the value of science in psychotherapeutic practice. The results of this review were then used to develop a survey, which was administered to Quebec psychotherapy providers. We examined the extent to which providers agreed with the opinions found in the literature, and the effect of personal and professional characteristics on responses. The findings shed light on how and why practitioners value science in psychotherapy, and potential avenues for improvement.

An overall discussion of the results, implications for future research, limitations to this research and conclusions are provided in chapter 4.

Chapter 2

Manuscript 1

(Paper published in *Canadian Psychology* journal)

Continuing education: A comprehensive review of the psychotherapy training offered to Quebec psychologists and implications for evidence-based practice

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Abstract

This comprehensive review examined the continuing education (CE) training offered to psychologists by the Ordre des Psychologues du Québec (OPQ [College of Psychologists of Québec]). The aim was to determine the extent to which the CE workshops advertised by the OPQ promote evidence-based practices. All 26 psychotherapies that advertised for training in the OPQ official journal, Psychologie Québec, were systematically evaluated to determine the quantity and quality of available evidence in support of their effects. The results indicate that nearly half of the psychotherapies promoted in OPQ-approved workshops are not yet supported with research. These findings suggest that psychologists in Québec may be receiving suboptimal training, which may in turn have a negative impact on psychotherapy service users. Recommendations for the regulatory bodies, the trainers developing and providing these CE workshops, and the psychologists enrolling in these workshops are discussed.

Keywords: psychotherapy, evidence-based practice, psychology, training

Continuing education: A comprehensive review of the psychotherapy training offered to Quebec psychologists and implications for evidence-based practice

Evidence-based practice (EBP) is an approach to clinical decision making and service delivery that integrates the application of the best available research, the practitioner's clinical expertise, the patient's characteristics, and the regular assessment of the effects of the services offered (e.g., Canadian Psychological Association [CPA], 2012). The best available research component of EBP was the first to receive attention when in 1993 the American Psycho- logical Association's (APA) Division 12: Society of Clinical Psychology Task Force proposed criteria for evaluating the outcomes associated with various psychological treatments. The procedure involved collecting published research on a given treatment, examining whether the findings support the efficacy of the treatment, and categorizing these treatments into one of two categories (i.e., a well-established treatment or a probably efficacious treatment) depending on the availability of supporting research. Treatments with sufficient research support were labeled as empirically validated treatments (EVTs; Chambless et al., 1998).

In 1998, the review process for EVTs, later referred to as empirically supported treatments (EST), was updated by Chambless and Hollon (1998). The replication of findings by a minimum of two independent investigation teams was emphasized, and the type of research designs required to determine efficacy was limited to randomized clinical trials or a series of carefully controlled single case experiments. The APA Division 12 website currently maintains a list of psychological treatments and reports the strength of the evidence in support of them. The status of each psychotherapy is reported as either strong (i.e., a well-established treatment), modest (i.e., a probably efficacious treatment), or controversial for each diagnosis. At present, many psychotherapies are qualified as having modest or strong research support for several

diagnoses. For example, APA has determined that there is strong research support for the efficacy of acceptance and commitment therapy (ACT) in treating chronic pain and modest research support for its efficacy in treating depression. Likewise, cognitive-behavioral therapy (CBT) has strong research support for the treatment of insomnia and dialectical behavior therapy has strong research support for treating borderline personality disorder. In total, the efficacy of 48 therapies for 30 diagnoses is currently reported by APA Division 12 (see https://www.div12.org/ psychological-treatments/).

Although there is some controversy about the Division 12 list of ESTs because of its focus on random clinical trials (i.e., efficacy studies; see Castelnuovo, 2010; Castelnuovo, Faccio, Molinari, Nardone, & Salvini, 2004; Herbert, 2003; Norcross, 2002; Tolin, McKay, Forman, Klonsky, & Thombs, 2015; Wachtel, 2010), this list remains widely used and promoted (Djulbegovic & Guyatt, 2014; Stewart & Chambless, 2010; Stewart, Stirman, & Chambless, 2012; Tolin et al., 2015). Furthermore, given its focus on outcome research, work on ESTs also served as an important catalyst for the movement toward EBP in psychology as we know it today. EBP was formally defined by the APA Presidential Task Force on Evidence-Based Practice in Psychology (2006) and by the CPA Task Force in 2011 (Dozois et al., 2014). Although the CPA statement on EBP is generally similar to the APA definition (i.e., both highlight the importance of clinician expertise, patient characteristics, and research, including outcome research), it is also different in a number of ways, including that the CPA statement proposes a hierarchy of evidence, with systematic knowledge syntheses providing the highest level of evidence, followed by primary research, then by expert consensus based on formal procedures to establish consensus; unpublished data, professional opinion, and prior professional experience provide the lowest level of evidence. In sum, an important, albeit not the only,

component of EBP according to both APA and CPA, is research evidence, with special attention paid to outcome research. It is indeed essential that psychologists have access to outcome research that outlines what psychotherapy approaches have been found to be most effective for which populations or disorders.

However, despite the availability of psychotherapies for which outcome data are available, an abundant number of new psychotherapies are regularly being developed, branded, and advertised to psychologists and other professionals. For example, since 2010, the *Ordre des Psychologues du Québec* (OPQ; the College of Psychologists of Québec) has advertised an increasing number of continuing education (CE) workshops for different psychotherapies in their flagship journal, *Psychologie Québec*, which is sent to all 8,700 psychologists in Québec (see Figure 1). The workshops for these psychotherapies are provided by psychologists and other health professionals who claim expertise in certain areas. It is worth noting that if trainers and workshop leaders wish to advertise their training in *Psychologie Québec*, they are required to have their workshop formally approved and accredited for CE purposes by the OPQ before it can be advertised. To accredit a training, the OPQ requires trainers to submit applications detailing the dates and locations of the workshops, the names and descriptions of the psychotherapies for which training was offered, and a list of references that provide direct support for the psychotherapy presented in the workshop. The OPQ requires that all psychotherapies offered for training be based on a recognized theoretical model of intervention, and involve either cognitive-behavioral, psychodynamic, systemic and theories of communication, or humanist psychotherapy (OPQ, 2019). Furthermore, when submitting their application for accreditation, trainers are required to report the evidence (described by the OPQ as peer-reviewed, empirical support) for the therapy, or mention that it is a novel therapy and provide references that demonstrate that it is

nonetheless congruent with existing practices and in line with the field's current state of knowledge.

Psychologists who practice psychotherapy in Québec register for OPQ accredited workshops in order to fulfill their 90 hr of mandatory CE. Psychologists are permitted to complete up to 85 of these mandatory hours via these OPQ-approved workshops (OPQ, 2019), while the remaining 5 hr must be in the form of individual supervision. As such, the CE of Québec psychologists can depend in large part on OPQ-approved workshops. For this reason, it is reasonable to expect the workshops to be of high quality. Indeed, psychologists should have reason to believe that the OPQ has diligently examined the teaching content of each workshop prior to providing accreditation and advertising it to Québec psychologists. Given the importance of EBP in psychology, the psychotherapies being advertised for training by the OPQ should be supported with research, especially because the OPQ endorsed the APA (but not the CPA) statement on EBP in psychotherapy in 2008.

However, research has yet to examine whether the screening process conducted by the OPQ is indeed effective in ensuring that only psychotherapies with some supporting research are advertised for training. Such research would not only indicate to what extent the therapies promoted in workshops advertised by the OPQ are supported by research, it would also provide insight into how the OPQ, the regulatory body for all 8,700 psychologists in Québec, has practices that are congruent with one of the key components of EBP, namely outcome research. Thus, the objective of the present study was to systematically search and synthesize the available evidence for each psychotherapy advertised for training in *Psychologie Québec*.

Method

This study received ethics approval from McGill University (REB #254–1215). It was conducted in five stages:(a) identification of psychotherapies advertised in *Psychologie Québec*, (b) contact with trainers and workshop leaders, (c) review of the literature, (d) synthesis of available research, and (e) categorization of each psychotherapy.

Identification of Psychotherapies and Targets

Three graduate-level research assistants and one senior researcher examined the six issues of *Psychologie Québec* that were published in 2015 to identify advertisements for psychotherapy training workshops. The issues from the year 2015 were of interest, given that the highest number of unique psychotherapies advertised between 2010 and 2017 was recorded that year (see Figure 1). The following information was extracted from each advertisement: (a) the name of the psychotherapy; (b) the name and professional title of the workshop trainer; and (c) if available, information concerning the psychotherapy's target, this target being defined as the focus of the therapy, for example one or many diagnoses (major depression, borderline personality disorder, etc.), an age group (children, elderly, etc.), a particular outcome (suicidal ideation, self-harm, etc.), or a particular setting (primary care, inpatient settings, etc.).

Contact with Trainers

All workshop trainers were then contacted via e-mail and asked to provide the following information if they consented to participate in the project: (a) the English term or name used to refer to the psychotherapy (if a French name was used in the advertisement), (b) additional information about the target, (c) the references they submitted to the OPQ for accreditation of their workshop, and (d) their opinion on whether or not they consider the psychotherapy they are advertising to be supported by outcome research.

Review of the Literature

Systematic reviews and meta-analyses. A search for systematic reviews and meta-analyses on the efficacy or effectiveness of each psychotherapy and target was conducted. For example, if an advertisement promoted a workshop on cognitive-behavioral therapy for children, we searched for systematic reviews and meta- analyses on that therapy (i.e., CBT) with that target (i.e., children). When an advertisement did not specify a target (and the trainer did not provide additional information when contacted) and promoted only a type of therapy (e.g., ACT), we searched for all meta-analyses and systematic reviews on that therapy, regardless of the target (i.e., without limiting to age groups, diagnoses, settings, or particular outcomes). These searches were completed using the Cochrane Database of Systematic Reviews (Cochrane Library), Ovid Medline (produced by the National Library of Medicine), and PsycINFO by using the search strategy described herein (for details, see supplemental material). The search for articles was limited to the last 10 years (2008 to 2018) and was conducted in August 2017. A second search was conducted in June 2018 to include any systematic reviews or meta-analyses that may have been published between both search dates. The abstract of each article was examined by the team to determine if it met the following inclusion criteria: (a) the study is a systematic review or meta-analysis, (b) the study discusses the appropriate psychotherapy and target, and (c) the study examines treatment outcomes.

Primary research studies. If meta-analyses or systematic reviews were not found for a therapy, we conducted a search for primary research studies in the Medline and PsycINFO databases, limited to the last 10 years (2008 to 2018), using the search strategy described here (see supplemental material). This search was conducted in February 2018. The researchers examined the abstracts of the search results to determine whether each article met the following

inclusion criteria: (a) the study discusses the appropriate psychotherapy (as labeled in the advertisement) and target when relevant and (b) the study examines treatment outcomes (efficacy or effectiveness). Furthermore, if the trainer of these therapies responded to our request for information, the references they provided were also examined.

Synthesis of Available Research

Each psychotherapy and target for which systematic reviews and/or meta-analyses were identified was examined by the team for conclusions regarding treatment outcome. For psychotherapies with targets, the procedure was conducted for each individual target. For example, 16 targets were reported for CBT in the advertisements we reviewed; a review of meta-analyses and systematic reviews examining the effects of CBT was therefore completed for all 16 targets. For psychotherapies without targets, a review of meta-analyses and systematic reviews was conducted on the psychotherapy in general, without specifying any target. The conclusions about the outcomes of the psychotherapy were recorded and summarized (see Appendix A).

When systematic reviews/meta-analyses were not identified, rapid reviews were conducted, focusing on primary research studies meeting inclusion criteria (see Khangura, Konnyu, Cushman, Grimshaw, & Moher, 2012 for a thorough overview of rapid review methodology). The following information was extracted from each study: (a) the number and type of comparison groups (waitlist, treatment-as-usual, etc.), (b) the study design (experimental, quasi-experimental, etc.), and (c) the statistical significance of the comparison(s). For psychotherapies with targets, the procedure was conducted for each individual target. Subsequently, findings for each target were summarized. For psychotherapies without targets, a

review was conducted on the psychotherapy in general (without specifying any target). See Appendix A for a summary of the outcome findings for those psychotherapies.

Categorization of Each Psychotherapy and Target

Based on the steps described in the preceding text, each psychotherapy and target was sorted into one of four categories: (a) Category 1—supported via systematic reviews and meta-analyses; (b) Category 2—supported as a well-established treatment; (c) Category 3—supported as a probably efficacious treatment; or (d) Category 4 —little to no research support. Hence, for Categories 2 (well-established treatment) and 3 (probably efficacious treatment), we used the criteria for ESTs according to APA Division 12 (Chambless et al., 1998; Chambless & Ollendick, 2001). This decision was based on the availability of these established criteria to categorize levels of efficacy.

According to these criteria, psychotherapies may be categorized as a well-established treatment if (a) at least two good between- groups experiments demonstrate efficacy in one of the following ways: superior (statistically significant) to a pill, psychological placebo, another treatment, or equivalent to an already established treatment or (b) a large series of single-case design experiments ($n > 9$) demonstrate efficacy. Moreover, all experiments must be conducted with treatment manuals, characteristics of the client sample must be clearly specified, and effects must have been demonstrated by at least two different investigating teams. Psychotherapies may be categorized as a probably efficacious treatment if (a) there are two experiments showing the treatment is superior (statistically significant) to a waiting-list control group or (b) one or more experiments meet all criteria for a well-established treatment with the exception of having effects demonstrated by at least two different investigating teams, or (c) there are a small series of single case design experiments (>3) using good experimental designs, comparing the intervention to

another treatment, using treatment manuals and clearly specifying characteristics of client samples. Psychotherapies may have been placed in several categories depending on the target being reviewed. Although this classification system focuses on efficacy studies (experimental designs), for the purposes of this study, we also retrieved and considered effectiveness (quasi-experimental designs) studies when conducting the rapid reviews.

Results

Descriptive Statistics

Psychotherapies and targets. A total of 26 unique psychotherapies were advertised in *Psychologie Québec* in 2015. Of those 26 psychotherapies, 16 had targets and 10 had no specified targets (i.e., the advertisement did not specify any target and trainers did not provide any further information about a target).

Workshops per psychotherapy. A total of 134 psychotherapy workshop advertisements were included in the six issues of *Psychologie Québec* throughout 2015. Advertisements for certain workshops were often repeated many times throughout the year. Twenty-seven percent of the advertisements were for ACT workshops (*n*=16), 21% were for CBT workshops (*n*=17), 7% were for mindfulness workshops (*n*=4), and 4% were for motivational interviewing workshops (*n*=2). The percentage of advertisements for the remaining psychotherapies was less than 3%.

Trainers. Thirty-five of the 59 trainers (59 %) contacted for this study responded to our communication. Of those 35 trainers, seven were CBT trainers, seven were ACT trainers, four were mindfulness trainers, and two were solution-focused therapy trainers. One trainer responded for each of the following therapies: clinical/medical hypnosis, emotionally focused therapy, eye movement integration (EMI), functional analytic psychotherapy (FAP), imago relationship therapy, impact therapy, inference-based therapy, meaning-focused bereavement

therapy (MFBT), mentalization-based therapy, mindfulness-based cognitive therapy, motivational interviewing, play therapy, positive psychology, therapeutic hypnosis and visualization therapy, and the Zak and Zoe approach. No response was received from trainers for eidetic psychotherapy, psychoanalytic couples therapy, schema therapy, conversational hypnosis, mindfulness with self-compassion, integrative body psychotherapy, and processual approach psychotherapy.

Review Results

Detailed results are shown in Table 1 and in Appendix A. Eleven of the 26 (42%) psychotherapies (and their corresponding targets, if applicable) included in this study had little to no research in support of their efficacy. Seven psychotherapies (and targets) were supported by systematic reviews and meta-analyses, and three psychotherapies (and targets) were deemed as probably efficacious treatments according to APA Division 12 criteria. Five psychotherapies had mixed results (i.e., fell in more than one of the four categories) depending on the target in question. For example, mentalization-based therapy was supported via systematic reviews and meta-analyses for borderline personality disorder; was categorized as a probably efficacious treatment for self-harm in adolescents; and had limited or no research support for anorexia nervosa, antisocial personality disorder, children, and families.

Of the 11 psychotherapies with little to no research in support of their efficacy, few had effectiveness studies demonstrating positive effects. Specifically, ACT for parental well-being (i.e., parental well- being and coping strategies when raising children with chronic pain or other disorders) had two studies supporting effectiveness, ACT for suicidal ideation had three studies supporting effectiveness, EMI for trauma had one study in support of effectiveness, FAP with no specific target had four studies supporting effectiveness, and psychoanalytic couples therapy for

couples had one study in support of effectiveness. Given the low number of effectiveness studies for each, these psychotherapies are still considered to have little research support. Studies supporting the effectiveness of the other psychotherapies and targets (i.e., those categorized as well-established, probably efficacious, or supported via systematic reviews and meta-analyses) are also outlined in Appendix A.

Trainers' Opinions Versus Review Results

Of the 35 trainers who responded to our request to participate in this study, 32 considered the psychotherapy they were advertising to be supported by research, and two did not consider their psychotherapy to be supported by research. One trainer declined to express an opinion as to whether they considered the psychotherapy they were advertising to be supported by research.

The opinion of each trainer regarding the research support for their psychotherapy was supported by the results of this review, with the exception of five psychotherapies. More specifically, the trainers of MFBT, FAP, the Zak and Zoe approach, impact therapy, and EMI deemed their psychotherapy to be supported by research, while our search for evidence yielded little to no research in support of their efficacy or effectiveness. As three of these four trainers (EMI and impact therapy was advertised by the same trainer) provided references in response to our request (no references were provided for FAP), a closer examination of the references provided by these trainers was thus conducted. Regarding MFBT, all of the references provided by the trainer focused on the treatment of bereavement in general or the use of meaning reconstruction in psychotherapy. The term MFBT was not found in the list of references provided. With regard to the Zak and Zoe approach, all references provided were concerning CBT in general, with the exception of one reference for a book titled *Projet Z: Programme de Thérapie Cognitivo-Comportementale Pour le Trouble d'Anxiété Généralisée Chez les Enfants*

[Project Z: Cognitive-Behavioral Therapy Program for Generalized Anxiety in Children]. This book focuses on the application of this therapeutic approach with children rather than presenting research demonstrating the efficacy or effectiveness of this intervention. For impact therapy, the references provided did not focus on that therapy but rather on broader topics such as counseling skills and neuroimaging studies. The trainer of impact therapy also advertised the training for EMI and provided references related to eye tracking and trauma. Only two studies (one exploratory; Struwig & Van Breda, 2012) and one master's thesis (Van der Spuy, 2014) examined EMI specifically; both of these were outcome studies examining the effectiveness of the therapy for symptoms of trauma. Researchers in both studies concluded that EMI was effective in treating trauma symptoms in African children; however, there remains no efficacy research on this therapy and only little support for effectiveness.

The two trainers who did not consider their psychotherapy to be supported by outcome research were advertising training in positive psychology and therapeutic hypnosis and visualization. Regarding positive psychology, our review identified three reviews supporting the efficacy and effectiveness of this psychotherapy. For therapeutic hypnosis and visualization, our review identified little to no research in support of its efficacy or effectiveness.

Discussion

This review serves as a critical evaluation of the empirical support of the psychotherapies advertised to psychologists in Québec by the OPQ. The findings discussed in this review can help determine whether psychologists are exposed to training that is informed by research.

The results of this review indicate that 10 out of the 26 psychotherapies advertised by the OPQ had research demonstrating their effects with corresponding targets. Research support might have been in the form of systematic reviews and meta-analyses or via primary research

studies. Five psychotherapies had mixed results, with some targets having substantial research support and others having little to no research support. Among those five psychotherapies were CBT and ACT, both of which had substantial research support for their targets, except one or two. In the case of CBT, dysthymia is the only target for which no systematic reviews or meta-analyses were identified; many of the reviews identified in our search did not specify outcomes for dysthymia, but rather general results for mood disorders. However, the three primary research studies examining CBT's efficacy for dysthymia met criteria for a probably efficacious treatment according to APA Division 12. Regarding ACT and the treatment of suicidal ideation, no systematic reviews, meta-analyses, or primary research studies examining efficacy were identified. However, the two primary research studies meeting inclusion criteria for this analysis concluded that ACT was nonetheless an effective treatment for reducing suicidal ideation. The lack of efficacy studies for this target is unsurprising given the complexity of conducting a randomized controlled trial (RCT) on this topic. The results for ACT and parental well-being were similar; no systematic reviews, meta-analyses or primary research studies examining efficacy were identified. However, the four primary research studies meeting inclusion criteria concluded that ACT was nonetheless an effective treatment for improving parental well-being. Specifically, all four studies supported ACT's positive effect on the psychological flexibility of parents with children suffering from chronic pain.

The other three psychotherapy modalities (emotionally focused therapy, mentalization-based therapy, mindfulness-based cognitive therapy) for which mixed results were found all warrant greater investigation. These mixed results further highlight that the demonstrated efficacy or effectiveness of a psychotherapy is highly dependent on the target in question.

Eleven out of the 26 psychotherapies advertised for training by the OPQ had little to no research supporting their effects with corresponding targets. For example, no research support was identified for impact therapy and any of its five targets, namely, burnout, depression, anxiety, interpersonal relations, and grief. Likewise, no research was found in support of integrative body psychotherapy or of eidetic psychotherapy. These results are consistent with APA Division 12, as the 11 psychotherapies for which we identified little to no research support are also absent from Division 12's list of psychological treatments that are regularly evaluated for efficacy. Overall, this data suggests that nearly half of the psychotherapies taught and promoted in OPQ-approved workshops are not yet supported by research. These results are concerning and hold important implications for practitioners, the OPQ, the trainers of these workshops, and ultimately for the public receiving these therapies.

Implications

Research suggests that practitioners do not tend to rely on research when choosing to train in and later deliver one form or another of intervention (Baker, McFall, & Shoham, 2008; Drapeau & Hunsley, 2014). When registering for CE activities, psychologists likely value OPQ accreditation. However, based on the results of this review, the OPQ appears to be accrediting workshops for psychotherapies that are not yet supported with research. Training in such psychotherapies is evidently a surprising choice given the abundance of established treatments already available. Not only does this potentially diminish the value of the psychologists' ongoing education, it may also hold consequences for the public receiving psychotherapy services. Although our study did not examine how the training advertised translates into new or different practices, if psychologists or other licensed therapists are providing suboptimal psychotherapies to their clients and patients, treatment outcomes may be diminished. In sum, the CE that

psychologists are currently receiving may be less than optimal and the usefulness of psychotherapy may be reduced for some service users.

The data from this review also hold important implications for the OPQ and other regulatory and licensing bodies. As a professional order (college) advertising training to its members, it is the OPQ's responsibility to ensure a certain level of quality in the content that is being taught. As evidenced by the current procedure in place to accredit workshops, an effort is indeed being made to regulate (and approve) the teaching content. However, the current procedure does not appear optimal based on the results of this review. Approximately half of the psychotherapies offered for training had little to no research to support their efficacy or effectiveness. These findings, in turn, risk diminishing the credibility of OPQ-approved CE workshops and could undermine the stronger scientific footing that psychotherapy has gained over the years. It may be relevant for the OPQ to develop a more stringent process for evaluating and approving psychotherapy workshops, with outcome research being a prioritized criterion or that the OPQ clearly indicates when a therapy is novel and not yet supported by any research. In addition to this, it is unclear why trainers, who are licensed professionals themselves, are promoting psychotherapies with little research support. By offering training to fellow professionals, these trainers are making a public statement about the value of these psychotherapies; though, it is possible that this is addressed and discussed by trainers when they deliver their training. However, and perhaps more importantly, this review identified five psychotherapies that trainers explicitly claimed to be supported by research, yet our review of the research and the trainers' own references suggest that this is not the case. In sum, both the trainers providing these workshops, and the OPQ who approves them are allowing psychologists to train on and eventually provide psychotherapies that have yet to be supported with research,

which in turn may have deleterious consequences on the service users who the OPQ has a mandate to protect.

Although our findings are specific to Québec and the OPQ, they may also be considered within the greater context of Canada, as other provincial psychological orders are also implementing CE requirements that bear similarities to the OPQ's. In Ontario, members of the College of Psychologists of Ontario (CPO) are required to complete a minimum of 50 credits of continuing professional development (CPD) every 2 years. CPD consists of professional activities (teaching, consultation, research, etc.) and CE activities, of which members must complete a minimum of 10 credits in either activity, with one credit generally equating to 1 hr of activity. However, unlike in Québec, the CPO does not approve or endorse any specific CE programs (CPO, 2017). Similarly, both the colleges of British Columbia and of Alberta have also implemented their own CE requirements. The College of Psychologists of British Columbia (CPBC) requires its members to complete 12 hr of formal programs (courses, workshops or conferences) yearly as part of its Continuing Competency Program (CPBC, 2018), whereas the College of Alberta Psychologists (CAP) requires its members to engage in and record ongoing learning activities as part of their annual Continuing Competency Program Report, although no specific number of required CE hours are specified by the College (CAP, 2010). Neither the CPBC nor the CAP provide specific criteria that CE courses need to fulfill in order to be considered eligible for CE. Given these provincial parallels of mandatory CE, we feel further investigation into whether our findings are generalizable to other provincial colleges is of importance to professionals. Furthermore, given that mandatory CE is a growing, yet relatively new implementation in many provinces, we also feel that further research in other provinces' CE

regulations and criteria needs to be undertaken in order to gauge the level of research support for the therapies being offered to psychologists in all provinces.

Despite its uniqueness and potential to inform policy and practices, this review also has several limitations. First, it focused on psychotherapy modalities in general, as opposed to specific interventions. For example, the efficacy of CBT was investigated, rather than the efficacy of interventions such as behavioral activation or cognitive restructuring that may make up the CBT approach. Given that our data were informed by the advertisements in *Psychologie Québec*, which promote psychotherapy approaches rather than interventions, we felt it was most informative to carry out the review process in this way. Second, the search focused on the workshops advertised in one given year. This year was selected because that was when most workshops were advertised. Although unlikely, it is possible that the workshops advertised that year are not representative of what is advertised in other years. Future studies, for example a follow-up study to be conducted in 5 years, could also help to determine whether there are changes in the workshops advertised over the years.

Another limitation of this review is related to the decision to omit "gray literature" in our searches for evidence; our review focused on established sources of peer-reviewed information. This implies that certain studies might have been missed and thus not included as evidence in our study. Given this, we cannot rule out that there are absolutely no outcome studies for some therapies; we can only state that no published studies are available, which is congruent with the CPA statement on EBP and on the OPQ criteria for the accreditation of workshops. There might be value, in future studies, to investigate the gray literature or perhaps opt to conduct a file drawer analysis to examine the issue more thoroughly. A third limitation is that this study relied on the use of APA Division 12 criteria to define two categories. There has been much debate

about the value of these criteria (Castelnuovo, 2010; Castelnuovo et al., 2004; Herbert, 2003; Norcross, 2002; Tolin et al., 2015; Wachtel, 2010), given their emphasis on efficacy studies. In order to mitigate this, we also reported on effectiveness studies when such studies were available. Another limitation is that this study focused on outcome research and did not consider studies that support (or invalidate) the theory behind a given type of psychotherapy. Hence, we cannot rule out that the theories behind some the therapies that were advertised have not been validated by research. This deliberate decision to focus on patient-centered variables, as opposed to proxy variables such as theoretical constructs, is however congruent with much of the research in psychology.

Nonetheless, the conclusions of this review suggest a call for action for three important parties: the OPQ, the professional trainers developing and providing these workshops, and the psychologists enrolling in these workshops. The OPQ may need to consider revising the procedures currently in place to evaluate, accredit, and advertise psychotherapy workshops, as psychotherapies that lack research support are currently being advertised to psychologists. The sole mandate of the OPQ remains the protection of the public. As such, when a therapy that is not supported by research is advertised, there may be value in indicating that this therapy is novel and not yet empirically supported. Trainers with a desire to facilitate workshops for fellow colleagues may need to rely on objective results (i.e., outcome studies) to validate their psychotherapies prior to providing training to professionals. If no outcome studies exist, it is recommended that such therapies be clearly labeled as not evidence based. Last, psychologists choosing to complete CE hours via workshops should be diligent when choosing psychotherapy trainings, even if these workshops have been accredited or endorsed by a credible organization such as a college.

There is certainly tremendous value in supporting innovation in psychotherapeutic practices, and our recommendations do not aim to stifle such innovation. But psychologists should know if the training they complete is supported by research. If no such research exists, then psychologists should implement progress tracking and outcome measuring procedures (see CPA, 2018; Overington & Ionita, 2012). As such, efforts on behalf of all three parties—regulatory bodies, trainers, and practitioners—are necessary to ensure that the highest quality services are being provided to psychotherapy service users.

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Table 1

Categorization of the Type of Research Support Identified for each Psychotherapy and Target

Systematic Reviews/Meta Analyses	*Well Established Treatment**	*Probably Efficacious Treatment**	Limited or No Research Support
Acceptance and Commitment Therapy *for* Mood Disorders; Anxiety Disorders; Eating Disorders; Borderline Personality Disorder Chronic Pain; Addiction; Occupational Stress; Professional Burnout; Children; Adolescents; Adults **Cognitive Behavioural Therapy** *for* depression in elderly; Depression; Anxiety in elderly; anxiety and Generalized Anxiety Disorder; Generalized Anxiety Disorder in children; Insomnia; Fatigue; Panic Disorder; Borderline Personality Disorder; Obsessive Compulsive Disorder; Oppositional Defiant Disorder; Bipolar Disorder; Adults; Comorbidities; Children; Adolescents	**Emotion Focused Therapy** *for* Couples	**Acceptance and Commitment Therapy** *for* Personality Disorders (other than BPD) **Clinical and Medical Hypnosis** *with* no target specified **Cognitive Behavioural Therapy** *for* dysthymia **Imago Relationship Therapy** *for* Couples **Mentalisation Based Therapy** *for* Self-Harm in Adolescents **Solution Focused Therapy** with *no target specified*	**Acceptance and Commitment Therapy** for Suicidal Ideation[e]; Parental well-being[e] **Conversational Hypnosis** *for* Grief **Emotion Focused Therapy** *for* LGBT populations **Eidetic Psychotherapy** *with* no target specified **Eye Movement Integration** *for* Trauma[e]**;** Psychosomatic illness, Decision Making, Recurrent Memories; Flashbacks; Sociopathy; Psychopathy; Schizophrenia; Borderline Personality Disorder; Bipolar Disorder; Anxiety; Psychiatric Clientele; Children **Functional Analytic Psychotherapy** *with* no target specified[e]

Inference Based Approach *for* Obsessive Compulsive Disorder

Mentalisation Based Therapy *for* Borderline Personality Disorder

Mindfulness *for* Adults; Anxiety; Depression; Children; Stress

Mindfulness Based Cognitive Therapy *for* Depression; Pain; Anxiety in Children

Mindful Self-Compassion *with* no target specified

Motivational Interviewing *with* no target specified

Play Therapy *for* Children

Positive Psychology *with* no target specified

Schema Therapy *with* no target specified

Impact Therapy *for* Depression; Burnout; Anxiety; Interpersonal Relationships; Grief

Integrative Body Psychotherapy *with* no target specified

Meaning Focused Bereavement Therapy *for* grief in adults

Mentalisation Based Therapy *for* Anorexia Nervosa; Antisocial Personality Disorder; Children; Families

Mindfulness Based Cognitive Therapy *for* Addiction

Processual Approach Psychotherapy *with* no target specified

Psychoanalytic Couples Therapy *for* Couples[e]

Therapeutic Hypnosis and Visualization *for* Children; Adolescents

Zak and Zoe Project *for* Generalized Anxiety Disorder in Children

Note. *According to APA Division 12

[e] Some effectiveness studies identified

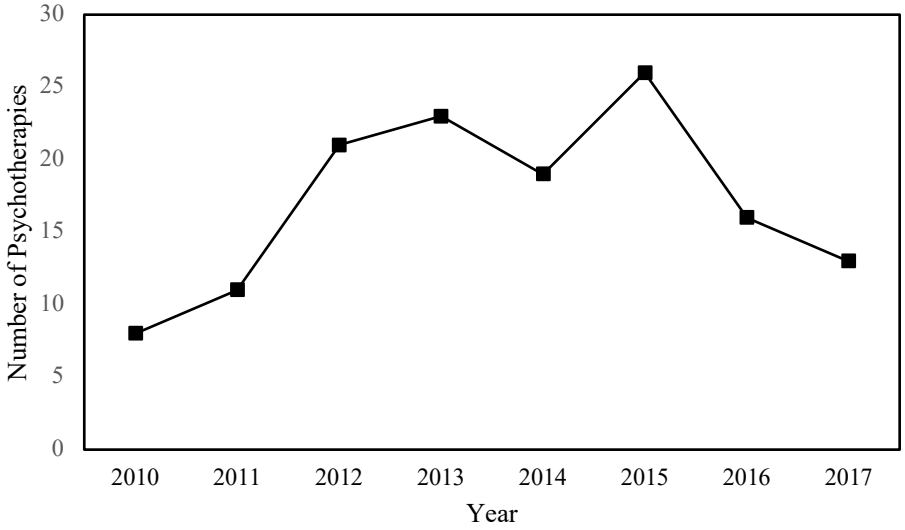

Figure 1. The number of psychotherapies advertised in the OPQ's *Psychologie Québec* from 2010-2017.

Appendix A: A Comprehensive Summary of the Research Identified for Each Psychotherapy and Target (if applicable).

Psychotherapy	Conclusion
1. Acceptance & Commitment Therapy	
Mood Disorders	Six reviews (four meta-analyses and two systematic reviews) concluded that ACT is an effective treatment for mood disorders (A-Tjak et al., 2015; Calzolari & Fioravanti, 2016; Hacker, Stone, & MacBeth, 2016; Powers, Zum, & Emmelkamp, 2009; Ruiz, 2010; Ruiz, 2012).
Anxiety Disorders	Twelve reviews (six meta-analyses and six systematic reviews) supported the use of ACT for the treatment of anxiety disorders (A-Tjak et al., 2015; Bluett, Homan, Morrison, Levin, & Twohig, 2014; Calzolari & Fioravanti, 2016; Hacker, Stone, & MacBeth, 2016; Kallapiran, Koo, Kirubakaran, & Hancock, 2015; Norton, Abbott, Norberg, & Hunt, 2015; Ost, 2014; Powers, Zum, & Emmelkamp, 2009; Ruiz, 2010; Ruiz, 2012; Swain, Hancock, Hainsworth, & Bowman, 2013; Twohig & Levin, 2017).
Eating Disorders	Two systematic reviews concluded that ACT is an effective form of treatment for eating disorders (Ducasse & Fond, 2015; Godfrey, Gallo, & Afari, 2015). However, a 2017 systematic review (Linardon, Brennan, Fairburn, Fitzsimmons-Craft, & Wilfley) concluded that ACT is not an empirically supported treatment for eating disorders.
Personality Disorders	Three reviews (two meta-analyses and one systematic review) determined that ACT is effective for the treatment of Borderline Personality Disorder (BPD) (Powers, Zum, & Emmelkamp, 2009; Ruiz, 2010; Ruiz, 2012). No other systematic reviews or meta-analyses were identified for personality disorders other than BPD. Thus, a rapid review was conducted on the four primary research studies meeting inclusion criteria for this study. Based on APA's Division 12 criteria for Empirically Supported Treatments, ACT for personality disorders has the necessary research support to be characterized as a "well-established" treatment (Chakhssi, Janssen, Pol, van, & Westerhof, 2015; Clarke, Kingston, James, Bolderston, & Remington,

	2014; Clarke, Kingston, Wilson, Bolderston, & Remington, 2012; Morton, Snowdon, Gopold, & Guymer, 2012).
Chronic Pain	Twelve reviews (three meta-analyses and nine systematic reviews) supported the use of ACT for the treatment of chronic pain (Barrett & Chang, 2016; Castelnuovo et al., 2016; Ducasse & Fond, 2015; Ost, 2014; Hann & McCracken, 2014; Hughes, Clark, Colclough, Dale, & McMillan, 2017; Powers, Zum, & Emmelkamp, 2009; Ruiz, 2010; Ruiz, 2012; Schütze et al., 2018; Veehof, Oskam, Schreurs, & Bohlmeijer, 2011; Veehof, Trompetter, Bohlmeijer, & Schreurs, 2016).
Addiction	Five reviews (three meta-analyses and two systematic reviews) demonstrated that ACT is effective in treating addiction (A-Tjak et al., 2015; Perry et al., 2015; Powers, Zum, & Emmelkamp, 2009; Ruiz, 2010; Ruiz, 2012). Specifically, Perry et al. (2015) found that ACT resulted in higher levels of abstinence when compared to other psychosocial therapies and a control group. Moreover, Powers, Zum, & Emmelkamp (2009) found ACT to be more effective in treating addiction than TAU and a 12-step facilitation treatment.
Suicidal Ideation	No systematic reviews or meta-analyses examining ACT for suicidal ideation were identified. Thus, the two primary research studies meeting inclusion criteria underwent a rapid review (Ducasse, René, Béziat, Guillaume, Courtet, & Olié, 2014; Walser et al., 2015). Although both studies found statistically significant effects, comparisons were not made between ACT and waitlist control groups, pill, psychological placebo, or other treatments. Rather, these studies compared the effects of ACT at baseline and post-treatment. Thus, ACT for suicidal ideation cannot be categorized as a "well-established" treatment or a "probably efficacious treatment" based on APA's Division 12 criteria. Further research is warranted.
Occupational Stress	A 2009 meta-analysis by Powers, Zum, & Emmelkamp determined that ACT is more effective in treating occupational stress when compared to a waitlist condition.
Professional Burnout	One systematic review (Rudaz, Twohig, Ong, & Levin, 2017) concluded that ACT is an effective treatment for professional burnout.
Children and Adolescents	Four reviews (two systematic reviews and two meta-analyses) supported the use of ACT for children and adolescents. Two meta-analyses found ACT to be an effective treatment for anxiety, depression, and OCD spectrum disorders in youth (Bluett, Homan, Morrison, Levin, Twohig, 2014; Kalliparan, Koo, Kirubakaran, Hancock, 2015). Furthermore, two systematic reviews deemed ACT is an efficacious treatment for a multitude of presenting problems in youth, improved quality of life, greater psychological flexibility and well-being, school attendance, and pain impairment (Montgomery, Kim, Springer, 2013; Swain, Hancock, Dixon, &

	Bowman, 2015). One systematic review reported no changes in outcome measures after treatment with ACT amongst children with autism (Hourston & Atchley, 2017). However, only one out of the 14 studies included in this systematic review examined ACT.
Parental Well-Being	No systematic reviews or meta-analyses examining the use of ACT for parents were specifically identified. Thus, the four primary research studies meeting inclusion criteria for this study underwent a rapid review. Of the four studies, two found statistically significant evidence for ACT's efficacy with parents (Kanstrup et al., 2016; Poddar, Sinha, & Mukherjee, 2015), while the other two studies only claimed to have found preliminary evidence (Martin et al., 2016; Wallace, Woodford, & Connelly, 2016). However, all four studies were comparing ACT's efficacy at various time points throughout treatment rather than comparing ACT's efficacy with another group (i.e., psychological placebo, another treatment, etc.). As such, ACT for parents cannot be categorized as a "well-established" treatment or "probably efficacious treatment" based on APA Division 12 criteria. Further research is warranted.
Adults	The majority of reviews examining the efficacy of ACT for various targets were based on studies using a sample of adults. No review identified in this study found ACT to be ineffective in an adult population specifically. ACT's efficacy appears to vary based on the disorder being treated rather than the population age range. Thus, based on the reviews identified in this study, ACT appears to be effective for adults when being used to treat problems such as mood disorders (e.g., Calzolari & Fioravanti, 2016), anxiety disorders (e.g., Twohig & Levin, 2017), eating disorders (e.g., Ducasse & Fond, 2015), Borderline Personality Disorder (e.g., Ruiz, 2012), chronic pain (e.g., Barrett & Chang, 2016), addiction (e.g., Perry et al., 2015), occupational stress (e.g., Powers, Zum, & Emmelkamp, 2009) and professional burnout (e.g., Rudaz, Twohig, Ong, & Levin, 2017).
2. Clinical / Medical Hypnosis	
No target specified	No systematic reviews or meta-analyses were identified. Thus, a rapid review of the four primary research studies meeting inclusion criteria for this study was conducted. All four studies found hypnosis to be superior (statistically significant) to the control condition. More specifically, these studies focused on the use of hypnosis for improving social and cognitive functioning in women diagnosed with

	breast cancer (Tellez, Juárez-García, Leticia, Medina De la Garza, & Sachez, 2017), for dentin hypersensitivity (Eitner, Bittner, Wichmann, Nickenig, & Sokol, 2010), morbidity and fetal loss for patients with intrauterine growth restriction and oligohydramnios (Shah, Thakkar, & Vyas, 2011), and anxiety during dermatological procedures (Shenefelt, 2013). However, given that all four studies compared hypnosis treatment to a control condition rather than another treatment, this therapy modality is deemed as a "probably efficacious treatment" based on APA Division 12 criteria.
3. Cognitive Behavioural Therapy	
Depression (elderly of 65+)	One systematic review (Wilson, Mottram, & Vassilas, 2008) concluded that CBT is an effective treatment for depression in elderly.
Depression	Five systematic reviews (Dennis & Hodnett, 2007; Macdonald et al., 2012, Martinez, Waddell, Perera, & Theodoulou, 2007; Nieuwenhuijsen et al., 2014; Pompoli et al., 2018) found that CBT is effective in treating depression. One systematic review (Dennis & Hodnett, 2007) demonstrated that CBT fares as well as antidepressant medication with severely depressed outpatients. Moreover, these systematic reviews supported the use of CBT for post-partum depression (Dennis & Hodnett, 2007), depression associated to child sexual abuse (Macdonald et al., 2012), and depression associated to panic disorder (Pompoli et al., 2018). One systematic review (Nieuwenhuijsen et al., 2014) also supported CBT provided online or by telephone in reducing depressive symptoms.
Dysthymia	One meta-analysis (Gould, Coulson, & Howard, 2012) examining CBT for depression in older people specified the inclusion of patients with dysthymia in their sample. However, this paper made no statements regarding CBT's efficacy for dysthymia specifically. The three primary research studies meeting inclusion criteria were included in the rapid review. Two of the three studies were comparing CBT to a Positive Psychology Intervention (PPI) (Chaves, Lopez-Gomez, Hervas, Vazquez, 2017; Lopez-Gomez, Chaves, Hervas, Vazquez, 2017) and one study was comparing CBT to Self-System Therapy (SST) (Eddington, Silva, Foxworth, Hoet, Kwapil, 2015). Both PPI and SST are yet to be considered as "well-established" treatments according to the APA, therefore the comparisons made in these three studies do not provide sufficient evidence to categorize CBT for dysthymia as a

	"well-established" treatment or a "probably efficacious treatment." Continued research is warranted.
Anxiety + elderly (65+)	One systematic review (Hunot, Churchill, Teixeira, & Silva, 2007) concluded that CBT is more effective than TAU and WL in reducing anxiety, worry, and depression symptoms in both adult and elderly groups. Specifically, six studies included in this systematic review were examining elderly populations exclusively.
Anxiety / GAD	Five systematic reviews (Hunot, Churchill, Teixeira, & Silva, 2007; James, James, Cowdrey, Soler, & Choke, 2015; Mayo-Wilson & Montgomery, 2013; Olthuis, Watt, Bailey, Hayden, & Stewart, 2016; Pompoli et al., 2018) supported the use of CBT for anxiety and Generalized Anxiety Disorder. All five reviews supported CBT for anxiety and GAD in adults, one provided specific support for the treatment of children and adolescents (James, James, Cowdrey, Soler, & Choke, 2015) and one provided specific support for the treatment of elderly (Hunot, Churchill, Teixeira, & Silva, 2007). Evidence was found in support for media-delivered CBT interventions (Mayo-Wilson & Montgomery, 2013) and Therapist-Supported Internet CBT (Olthuis, Watt, Bailey, Hayden, & Stewart, 2016), though the reviews indicated that the evidence was of low quality.
Generalized anxiety (Children aged 8-12)	One systematic review (James, James, Cowdrey, Soler, & Choke, 2015) concluded that CBT is significantly more effective than no therapy in reducing symptoms of anxiety in children and young people.
Insomnia	Five reviews (Brasure et al., 2016; Koffel, E.A., Koffel, J.B., & Gehrman, 2015; Navarro-Bravo, Párraga-Martínez, López-Torres Hidalgo, Andrés-Pretel, & Rabanales-Sotos, 2015; Trauer, Qian, Doyle, Rajaratnam, & Cunnington, 2015; van Straten, Van de Zweerde, Kleiboer, Cuijpers, Morin, & Lancee, 2018) demonstrated that CBT is an effective treatment for insomnia. Brasure and colleagues (2016) found CBT to be the most effective treatment for insomnia in the general adult population, and Koffel, E.A., Koffel, J.B., & Gehrman (2015) confirmed group CBT as an efficacious treatment for insomnia as well. Van and colleagues (2018) specified that CBT for insomnia is effective with large overall effects on insomnia severity, sleep efficiency, wake after sleep onset, and sleep onset latency.
Fatigue	One systematic review (Price, Mitchell, Tidy, & Hunot, 2008) concluded that CBT is more effective in reducing fatigue symptoms when compared to other psychological therapies.
Panic Disorder (w or w/o agoraphobia)	Two systematic reviews (Furukawa, Watanabe, & Churchill, 2007, Pompoli et al., 2018)) concluded that CBT is often superior to other psychological therapies when treating panic disorder with or without agoraphobia, with one systematic review

	(Furukawa, Watanabe, & Churchill, 2007) concluding that CBT may be chosen as the first line treatment for panic disorder with or without agoraphobia.
Personality disorders	Two systematic reviews (Marques, Barrocas, & Rijo, 2017; Storebø et al., 2018) examined CBT for Borderline Personality Disorder (BPD). One systematic review (Storebø et al., 2018) found no statistically significant effects for CBT on BPD, however, a 2017 review by Marques, Barrocas, & Rijo found that CBT, amongst other psychotherapies, was effective in reducing BPD core pathology. No reviews examining CBT for other personality disorders were found. No primary research study examining CBT for any other personality disorders met inclusion criteria for this study.
Obsessive Compulsive Disorder	15 reviews were found in support of CBT for OCD, claiming that this psychotherapy is effective for children, teenagers, and adults (Albert, Marazziti, Di Salvo, Solia, Rosso, Maina, 2017; Dèttore, Pozza, & Andersson, 2015; Freeman et al., 2014; Huang, Li, Han, Xiong, Ma, 2013; Ivarsson et al., 2015; Jónsson, Kristensen, & Arendt, 2015; Olatunji, Davis, Powers, & Smits, 2013; Öst, Havnen, Hansen, & Kvale, 2015; Öst, Riise, Wergeland, Hansen, & Kvale, 2016; Romanelli, Wu, Gamba, Mojtabai, & Segal, 2014; Rosa-Alcázar, Sánchez-Meca, Rosa-Alcázar, Iniesta-Sepúlveda, Olivares-Rodríguez, J., & Parada-Navas, 2015; Sánchez-Meca, Rosa-Alcázar, Iniesta-Sepúlveda, & Rosa-Alcázar, 2014; Skapinakis et al., 2016; Skarphedinsson et al., 2015; Wu, Lang, & Zhang, 2016). With regards to treatment-resistant OCD, a CBT addition to medication was found to be an effective strategy in a 2017 review by Albert and colleagues, with several other reviews confirming the efficacy of combined treatment (CBT + pharmacology) as well. Another review by Freeman et al. (2014) found family-focused CBT to be effective in treating youth with OCD. Only one 2016 review by Skapinakis and colleagues found CBT to be no different from a psychological placebo when treating OCD in an adult population.
Oppositional Defiant Disorder	A 2015 meta-analysis (Battagliese et al., 2015) examining 21 randomized controlled trials found CBT to be an effective treatment for Oppositional Defiant Disorder.
Bipolar Disorder	Eight reviews were found in support of CBT for Bipolar Disorder (BD) (Chatterton et al., 2017; Chiang et al., 2017; Gregory, 2010a; Gregory, 2010b; Gregory, 2010c; Salcedo et al., 2016; Szentagotai & David, 2010; Ye et al., 2016). Specifically, CBT has been shown to reduce depression levels, improve mania severity, decrease relapse rates and increase psychosocial functioning. One review highlighted the importance of including psychoeducation as part of CBT when treating BD, as it is particularly effective in increasing medication adherence (Chatterton et al., 2017). Many reviews suggest CBT as an adjunct to pharmacotherapy when treating mania

	in particular. One meta-analysis (Lynch, Laws, & McKenna, 2010) concluded that CBT was ineffective for BD and one systematic review found limited support for the usefulness of CBT in treating BD (Miziou et al., 2015).
Adults	The majority of reviews examining the efficacy of CBT for various targets were based on studies using a sample of adults. No review identified in this study found CBT to be ineffective in an adult population specifically. CBT's efficacy appears to vary based on the disorder being treated rather than the population age range. Thus, based on the reviews identified in this study, CBT appears to be effective for adults when being used to treat problems such as depression (e.g., Pompoli et al., 2018), anxiety (e.g., Mayo-Wilson & Montgomery, 2013), insomnia (Brasure et al., 2016), fatigue (e.g., Price, Mitchell, Tidy, & Hunot, 2008), Borderline Personality disorder (e.g., Marques, Barrocas, & Rijo, 2017), Obsessive Compulsive Disorder (e.g., Dèttore, Pozza, & Andersson, 2015), and Bipolar Disorder (e.g., Chatterton et al., 2017).
Comorbidities	Five systematic reviews supported CBT for medical comorbidities (Jassim, Whitford, & Grey, 2010; Martinez-Devesa, Perera, Theodoulou, & Waddell, 2010; Soo & Tate, 2007, Usmani et al., 2017; Van, Abrahams, & Sinclair, 2017). Specifically, CBT was found to be effective in treating depression and anxiety with individuals diagnosed with breast cancer, tinnitus, traumatic brain injuries, and HIV. Evidence was also found in support of treating individuals with chronic obstructive pulmonary disease, though authors noted that the evidence was of low quality (Usmani et al., 2017). One meta-analysis examining CBT for a broad range of different medical disorders comorbid with depression supported this form of intervention based on 23 studies included in their analysis (Van Straten, Geraedts, Verdonck de Leeuw, Andersson, & Cuijpers, 2010). Only one systematic review (Gertler, Tate, & Cameron, 2015) examining CBT for adults and children with depression and a traumatic brain injury found no compelling evidence in support of the intervention.
Children and Adolescents	Several systematic reviews supported the use of CBT for various disorders in children and adolescents. For example, one systematic review deemed this therapy as efficacious for Oppositional Defiant Disorder, a disorder that is diagnosed in children and adolescents (Battagliese et al., 2015). James, James, Cowdrey, Soler, and Choke's 2015 systematic review concluded that CBT was effective when treating anxiety and Generalized Anxiety Disorder in youth, and the use of this therapy for OCD in youth was also supported by the literature (e.g., Freeman et al.,

	2014; Ivarsson et al., 2015). No systematic review identified in this study found CBT to be ineffective for children or adolescents specifically.
4. Conversational Hypnosis	
Grief	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
5. Eidetic Psychotherapy	
No target specified.	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
6. Emotion Focused Therapy	
Couples	No systematic reviews or meta-analyses were identified for Emotion Focused Therapy (EFT). Thus, a rapid review of the five primary research studies meeting inclusion criteria for this study was completed. Of those five, three studies examined EFT's efficacy with couples by comparing baseline and post-treatment scores (Ghedin et al., 2017; MacIntosh, & Johnson, 2008; McLean, Walton, Rodin, Esplen, & Jones, 2013). One study compared EFT to a control group (Dalton, Greenman, Classen, & Johnson, 2013) and one study compared EFT to a medication group (Denton, Wittenborn, Golden, 2012). As such, the evidence obtained from those study designs places EFT for couples in the "probably efficacious treatment" group according to APA's Division 12 criteria.
LGBT	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
7. Eye Movement Integration	

Trauma	No systematic reviews or meta-analyses were identified for Eye Movement Integration (EMI). Thus, a rapid review of the one primary research study meeting inclusion criteria was completed. Although this study (Struwig & van Breda, 2012) demonstrated a significant reduction in trauma symptoms following treatment with EMI, no comparison group (e.g., placebo group, control group, etc.) was included. This, in addition to the lack of any other study meeting inclusion criteria, limits the potential for this therapy approach to be categorized as "well-established" treatment or "probably efficacious treatment" based on APA Division 12 criteria. Further research is necessary.
Psychosomatic illness	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Decision Making	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Recurrent memories	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Flashbacks	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Sociopathy	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Psychopathy	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Schizophrenia	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Borderline Personality Disorder	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Bipolar Disorder	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Anxiety	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Psychiatric clientele	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Children	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.

8. Functional Analytic Psychotherapy

No target specified	A 2017 comprehensive review by Kanter, Manbeck, Kuczynski, Maitland, Villas-Bôas, and Reyes examined 30 manuscripts, including qualitative studies, uncontrolled and controlled single-case designs, and group designs. The review concluded that although current research support for FAP is promising, it is insufficient to conclude that Functional Analytic Psychotherapy (FAP) is research-supported for specific psychiatric disorders. As such, a rapid review of the eight primary research studies meeting inclusion criteria for this study was completed. Four of those studies had no comparison group (Cattivelli, Tirelli, Berardo, & Perini, 2012; Landes, 2008; Landes, Kanter, Weeks, & Busch, 2013; Lizarazo, Munoz-Martinez, Santos, & Kanter, 2015). One study demonstrated that FAP was statistically superior to a wait-list condition in reducing psychological symptoms and distress (Maitland, 2016). The other three studies examined FAP as an add-on to meditation (Bowen, Haworth, Grow, Tsai, & Kohlenberg, 2012), in comparison to watchful waiting (Maitland, Petts, Knott, Briggs, Moore, & Gaynor, 2016) and in comparison to supportive listening (Maitland & Gaynor, 2016). As such, there is insufficient evidence to deem FAP as a "well-established" treatment or "probably efficacious treatment" based on APA Division 12 criteria.
9. Imago Relationship Therapy	
Couples	No systematic reviews or meta-analyses were identified for Imago Relationship Therapy (IRT). Thus, a rapid review of the four primary research studies meeting inclusion criteria for this study was completed. All four studies found IRT to be significant in terms of improving relationship satisfaction and empathetic responding in couples. Three of the four studies compared the intervention group to a control group (Christopher, & Nathan, 2017; Gehlert, Schmidt, Giegerich, & Luquet, 2017; Muro, Holliman, & Luquet, 2016a) and one study utilized a pre-post design (Muro, Holliman, & Luquet, 2016b). As such, IRT for couples would be categorized as a "probably efficacious treatment" according to APA Division 12 criteria.
10. Impact Therapy	

Burnout	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Depression	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Anxiety	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Interpersonal relationships	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Grief	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.

11. Inference Based Approach/Psychotherapy

Obsessive Compulsive Disorder	One review examining 34 articles concluded that the Inference Based Approach (IBA) is efficacious in decreasing OCD and secondary symptoms (Julien, O'Connor, & Aardema, 2016). More specifically, two randomized controlled trials showed that IBA is as efficacious as CBT. IBA is also suggested as a good alternative for patients who do not respond to CBT, or for those who are reluctant to comply with Exposure and Response Prevention Therapy.

12. Integrative Body Psychotherapy

No target specified	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.

13. Meaning Focused Bereavement Therapy / Constructivist Psychotherapy

Grief (adults)	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.

14. Mentalisation Based Therapy

Borderline Personality Disorder	One systematic review found Mentalisation Based Therapy (MBT) (both out-patient and partial hospitalization) to be effective for the treatment of Borderline Personality Disorder symptomology. Specifically, the therapy was effective for impulsivity, interpersonal problems, depression, and other general psychopathology (Stoffers-Winterling et al., 2012).
Self-harm (adolescents)	One systematic review included MBT in their analysis, however, results were only based on one study (Hawton et al., 2015). Results from that study suggested benefits for MBT over usual care, though results were not conclusive. Thus, the two primary research studies meeting inclusion criteria for this study underwent a rapid review. One study did not include a comparison group but rather compared pre-treatment to post-treatment (Bo, Sharp, Beck, Pedersen, Gondan, & Simonsen, 2017). However, the other study compared MBT to Structured Clinical Management and found a superior improvement in self-harm behaviours amongst adolescents for the MBT group compared to the SCM group (Bateman & Fonagy, 2009). As such, this study allows MBT to be categorized as a "probably efficacious treatment" according to APA Division 12 criteria.
Anorexia Nervosa	No systematic reviews or meta-analyses were identified. Thus, a rapid review of the one primary research study meeting inclusion criteria for this study was completed. The study (Balestrieri, Res, Zuanon, Pellizzari, Zappoli-Thyrion, & Ciano, 2015) compared MBT to a psychodynamic oriented treatment, and though both treatment approaches resulted in improved symptomology, the latter therapy is not yet considered an established treatment, therefore this single study is insufficient in order to categorize MBT for Anorexia as a "well-established" or "probably efficacious treatment" according to APA Division 12 criteria.
Antisocial Personality Disorder	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Children	One systematic review included MBT in their analysis, however, results were only based on one study (Hawton et al., 2015). Results from that study suggested benefits for MBT over usual care, though results were not conclusive. No primary research studies meeting inclusion criteria for this study were identified, therefore no rapid review will be conducted.
Families	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.

15. Mindfulness

Adults	A large number of systematic reviews examining the use of Mindfulness with an adult population were identified. To summarize, the efficacy of Mindfulness as a treatment for various disorders and problems amongst adults was well supported in the literature. For example, systematic reviews supported the use of this therapy for PTSD (e.g., Banks, Newman, & Saleem, 2015), pain (e.g., e.g, Castelnuovo et al., 2016), substance use (e.g., Katz & Toner, 2013; Li, Howard, Garland, McGovern, & Lazar, 2017), psychosis (e.g., Aust & Bradshaw, 2017), depression (Cavanagh, Strauss, Forder, & Jones, 2014), anxiety (e.g., Cavanagh, Strauss, Forder, & Jones, 2014), binge eating (e.g., Godfrey, Gallo, & Afari, 2015), intellectual disabilities (e.g., Chapman, Hare, Caton, Donalds, McInnis, & Mitchell, 2013), reducing stress amongst caregivers of individuals with dementia (e.g., Kor, Chien, Liu, & Lai, 2018) and autism spectrum disorder (e.g., Cachia, Anderson, & Moore, 2016), work-related stress (e.g., Ravalier, Wegrzynek, & Lawton, 2016), and mental health problems (i.e., stress, anxiety, depression) during pregnancy (e.g., Dhillon, Sparkes, & Duarte, 2017) and for patients with diabetes (e.g., Noordali, Cumming, & Thompson, 2017). Moreover, systematic reviews provided preliminary support for the treatment of weight loss (e.g., Katterman, Kleinman, Hood, Nackers, & Corsica, 2014), smoking (e.g., de Souza et al., 2015), and fibromyalgia (e.g., Lauche, Cramer, Dobos, Langhorst, & Schmidt, 2013).
Anxiety	Many systematic reviews examining Mindfulness and anxiety were identified. In sum, Mindfulness appears to be an effective intervention for anxiety (i.e., Social Anxiety Disorder, Generalized Anxiety Disorder, etc.) (e.g., Cavanagh, Strauss, Forder, & Jones, 2014). Moreover, systematic reviews supported the use of Mindfulness for anxiety during pregnancy (e.g., Dhillon, Sparkes, & Duarte, 2017; Matvienko-Sikar, Lee, Murphy, & Murphy, 2016), anxiety amongst individuals with Bipolar Disorder (e.g., Miziou et al., 2015) and anxiety amongst individuals with physical illnesses (e.g., McAbee, Labbe, & Drayer, 2014; Noordali, Cumming, & Thompson, 2017).
Depression	Many systematic reviews examining Mindfulness' efficacy in treating depression were identified. In sum, Mindfulness appears to be an effective form of treatment for depression in adults and teens (e.g., Cavanagh, Strauss, Forder, & Jones, 2014; Langer, Ulloa, Cangas, Rojas, & Krause, 2015), depression during pregnancy (e.g.,

	Dhillon, Sparkes, & Duarte, 2017; Matvienko-Sikar, Lee, Murphy, & Murphy, 2016), and depression in patients with physical illnesses (e.g., McAbee, Labbe, & Drayer, 2014; Noordali, Cumming, & Thompson, 2017).
Children	Several systematic reviews examining the use of Mindfulness with children were identified. To summarize, Mindfulness appears to be an effective treatment for anxiety in children (e.g., Martinez-Escribano, Piqueras, & Salvador, 2017) and an effective means of developing executive functioning in youth (e.g., Jansen, Schulz, & Nottberg, 2016; Mak, Whittingham, Cunnington, & Boyd, 2018). Moreover, there is preliminary evidence for the efficacy of Mindfulness-based intervention in school settings, whereby this therapeutic approach may improve overall educational and psychosocial outcomes for children (Felver, Celis-de Hoyos, Tezanos, & Singh, 2016).
Stress	Many systematic reviews examining the use of Mindfulness in the treatment of stress were identified. In summary, the literature supports the efficacy of mindfulness in treating stress during pregnancy (e.g., Dhillon, Sparkes, & Duarte, 2017), stress in the workplace (e.g., Ravalier, Wegrzynek, & Lawton, 2016) and stress amongst university students (e.g., O'Driscoll, Byrne, Mc Gillicuddy, Lambert, & Sahm, 2017; Regehr, Glancy, & Pitts, 2013).

16. Mindfulness Based Cognitive Therapy

Depression	Nine reviews (five systematic reviews and four meta-analyses) found Mindfulness Based Cognitive Therapy (MBCT) to be effective in the treatment of depression (Bojic & Becerra, 2017; Galante, Iribarren & Pearce, 2013; Hempel et al., 2014; Kallapiran, Koo, Kirubakaran, & Hancock, 2015; Kishita, Takei, & Stewart, 2017; Kuyken et al., 2016; Lenz, Hall, & Smith, 2016; Perestelo-Perez, Barraca, Penate, Rivero-Santana, & Alvarez-Perez, 2017; Van der Velden et al., 2015). One systematic review concluded that MBCT is effective in reducing rumination specifically (Perestelo-Perez et al., 2017), and one meta-analysis found MBCT to be particularly effective in preventing relapse (Kuyken et al., 2016). However, two systematic reviews (Gertler, Tate, & Cameron, 2015; Liu, Zeng, & Duan, 2018) found no significant effect when MBCT was used to treat depression associated with traumatic brain injuries. One other systematic review examining MBCT and depression did not conclude on this psychotherapy's efficacy, as MBCT was largely tested following pharmacotherapy (Clarke, Mayo-Wilson, Kenny, & Pilling, 2015).

Pain	Two reviews (one systematic review, one meta-analysis) found MBCT to be effective for the treatment of pain. Specifically, MBCT is efficacious in reducing pain, symptom severity, associated depression and anxiety, and improving quality of life (Lakhan & Schofield, 2013; Veehof, Trompetter, Bohlmeijer, & Schreurs, 2016)
Addiction	One review (Skanavi, Laqueille, & Aubin, 2011) examined MBCT's efficacy in treating addictive disorders and found statistically significant reductions in substance use. However, this review was not systematic nor considered a meta-analysis. No primary research studies meeting inclusion criteria for this study were identified, therefore no additional support for this psychotherapy and target was found. Greater investigation is warranted.
Anxiety in children	One meta-analysis (Kallapiran, Koo, Kirubakaran, & Hancock, 2015) found MBCT to be an effective treatment for anxiety and stress in children. Specifically, MBCT was better at reducing symptoms of anxiety and stress when compared to control conditions.

17. Mindful Self-Compassion

No target specified	One systematic review examining Mindful Self-Compassion (MSC) amongst other mindfulness-based psychotherapies was identified (Rudaz, Twohig, Ong, & Levin, 2017). The authors concluded that MSC is effective at reducing stress and burnout, increasing psychological flexibility, mindfulness, and self-compassion. However, results were less supportive of MSC's efficacy in improving overall psychological well-being.

18. Motivational Interviewing/Approach/Intervention

No target specified.	15 systematic reviews examining the efficacy of Motivational Interviewing (MI) were identified. Of these, eight systematic reviews focused on the use of MI to treat alcohol and drug dependence. The conclusions of these eight systematic reviews were heterogeneous, with five reviews supporting the use of this therapy for drug and alcohol dependence (Gates, Sabioni, Copeland, Le, & Gowing, 2016; Klimas et al., 2014; Minozzi, Saulle, De, & Amato, 2016; Smedslund et al., 2011; Stade et al., 2009) one review (Darker, Sweeney, Barry, Farrell, & Donnelly-Swift, 2015) concluding that there is insufficient evidence to support this therapy for drug

	dependence, one review (Foxcroft, Coombes,Wood, Allen, Almeida, & Moreira, 2016) finding no benefit for MI in the treatment of alcohol related problems, and one review (Terplan, Ramanadhan, Locke, Longinaker, & Lui, 2015) finding no difference between MI and usual care when treating drug dependence in pregnant women, specifically. The remaining seven systematic reviews deemed MI to be an effective therapy for the treatment of gambling (Cowlishaw, Merkouris, Dowling, Anderson, Jackson, & Thomas, 2012), stroke recovery (Cheng, Qu, Huang, Xiao, Luo, & Wang, 2015), and smoking cessation (Lindson-Hawley, Thompson, & Begh, 2015), the prevention of children's exposure to tobacco (Baxi et al., 2014), improved outcomes for youth living with HIV (Mbuagbaw, Ye, & Thabane, 2012), and the increase of contraceptive use (Lopez, Tolley, Grimes, Chen, & Stockton, 2013) and workers use of respiratory protective equipment (Luong, Laopaiboon, Koh, Sakunkoo, & Moe, 2016).
19. Play Therapy	
Children	One meta-analysis supported the use of Play Therapy for children (Lin & Bratton, 2015). Specifically, authors considered Play Therapy as a developmentally and culturally responsive counselling intervention effective across presenting issues in children. However, four systematic reviews did not find conclusive results regarding Play Therapy's efficacy for children. One systematic review found inconclusive results regarding the effectiveness of therapeutic play intervention in children's perioperative anxiety, negative behaviours, and postoperative pain (He, Zhu, Chan, Klainin-Yobas, & Wang, 2015). The other three systematic reviews examining Play Therapy for depression, severe acute malnutrition, and anxiety found low quality evidence and discussed inconclusive results (Daniel et al., 2017; Silva, Austregésilo, Ithamar, & Lima, 2017; Zhou et al., 2015). Given this discrepancy in results, a rapid review was conducted on the 56 primary research studies identified for this study. At least three experimental studies comparing the efficacy of Play Therapy to a control group or well-established treatment were found (e.g., Meany-Walen, Bratton, & Kottman, 2014; Stulmaker & Ray, 2015; Vancraeyveldt et al., 2015), placing this approach in the category of an "well-established" treatment according to APA Division 12 criteria.

20. Positive Psychology

No target specified	One systematic review and two meta-analyses deemed Positive Psychology to be an effective therapy, particularly for the treatment of depression. Specifically, Sin & Lyubomirsky's (2009) meta-analysis concluded that there is overwhelming evidence that Positive Psychology is effective. Moreover, Bolier and colleagues (2013) found Positive Psychology to significantly enhance subjective and psychological well-being and reduce depressive symptoms. Santos and colleagues (2013) also found the act of increasing positive emotion, developing personal forces, and seeking direction, meaning and engagement to be effective strategies for the prophylaxis and treatment of depression.

21. Processual Approach Psychotherapy

No target specified	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.

22. Psychoanalytic Couples Therapy

Couples	No systematic reviews or meta-analyses were identified. Thus, a rapid review of the one primary research study meeting inclusion criteria for this study was completed. Of note, the name of the therapy included in this research study is stated as "Psychodynamic Couple Therapy." This paper was included in this study given the similarity between the terms "psychoanalytic" and "psychodynamic" in addition to the overall lack of studies meeting inclusion criteria. Despite reporting large effect sizes, this study made use of a single group design by comparing pre and post treatment scores (Hewison, Casey, & Mwamba, 2016). As such, there is insufficient evidence to categorize this therapy as a "well-established" or "probably efficacy treatment" based on APA Division 12 criteria. Further research is necessary.

23. Schema Therapy

No target specified	Four systematic reviews examining the efficacy of Schema Therapy were identified. However, all four systematic reviews provided inconclusive statements regarding the efficacy of this therapy, due to a lack of studies and low quality evidence. Therefore, the 21 primary research studies meeting inclusion criteria for this study underwent a rapid review. At least two experimental studies comparing the efficacy of Schema Therapy to a control group or well-established treatment were found in our search (e.g., Carter, McIntosh, Jordan, Porter, Frampton, & Joyce, 2013; McIntosh et al., 2016), both of which supported the efficacy of Schema Therapy. As such, Schema Therapy can be categorized as a "well-established" treatment based on APA Division 12 criteria.
24. Solution Focused Therapy	
No target specified	One systematic review examining Solution Focused Therapy's (SFT) efficacy for fatigue associated to irritable bowel syndrome (IBS) found this therapy to be effective (Artom, Czuber-Dochan, Sturt, & Norton, 2016). One meta-analysis examined Solution Focused Brief Therapy (SFBT)'s efficacy in treating symptoms of internalizing disorders, and deemed the therapy as effective (Schmit, Schmit, & Lenz, 2016). However, it is important to note that SFBT is a shortened version of SFT. Given that only one systematic review was identified, and that the focus was on fatigue associated to IBS specifically, the twelve primary research studies meeting inclusion criteria for this study underwent a rapid review. Five of the studies were published by Knekt and colleagues who used data from the Helsinki Psychotherapy Study, which included 326 outpatients with mood or anxiety disorder who were randomly assigned to long-term psychodynamic psychotherapy (LPP), short-term psychodynamic psychotherapy (SPP) and solution-focused therapy (SFT) (Knekt, Laaksonen, Raitasalo, Haaramo, & Lindfors, 2010; Knekt et al., 2015; Knekt, Lindfors, Keinänen, Heinonen, Virtala, & Härkänen, 2017; Knekt, Lindfors, Sares-Jäske, Virtala, & Härkänen, 2013; Knekt, Virtala, Härkänen, Vaarama, Lehtonen, & Lindfors, 2016). Across the five studies, all three psychotherapies were found to be effective for certain variables being measured. With regards to SFT specifically, it was found to be effective in reducing smoking long term, increasing psychosocial functioning in the short term, improving work ability, and decreasing clinically elevated psychiatric symptoms. Two studies compared SFBT to a control condition, and demonstrated a significant increase in post-traumatic growth in

	mothers who have a child with autism (Zhang, Yan, Du, & Liu, 2014) and a significant increase in social adjustment amongst students (Saffarpoor, Farahbakhsh, Shafiabadi, & Pashasharifi, 2013). Two studies compared SFT to Treatment as Usual, demonstrating significant effects on short term fatigue and quality of life in patients with IBS (Vogelaare et al., 2014) and increased psychological functioning, social functioning, autonomy and social optimism in individuals with mild intellectual disabilities (Roeden, Maaskant, & Curfs, 2014). One study compared SFT to Cognitive Behavioural Therapy in the treatment of childhood anxiety and found no significant differences (Creswell et al., 2017), and the other two studies did not include any comparison groups (Bilge & Engin, 2016; Carrera et al., 2016). In sum, these results would place SFT in the "probably efficacious treatment" category, according to APA Division 12 criteria.
25. Therapeutic Hypnosis and Visualization	
Children	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
Adolescents	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.
26. Zak and Zoe Project / Projet Z	
Generalized Anxiety Disorder (Children)	No systematic reviews or meta-analyses were identified. Moreover, no primary research studies meeting inclusion criteria for this study were identified.

Linking Manuscript 1 and 2

Manuscript 1 presented findings about the quality of the continuing education (CE) trainings promoted by the psychology regulatory body in Quebec (i.e., the OPQ). To our knowledge, this is the first study to examine the extent to which the CE trainings offered to Quebec psychotherapy providers are evidence-based. In fact, studies examining the quality of CE are rare in all provinces and countries. Given that training opportunities are one of the facilitators to bridging the science-practice gap, the results of this study provide valuable insight into some of the factors that may be maintaining this gap in Quebec. Based on our findings, we developed recommendations that could be directly considered by the OPQ. In sum, this study contributed a novel approach to examining the science-practice gap and facilitated targeted recommendations given the focus on one specific population of psychotherapy providers.

Given the abundance of factors responsible for the science-practice gap, the next part of this thesis focused on a new component, namely, the attitudinal barriers, but again within the context of the Quebec population of psychotherapy providers.

The aim of the study presented in Manuscript 2 was to examine how professionals in psychology perceive the value of science in psychotherapeutic practice. Phase one included a scoping review to gather the range of opinions in the literature. Phase two presented the results of this scoping review in a survey administered to Quebec psychotherapy providers. This study provides valuable insight about how practitioners value science in psychotherapy and how the value may be improved to in turn help bridge the science-practice gap. Again, based on our findings, direct recommendations are proposed to the OPQ.

Chapter 3

Manuscript 2

(Paper submitted to *Canadian Psychology*)

The Value of Science in Psychotherapeutic Practice

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Abstract

The science-practice gap refers to the discrepancy between the availability of scientific evidence and its routine use in clinical practice. This gap negatively affects the quality of psychotherapeutic services offered to the public and the credibility of professional psychology. There are many putative causes of this gap, including attitudinal and practical barriers to better science practice integration. The goal of this paper was to provide a richer understanding of the attitudinal barriers by examining how professionals in psychology perceive the value of science in psychotherapy. We conducted a two-phase study.

Phase one involved a scoping review to identify what professionals in psychology are writing about the value (i.e., worth, usefulness, and importance) of science in psychotherapeutic practice. Six themes resulted from this review – half of which spoke to the value of science in psychotherapy (e.g., science protects service users). The remaining themes revolved around the limits of science and how its contribution to psychotherapy could be improved.

Phase two involved a survey and focused specifically on the Quebec population of psychotherapy providers as nearly half of all Canadian psychologists practice in this province. The survey presented the findings obtained in the scoping review to determine if the opinions expressed in the literature were shared by the clinicians actively conducting psychotherapy in Quebec. Providers agreed with most themes, though their conceptualization of science within psychotherapy differed. Differences in responses based on theoretical orientation and academic involvement were also noted.

Implications for the science-practice gap in Quebec and recommendations to the psychology regulatory body responsible in this province are presented.

Keywords: psychotherapy, science, evidence-based practice, science-practice gap

The Value of Science in Psychotherapeutic Practice

Psychological science has been informing mental health treatments since its establishment as a discipline in the late 19th century (Balance & Evans, 1975; Rieber & Robinson, 2001). Notable contributions include the application of the behaviourist principles of classical and operant conditioning to the treatment of anxiety and stress disorders and the cognitive revolution (Staddon & Cerutti, 2003; Trull, 2007; Wolpe, 1958; Wolpe & Plaud, 1997). Originating in the 1950s, the cognitive revolution underscored the importance of dysfunctional thought patterns (Folsom et al., 2016; Oatley, 2004) and ultimately led to the establishment of cognitive behavioural therapy, one of the most empirically validated psychotherapeutic treatments (David, Cristea, & Hofmann, 2018).

The scientific method itself is also applied to psychotherapeutic treatments to ensure that they are effective. For example, the American Psychological Association's (APA) Division 12 has been actively maintaining a list of well-established psychological treatments for over 30 diagnoses. To be considered well-established, treatments must be "supported by (a) at least two independently conducted, well-designed studies or (b) a large series of well-designed and carefully controlled single-case design experiments" (Tolin, McKay, Forman, Klonsky, & Thombs, 2015 p. 319), although a new set of criteria is being piloted (APA https://div12.org/psychological-treatments/frequently-asked-questions/). The Division 12's list is just one of the many initiatives that encourage and facilitate the integration of science into psychotherapeutic practice.

The most notable effort towards research practice integration is arguably the Evidence-Based Practice (EBP) movement, inspired by the medical field (Berg, 2019). EBP can be broadly defined as an approach to clinical decision making that encompasses three components, namely

the best available research, clinical expertise, and patient characteristics (e.g., CPA, 2012; DiMeo, Moore, Lichtenstein, 2012; Lee & Hunsley, 2015). The CPA endorsed the EBP model as a basis for guiding professional psychological practice in Canada (Dozois et al., 2014) and a Task Force on the Evidence-Based Practice of Psychological Treatments recommended that the CPA sections offering or sponsoring training activities ensure that they reflect EBP (CPA, 2012). Moreover, resources on the CPA website include guides describing and explaining EBP to the public and professionals, with the aim of helping service-users get the best psychological help by seeking effective psychological treatments. In sum, the CPA values EBP and has made important efforts to promote this practice amongst its professionals.

Practical barriers to the use of science in psychotherapy

However, mental health practitioners report practical barriers to the implementation of EBP and the use of science in their practice. First, psychologists frequently mention insufficient time and resources as primary obstacles to engaging in EBP (Carstens, Panzano, Massatti, Roth, & Sweeney, 2009; Gallo & Barlow, 2012). According to Stewart, Stirman and Chambless (2012), practitioners not only state that reading research is time consuming, but also that the reward in information is rarely worth the effort. Clinicians have mentioned feeling overwhelmed by the sheer volume of information and the learning curve, which limits their interest and the time dedicated to keeping up with the literature (Gallo & Barlow, 2012). Many also perceive that they do not have the time, money, guidance or training opportunities to "make the switch" to EBP (Carstens et al., 2009; Lilienfeld, Lynn, & Lohr, 2015; Lilienfeld, Ritschel, Lynn, Cautin, & Latzman, 2013; Pagoto et al., 2007). As explained by Rousseau and Gunia (2016), the ability to practice EBP implies knowing how to ask for, acquire, appraise, apply, and assess information. Both the APA and CPA task forces have been criticized for not providing enough guidance on

how to integrate the individual components in the EBP decision-making process (Lilienfeld et al., 2015). Such insufficient training and knowledge likely reduce clinicians' motivation to practice EBP and may even contribute to their resistance to this approach (Rousseau & Gunia, 2016).

Workplace conditions also hinder the practice of EBP. Lack of authority to use EBP (Dalheim, Harthug, Nilsen, & Nortvedt, 2012), limited autonomy and flexibility (Belden, Leafman, Nehrenz, & Miller, 2012), large heterogeneous caseloads, and lack of supervisory support (Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001; Melnyk et al. 2004; Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012) are only some examples of the many on-site barriers that may exist for mental health practitioners wishing to adopt the approach.

Efforts to encourage the use of science in psychotherapy

Practical efforts have been made to address some of these barriers and encourage the use of science by practitioners. First, various agencies and professional groups regularly publish clinical practice guidelines. These are evidence-based recommendations for the care and services indicated for specific populations and presenting problems. Indeed, the National Institute for Health and Care Excellence (NICE) has been a leader in the development of guidelines and their dissemination. Their publicly available guidelines are based on the best available evidence and updated as needed (see https://www.nice.org.uk). Second, researchers have also begun addressing training in the three components of EBP and delivering specific suggestions for curriculum development (e.g., Hershenberg, Drabick, & Vivian, 2012). For example, Norcross and Karpiak (2012) developed four seminal lessons that all psychology students can master, including 1) connecting to psychological science, 2) committing to evidence-based practice, 3) adapting treatment to the person, and 4) becoming all that a clinical psychologist can be (in

contrast to providing only psychotherapy). Third, the literature is replete with ideas and innovations to help make research-practice integration more feasible (e.g., Teachman et al., 2012). In fact, in 2012, an entire Special Section, developed by the American Psychology Association's Division 12 (Clinical) 2011 Committee on Science and Practice, was devoted to bridging the gap between research and practice. Finally, practice research networks (PRNs), which have been in place in the United Kingdom and the United States for some time, and more recently in Canada (see https://www.mcgill.ca/psy/practice-research-networks), are important initiatives for the integration of science and practice. PRNs aim to improve clinical practice while simultaneously informing clinical research (Tasca, Grenon, Fortin-Langelier, & Chyurlia, 2014). These networks enable partnerships between researchers and clinicians "thereby linking the realities of routine care with the methodological rigor required to successfully understand and overcome implementation issues" (Lucock et al., 2017, p. 919).

Yet, despite these translational efforts and growing pressures for accountability from third-party payers (Chambless, 2014), many psychologists and psychotherapists do not base their clinical practice on empirical evidence (e.g., Dozois, 2013; Drapeau & Hunsley, 2014; Gallo & Barlow, 2012; Lilienfeld et al., 2013; Middleton, Kalogeropoulos, & Drapeau, 2020; Rousseau & Gunia, 2016; Stewart et al., 2012). This is known as the *science-practice gap* (Lilienfeld et al., 2013). This gap is typically defined as the discrepancy between research findings and their application in routine clinical practice (Lilienfeld et al., 2013). Cautin (2011) defined the scientist–practitioner gap as the division that exists between psychologists who believe that clinical practice should be informed primarily by empirical research and those who have greater faith in clinical experience. In practice, the gap implies that some patients are still treated with

psychotherapeutic approaches and interventions that have yet to be deemed effective (Baker, McFall, & Shoham, 2009).

Attitudinal barriers to the use of science in psychotherapy

Though practical barriers can account for part of the science-practice gap, clinicians' attitudes also contribute to this divide. For example, many psychologists believe that clinical evidence is more valuable than scientific evidence (e.g., Dozois, 2013; Pagoto et al., 2007). Numerous practitioners also prefer to rely on their previous experience rather than the recommendations provided by research (e.g., Cook, Schnurr, Biyanova, & Coyne, 2009; Middleton et al., 2020; Nelson, Steele, & Mize, 2006; Riley et al., 2007). Thus, personal opinion, clinical intuition, and prior professional experience may often outweigh the importance of the best available research (Middleton et al., 2020). Furthermore, some practitioners believe that all treatments are equivalent, that therapeutic alliance is all that matters, and that the relationship with the therapist, hope, and expectation of change are the only requisites for effective treatment (Riley et al., 2007; Stewart et al., 2012). Concerns regarding the generalizability of research findings to clinical practice are also common (Hunsley, 2007; Kazdin, 2008; Shafran et al., 2009; Stewart et al., 2012). Indeed, psychologists have argued that research is based on patients presenting with fewer comorbidities and milder symptoms, which does not reflect their own practice (Shafran et al., 2009; Stewart et al., 2012).

The present study

Though information on EBP is readily available and important efforts have been made to integrate research and practice, not all practitioners rely on science in their work (Dozois, 2013; Drapeau & Hunsley, 2014; Gallo & Barlow, 2012; Lilienfeld et al., 2013; Middleton, et al., 2020; Rousseau & Gunia, 2016; Stewart et al., 2012). The practical and attitudinal barriers

discussed above provide some insight into the factors that perpetuate the science-practice gap. The goal of this paper was to provide a greater understanding of the attitudinal barriers by looking at a broader question: What is the value of science in psychotherapy for professionals in psychology? In other words, we sought to understand the conditions in which science is perceived to be useful or, on the contrary, irrelevant.

The first phase of this study involved conducting a scoping review to identify what professionals in psychology are writing about the value of science in psychotherapeutic practice. Specifically, all statements regarding the worth, usefulness, importance, advantages, or disadvantages of science, expressed by practitioners, researchers, or other experts in psychology, were of interest.

The second phase of this study focused specifically on the Quebec population of psychotherapy providers as it includes half of all Canadian psychologists. The findings from the scoping review in phase one of this study were used to develop a survey, which was then administered to this population. The aim of this survey was to first determine if the opinions about the value of science in psychotherapy expressed in the literature and identified in our scoping review were shared by the clinicians actively conducting psychotherapy in Quebec. Second, we aimed to examine if the personal and professional characteristics (e.g., age, primary therapeutic approach, practice setting, etc.) of respondents contributed to their opinions and attitudes expressed on the survey. It was our hope that developing a deeper understanding of the perspectives held by practitioners on the value of science in psychotherapy could ultimately allow us to formulate stronger and better targeted recommendations for bridging the science-practice gap. Moreover, with findings specific to the Quebec population of psychotherapy providers, we strived to make specific recommendations that could be considered by the

provincial regulatory body responsible for regulating the profession of psychotherapy in this province (i.e., the Ordre des Psychologues du Québec (OPQ; the College of Psychologists of Québec)).

PHASE I: Scoping Review - What are Professionals in Psychology Saying About the Value of Science in Psychology?

This scoping review aimed to identify the statements made about the value of science in psychotherapeutic practice by professionals in psychology in the past 10 years. The methodological framework adopted was based on the five stages suggested by Arksey and O'Malley (2005): 1) identify the research question; 2) identify relevant studies; 3) study selection; 4) chart the data; and 5) collate, summarize and report the results. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was adopted to ensure a transparent and accurate reporting structure (Moher, Liberati, Tetzlaff, & Altman, 2009). To maximise rigour, we integrated several key recommendations made by Levac, Colquhoun, and O'Brien (2010) on the process of scoping and the use of Arksey and O'Malley's (2005) framework.

1. Identifying the Research Question

We formulated one broad research question: What are professionals in psychology saying about the value of science in psychotherapeutic practice?

Levac et al. (2010) recommend that researchers combine a broad research question with a clearly articulated scope of inquiry. This includes defining key concepts and the target population. As such, we defined the concept of *value* in our research question as: the importance, worth, or usefulness of something (Oxford Languages). Our target population was defined as

professionals in psychology, which specifically included psychologists, psychotherapists, clinicians, practitioners, academics, and researchers in psychology.

2. Identifying relevant studies

The search protocol for this scoping review was developed by the team in collaboration with a research librarian. The protocol included selected keywords and database-derived synonyms to capture the highest possible proportion of relevant studies. Additional keywords were tested to determine whether their inclusion identified any further studies (See supplemental material for the database search protocol).

Three electronic databases (PsycINFO, Scopus, and ProQuest Dissertations & Theses Global), Google Scholar, and McGill's library catalogue of books were searched for this review. Records included for this scoping review were theoretical articles, policy statements, commentaries, editorials, reports, and book chapters. Review papers and empirical studies were excluded. Any other documents that addressed the research question were eligible. The searches were limited to records written in English or French and published in the past 10 years.

The original search was conducted on May 1, 2020, yielding 1810 records. A second search was conducted on October 27, 2021, to determine if new records meeting inclusion criteria had been published since the initial search. A total of 324 new records were added, including 5 records identified via hand-searching. After combining the records from both searches and removing duplicates, 2068 records were retained.

3. Study Selection

The first round of screening involved the examination of titles and abstracts. Review papers and empirical studies were excluded, as were records written in languages other than English or French or published more than 10 years ago. Records discussing topics irrelevant to

the research question were also excluded. We excluded 1981 records using these criteria. We then screened the full texts of the remaining 87 records, excluding 38 records which met exclusion criteria upon closer examination. Two records were then excluded during the data extraction phase because they were irrelevant to the research question. One record identified during the hand search was included in this review despite the year of publication (2006) falling outside of inclusion criteria. This record, the *American Psychological Association Presidential Task Force on Evidence-Based Practice*, was included given its strong relevance to the topic in question. Ultimately, 47 records were included in the analysis. A PRISMA flowchart summarizing the selection process is shown in Figure 1 (Moher et al., 2009).

All steps of the study selection process were conducted by a team of three psychology graduate students and a senior researcher. As recommended by Levac and colleagues (2010), the team met to discuss decisions surrounding inclusion and exclusion criteria at the beginning of the scoping process and several times throughout. Inter-rater reliability was assessed using *Rayyan* (https://rayyan.qcri.org), an online screening tool designed for scoping and systematic reviews. Cohen's kappa was calculated in both rounds of screening to assess the agreement between the raters. In the first round of screening, 10% of the records retained were screened by two trained reviewers, resulting in a moderate level of agreement (85.2%; $k = 0.45$). The conflicts were resolved by a senior graduate student and a senior researcher, and a consensus was reached for each case. Another round of inter-rater reliability was conducted on approximately 100 records, resulting in a substantial level of agreement between reviewers (94.2%; $k = 0.64$). As such, the two trained reviewers then independently reviewed the title and abstracts of the remaining records to determine if they met inclusion criteria. The second, more comprehensive review of

the full texts, was conducted by the same two reviewers with supervision and spot checks completed by a senior graduate student.

4. Charting the Data

A table was developed to chart the basic information of each record included in the review (Daudt, van Mossel, & Scott, 2013; Levac et al., 2010; Pham et al., 2014). The table was reviewed periodically and adapted to ensure a comprehensive representation of the data (e.g., columns were added, deleted, collapsed, or altered to accurately summarise key features). For each record, the following information was extracted: 1) the type of paper (e.g., theoretical article, policy statement), 2) all available information about the authors of the paper, and 3) the specific statements addressing the value of science in psychotherapeutic practice. In the rare case that an author's argument was not effectively summarized by one or few specific statements in the paper, the reviewer extracting the information was instructed to synthesize the argument in a sentence or two of their own.

5. Collating, Summarizing, and Reporting the Results

Scoping reviews require some analytic framework or thematic construction to present the existing literature (Arksey & O'Malley, 2005). First, a basic numerical analysis of the extent, nature and distribution of the studies included in the review was completed (Levac et al., 2010). Second, the literature was organized thematically into six categories of responses to the research question. Each of these themes was then divided into subthemes to provide a meaningful, yet complete mapping of the data. Best practices recommend that researchers creatively consider and choose the best approach to articulate findings to readers (Arksey & O'Malley, 2005; Levac et al., 2010; Peters et al., 2020). As such, the themes and subthemes were developed collaboratively by two members of the team.

RESULTS OF PHASE I (Scoping Review)

Nature and Distribution of the Records

Forty-seven records were included in this scoping review. Nearly half were published in the USA (21 records, 45%). The remainder were published in Europe (14 records, 30%), Canada (6 records, 13%), Asia (2 records, .05%), Australia (2 records, 0.05%), and South America (1 record; 0.02%). One record had no identifying information regarding geographical location.

The most common type of records included in this review were theoretical articles (21 records, 45%), followed by commentaries (20 records, 43%). Two book chapters (0.05%), two task force statements (0.05%), one presidential address (0.02%), and one keynote address (0.02%) were also included.

Author demographic information was documented using the information included in the publication itself and was supplemented by an online search for the author's name. Nearly all authors had clinical backgrounds, either currently working or having worked as clinicians (psychologists or psychotherapists). All authors were also involved in some way in academia, either as program directors, professors, research lab directors, or research chairs. In sum, the authors' backgrounds were similar: a mixed involvement in clinical work and academia. In addition, two records were written by doctoral students.

Thematic Analysis

The data extracted for this scoping review was categorized into six themes, each containing several subthemes. See Table 1 for the complete list of themes, subthemes, definitions, and sample statements. The number of records addressing each subtheme is also specified in Table 1.

Theme 1: Science is valuable, but not the only valuable element for psychotherapy. Most statements extracted in this scoping review were favorable towards the value of science in psychotherapy. However, in thirteen papers, authors also argued that science was not the only valuable element for psychotherapy, and that many other variables were equally, if not more important. Constructs such as ethics, values, the therapist themselves, client input, discovery, exploration, common factors, clinical intuition, wisdom, and judgment were mentioned as also essential to successful therapeutic outcomes (Allen, 2013; Berg, 2019; Berg, 2020; Berg & Slaattelid, 2017; Carere-Comes, 2015; Cerbone, 2017; Hagemoser, 2009; Hollon & Teachman, 2019; Iwakabe, 2013; Jacobs, Kissil, Scott, & Davey, 2010; Lindgren, Folkesson, & Almqvist, 2010; Thyer, 2015; Zeldow, 2009). Authors in four papers also argued that psychotherapy is both an art and a science (Fox, 2011; Jacobs et al., 2010; Powers, Rindler, & McCloskey, 2014; Zeldow, 2009). According to Powers et al. (2014), there are intangible, variable, and unpredictable aspects of therapy that point to therapy as an art more than a hard science.

Theme 2: Science can protect service-users engaging in psychotherapy. Another common theme that emerged in nine of the included records was that science can protect psychotherapy service-users. Specifically, several statements highlighted how science can safeguard from bias (Altimir, & Jimenez, 2020; Dozois, 2013; Engelhard, 2012; Lilienfeld et al., 2013), reduce errors in treatment selection and clinical decision making (Dozois, 2013; Sperry, 2015), and reduce the risk of harm for clients (Constantino, Coyne, & Gomez Penedo, 2017; Dozois et al., 2014; Engelhard, 2012; Newnham & Page, 2010; Purgato, Cuijpers, & Barbui, 2021).

Theme 3: Science can improve the practice of psychotherapy. Fifteen papers argued that science can improve the practice of psychotherapy. First, some authors mentioned

neuroscience and biological research as being valuable and essential for further advancements in psychotherapy (Allen, 2013; Chiesa & Healy, 2009; Fonagy, 2010). Others argued that science can improve psychotherapy by guiding treatment planning (APA Presidential Task Force on Evidence-Based Practice, 2006; Dobson & Beshai, 2013; Dobson, 2018; Powers et al., 2014) and clinical decision making (Thyer 2015, APA Presidential Task Force on Evidence-Based Practice, 2006), while ensuring ethical care (Dobson & Beshai, 2013; Dozois et al., 2014; Powers et al., 2014; Stricker, 2010). Some papers addressed the idea that scientific findings can indeed generalize to clinical populations, putting forth studies showing that effect sizes from research trials can reliably be replicated in community and routine settings (Dobson & Beshai, 2013; Shafran, 2011). Authors also discussed the idea that science can improve current psychotherapeutic treatments by investigating mechanisms of change and potential new applications (Altimir, & Jimenez, 2020; APA Presidential Task Force on Evidence-Based Practice, 2006; Constantino et al., 2017; Engelhard, 2012; McWilliams, 2017; Stirman & Beidas, 2020). Finally, one paper focused on implementation science and argued that it has the potential to improve psychotherapy by resolving the science-practice gap (Stirman & Beidas, 2020).

Theme 4: Science can be limited in its clinical applicability to psychotherapy.

Thirteen records discussed the limitations of science within the practice of psychotherapy. Many authors argued that science does not focus on the problems that clinicians treat in everyday practice (Allen, 2013; Cierpiałkowska & Sęk 2016; Fonagy, 2010; Goldfried, 2013; Grawe-Gerber, 2010; Goldfried et al., 2014; Iwakabe, 2013; Johnston, 2016; Zeldow, 2009). Indeed, numerous papers mentioned the idea that research and science tend to focus on disorders or "pure" categories consistent with the medical model rather than on focal problems (e.g., unassertiveness and motivation), which are often seen in everyday psychotherapeutic practice.

Similarly, some authors held the position that scientific findings are not generalizable to psychotherapeutic work for various reasons including differences in context, population demographics, and presenting problem complexities between research and real-world practice (Carere-Comes, 2015; Cierpiałkowska & Sęk 2016). Other authors drew attention to the limitations of specific scientific methodologies such as randomized controlled trials (RCTs) and self-report measures (Fonagy, 2010; Greene, 2014; Johnston, 2016), which restrict the applicability of scientific findings to psychotherapeutic practice.

Finally, two papers argued that the impact of science can be limited when rooted in bias. One paper argued that science can be motivated by prejudice, offering the example of research conducted on homosexuality in the 1960s, which was driven by antigay cultural attitudes (Cerbone, 2017). Another paper argued that science can be Eurocentric and thus limited in its applicability to diverse samples and populations (Gone, 2015).

Theme 5: Science could be more valuable to psychotherapy. Nearly half of the papers included in this scoping review proposed ways in which science could become more valuable to psychotherapy. Twelve papers suggested a better partnership between researchers and clinicians, advocating for a bi-directional flow of information between science and practice. The belief that clinicians should inform research was the most frequent recommendation noted in this review (Chambless, 2014; Constantino et al., 2017; Dobson & Beshai, 2013; Dozois, 2013; Engelhard, 2012; Goldfried, 2013; Goldfried et al., 2014; Greene, 2014; Iwakabe, 2013; Shaw & Pecsi, 2021; Strenger, 2013; Teachman et al., 2012). Moreover, authors encouraged greater interdisciplinary conversations and collaborations to bridge the gap between science and practice (Chiesa & Healy, 2009; Gone, 2015; Purgato et al., 2021). It was also argued that mental health professionals and students should be taught how to consume research (Dozois, 2013; Engelhard,

2012; Shaw & Pecsi, 2021). Specifically, they should receive training in critical thinking and the scientific method, and on how to integrate information to make scientifically informed clinical decisions within the context of a patient's needs and background. One article also called for greater diversity in the way we construe evidence. Alongside RCT data, practice-based evidence and clinician observations should also be considered according to Greene (2014). Finally, a small portion of the articles suggested that psychotherapy would be improved by an increase in research on specific topics. Specifically, authors mentioned mechanisms of change (Dozois, 2013; Fonagy, 2010), process in psychotherapy (Altimir & Jimenez, 2020; Hobson, 2012; Lindgren et al., 2010), markers of therapeutic stagnation or failure (Iwakabe, 2013), and lifestyle factors (Marx, Jacka, & O'Neil, 2021).

Theme 6: Science can improve mental health care delivery. Finally, seven articles discussed the value of science in psychotherapy in the context of improving mental health care delivery. First, authors argued that science can increase the credibility of psychotherapy in healthcare, since credibility in this environment is contingent on the use of science in professional practice (Drapeau & Hunsley, 2014; Hollon & Teachman, 2019; Strenger, 2013). Next, papers also emphasized that science could help reduce expenses (Dozois et al., 2014; Engelhard, 2012). For example, Engelhard (2012) argued that "there are many patients, and there is little money. So knowledge needs to be used well. Efficiency studies can help to make mental healthcare less expensive, although, of course, there is a limit to this" (p. 6). Lastly, one author argued that science can help justify the offer of diverse services to the public, including long-term psychotherapy. They highlighted that science is important to the development of treatments that go beyond medication or brief symptom-targeted therapies (McWilliams, 2017).

PHASE II: How did Psychotherapy Providers in Quebec Respond to the Results of the Scoping Review?

The Survey

Survey questions were extracted from the results of the scoping review. The themes and subthemes were iteratively read to identify the central concepts and ideas that needed to be presented to respondents. Several themes were combined to be concise in the number of items included on the survey. A draft survey was piloted with 12 clinicians, then revised and translated into French, and then piloted again in both French and English. Once the survey was finalized, it obtained ethical approval (REB #22-03-063) from the McGill Research Ethics Board in May 2022.

The final survey was divided into three sections: 1) Ten demographic/background questions 2) four Likert scale questions each having between 7-13 items, and 3) five general yes/no questions with a textbox to elaborate on their responses if participants wished to do so (see supplemental material for draft of survey).

Demographic / Background Questions. Section one assessed the practitioners' background, including demographic information (e.g., age, gender, highest level of education), professional information (e.g., theoretical orientation, clinical experience), employment information (e.g., primary employment setting), and recent involvement in scholarly activity.

Likert Scale Questions. Section two assessed practitioners' level of agreement with statements pertaining to the value of science in psychotherapy, using four Likert scale questions:

1. ***The Potential Value of Science.*** Participants were presented with 13 items and asked to rate the potential value of science to each item using a scale from 1-5, with 1 representing *no potential value* and 5 representing a *very high potential value.* Refer to table 3 for sample items.

2. ***The Current Value of Science.*** Participants were presented with the same 13 items as the above question, but this time had to rate the current value of science to each item using a scale from 1-5, with 1 representing *no current value* and 5 representing a *very high current value.*
3. ***Ways in Which Science Could be Even More Valuable to Psychotherapy.*** Participants were presented with seven items, each representing ways in which science could be even more valuable to psychotherapy. Participants were asked to rate their level of agreement with these ideas using a scale from 1-5, with 1 representing *Strongly Disagree* and 5 representing *Strongly Agree*. Refer to table 6 for sample items.
4. ***Various Statements about Science and Practice.*** The final Likert-scale question asked participants to rate their level of agreement with various statements on the same 1-5 scale as the previous question. Statements investigated participants' individual skills in research and science, the extent to which they trust science to inform their practice, and their beliefs about the science-practice gap. Refer to table 7 for sample items.

General Yes/No Questions. The yes/no questions focused on the first theme of the scoping review: that *science matters in psychotherapeutic practice, but so do other constructs.* We evaluated whether participants agreed with the suggested opposition between science and various constructs in the context of psychotherapeutic practice. Participants were asked whether they agreed (yes/no) that a certain construct may be opposed to science. The five constructs examined were as follows: 1) client input, 2) the therapist, 3) common factors, 4) ethics and values, 5) clinical intuition, wisdom, and judgment, for a total of 5 questions. A sample item

includes "*In discussing science and psychotherapeutic practice, some authors have stated that* ***science matters, but so does client input****. As written, this implies that these two constructs (science versus client input) are opposed to one another. Do you agree that these two constructs (science versus client input) are opposed to one another"?*

Participants

Detailed demographics can be found in Table 2. The survey was completed by 210 OPQ licenced psychotherapy providers in Quebec (psychologists or psychotherapists). OPQ members who did not practice psychotherapy were excluded. A minority (21%) of participants completed the survey in English and most (79%) completed the survey in French. Respondents were most often female (75.2%) between 41 and 50 years old (28.1%), commonly with over 21 years of psychotherapy experience (38.1%). Most respondents were working in private practice (61.4%) or hospital and community centres (16.7%), and the majority trained in the fields of clinical (58%) and counselling (19%) psychology. The most common therapeutic approaches were cognitive and/or behavioural (CBT; 38.1%), followed by humanistic/existential/person-centred (20.5%). Finally, over a quarter (28%) of the respondents had been involved in scholarly activities leading to a scientific publication in the last 5 years.

According to the most recent OPQ annual report (2020-2021), 77.7% of the psychotherapy providers in Quebec are female and most providers work in private practice (36.13%) or hospital and community centres (32.14%). Our sample is thus representative of the population of psychotherapy providers in Quebec.

Procedure

The survey was first distributed by the OPQ via email to all licensed psychologists and psychotherapists in Quebec. The email included a brief description of the project and a hyperlink

for both the English and French versions of the survey. Interested participants accessed the hyperlink to the consent form. After providing consent, the survey took approximately 10 minutes to complete. To maximize participation rate, the same e-mail was sent to Quebec psychologists and psychotherapists who are part of our research lab's mailing list from prior studies, reminding them to participate in the study if interested. As such, a non-probability, convenience sample of participants was recruited. Data collection occurred from June to August 2022.

RESULTS OF PHASE II (Survey)

All analyses were non-parametric tests given that the data was not normally distributed. We conducted a Wilcoxon signed-rank test to explore differences between two of the Likert scale questions, and a series of Mann-Whitney and Kruskal-Wallis tests to determine if the personal and professional characteristics of respondents contributed to their opinions and attitudes expressed on the survey. Only the significant results are reported below.

Attitudes Towards the Potential Value of Science

Participants rated the potential value of science (from 1-5, with 1 representing *no potential value* and 5 representing a *very high potential value*) similarly for all 13 items listed. Approximately half of the items had a modal response of 3, indicating *some potential value*, while the other half had a modal response of 4, indicating *high potential value*. See Table 3 for descriptives of each item. The item rated with the highest potential value was "*increasing the credibility of psychotherapy*" (M = 3.6, SD =.81) and the item rated with the lowest potential value was "*helping practitioners deliver cost-effective treatments*" (M = 3.3, SD = 1.26).

A Mann-Whitney test revealed that participants who have been involved in scholarly activities leading to a publication in the past 5 years rated the potential value of science to

"safeguarding from clinician bias" significantly higher than those who have not been involved in scholarly activities, $U = 3525$, $p = .03$.

Kruskal-Wallis tests also revealed statistically significant differences in the responses to the potential value of science to the items "*increasing the likelihood that clients will receive effective treatments*" ($H(3) = 13.94$, $p = .003$), "*helping practitioners deliver cost-effective treatments*" ($H(3) = 8.76$, $p = .03$), and "*explaining mechanisms of change*" ($H(3) = 8.58$, $p = .04$) based on highest level of education. Post-hoc Mann-Whitney tests using a Bonferroni-adjusted alpha level of .008 (0.05/6) indicated that participants with bachelor's degrees rated the potential value of science in "*increasing the likelihood that clients will receive effective treatments"* significantly lower than participants with master's degrees ($U = 74.5$, $p < .001$), with doctoral degrees ($U = 94$, $p = .002$), and with post-doctoral degrees ($U = 6.5$, $p = .002$). Similarly, participants with bachelor's degrees rated the potential value of science in "*helping practitioners deliver cost-effective treatments*" as lower than participants with master's degrees ($U = 123$, $p = .003$). Post-hoc tests revealed no significant comparisons after the Bonferroni adjustment on the item "*explaining mechanisms of change*".

The number of years of clinical experience held by participants contributed to their responses to the potential value of science to the item "*protecting clients from harm*" ($H(3) = 13.65$, $p = .018$). Post-hoc Mann-Whitney tests using a Bonferroni-adjusted alpha level of .003 (0.05/15) showed that participants having 6-10 years of clinical experience rated the potential value as significantly higher than participants having 21+ experience ($U = 707$, $p = .003$).

Primary therapeutic approach also played a role in how participants rated the potential value of science to five items "*increasing the likelihood that clients will receive* ***safe*** *treatments*" ($H(4) = 10.15$, $p = .04$), "*increasing the likelihood that clients will receive* ***effective*** *treatments*"

($H(4) = 21.19$, $p < .001$), "*increasing the credibility of psychotherapy"* ($H(4) = 16.09$, $p < .001$), "*improving current psychotherapeutic treatments*" ($H(4) = 19.52$, $p = .001$), and "*overall advancements in psychotherapy*" ($H(4) = 13.04$, $p = .01$). Post-hoc Mann-Whitney tests using a Bonferroni-adjusted alpha level of .005 (0.05/10) revealed that participants adopting a humanistic/existential/person-centered approach rated the potential value of science in "*increasing the likelihood that clients will receive* ***effective*** *treatments*" and "*improving current psychotherapeutic treatments*" significantly lower than participants adopting a cognitive and/or behavioural approach ($U = 1191$, $p = .002$; $U = 1149$, $p = .001$, respectively). Finally, participants adopting a psychoanalytic/psychodynamic primary approach rated the potential value of science to all five items listed above as significantly lower than participants adopting a cognitive and/or behavioural approach ($U = 1493$, $p = .01$; $U = 1193$, $p < .001$; $U = 1347$, $p < .001$; $U = 1240$, $p < .001$; $U = 1312$, $p < .001$, respectively).

Attitudes Towards the Current Value of Science

Participants rated the current value of science (from 1-5, with 1 representing *no current value* and 5 representing a *very high current value*) relatively equally for all 13 items listed once again. All items had a modal response of 3, indicating *some current value,* except for the item *"explaining mechanisms of change*" which had a modal response of 4, indicating *high current value*. See Table 4 for descriptives of each item. The item rated with the highest current value was "*increasing the likelihood that clients will receive effective treatments*" ($M = 3.48$, $SD = 1.08$) while the item rated with the lowest current value was "*contributing to the maintenance of the diverse psychotherapeutic services offered to the public*" ($M = 3.10$, $SD = 1.29$).

Kruskal-Wallis tests showed that there was a statistically significant difference in responses to the item "*increasing the likelihood that clients will receive* ***effective*** *treatments*"

between age groups, $H(5) = 12.79$, $p = .02$, and based on highest level of education, $H(3) = 11.64$, $p = .01$. Post-hoc Mann-Whitney tests using Bonferroni-adjusted alpha levels only identified one significant pairwise comparison, which showed that participants with bachelor's degrees rated the current value of science to this item as significantly lower than participants with post-doctoral degrees ($U = 8.5$, $p < .001$).

There was also a significant difference in responses to the current value of science to the items "*safeguarding from clinician bias*" ($H(4) = 9.67$, $p = .04$), "*increasing the credibility of psychotherapy*" ($H(4) = 9.68$, $p = .04$), and "*improving current psychotherapeutic treatments*" ($H(4) = 10.33$, $p = .04$) based on primary practice setting. However, post-hoc tests revealed no significant comparisons after the Bonferroni adjustment.

Potential Value of Science Versus Current Value of Science: a significant difference in responses?

To examine if ratings on the current value of science and the potential value of science were significantly different across the 13 items, a non-parametric Wilcoxon signed-rank test was computed. The ratings on all 13 items, except for one, were significantly different, $p < .05$. Specifically, the Wilcoxon signed-rank test indicated that ratings of the potential value of science were significantly higher than the ratings of the current value of science, implying that respondents believe that science has the potential to contribute more to the items than it is currently doing. The item "*helping practitioners deliver cost-effective treatments*" was the only item that did not statistically differ in terms of the potential and current value of science ($Z = -.67$, $p = 0.5$). See table 5 for Z and p values for each item.

Attitudes Towards Possible Ways in Which Science Could be Even More Valuable to Psychotherapy

Overall, attitudes towards the ways in which science could be even more valuable to psychotherapy culminated in means that exceeded a value of 4, which indicates that respondents were highly agreeable to the ideas extracted from the scoping review. Nearly all items had modal responses of 5, apart from two items whose modal responses were 4. See table 6 for descriptives of each item. Participants most highly agreed with the item "*Science could be even more valuable to psychotherapy if clinician input was more often sought to inform research*" (M = 4.46, SD = .59).

Kruskal-Wallis tests revealed statistically significant differences in responses to the item "*science could be even more valuable to psychotherapy if a greater focus was placed on lifestyle factors (e.g., diet, sleep, exercise)*" between age groups, ($H(5) = 17.71$, $p < .001$), based on years of clinical experience, ($H(5) = 16.03$, $p < .001$), and based on primary therapeutic approach, ($H(4) = 12.47$, $p < .001$). Post-hoc Mann-Whitney tests using Bonferroni-adjusted alpha levels specified that participants aged 70+ had significantly higher levels of agreement than participants aged 31-40, in terms of this item helping science become more valuable to psychotherapy (U = 100, $p < .001$). Similarly, participants with 21+ years of clinical experience had higher levels of agreement than participants with 6-10 years of experience ($U = 692.5$, $p < .001$) and participants with 16-20 years of experience had significantly higher levels of agreement than participants with 6-10 years of experience ($U = 256$, $p < .001$). Participants who adopted a cognitive and/or behavioural approach also had significantly higher levels of agreement than participants adopting a psychoanalytic/psychodynamic approach ($U = 1374$, $p < .001$).

Group membership based on highest level of education and primary therapeutic approach also had a significant effect on the responses to the item "*science could be even more valuable to psychotherapy if professionals were taught how to use research*" ($H(3) = 9.3$, $p = .03$; $H(4) =$

13.36, $p = .01$, respectively). Post-hoc Mann-Whitney tests using Bonferroni-adjusted alpha levels revealed that participants who held post-doctoral degrees had a significantly higher level of agreement with this statement than participants with doctoral degrees ($U = 262.5$, $p = .01$). Participants whose primary therapeutic approach was cognitive and/or behavioural also had significantly higher levels of agreement on this item than participants whose primary therapeutic approach was humanistic/existential/person-centered ($U = 1099.5$, $p < .001$).

Practice setting also played a role in how participants responded to the items "*science could be even more valuable to psychotherapy if clinician input was more often sought to inform research" (*$H(4) = 11.32$, $p = .02$) and *"science could be even more valuable to psychotherapy if a greater focus was placed on mechanisms of change"(*$H(4) = 11.31$, $p = .02$). Post-hoc Mann-Whitney tests using Bonferroni-adjusted alpha levels only revealed significant pairwise comparisons for the first item, specifying that participants working in private practice had higher levels of agreement with the statement than participants working in school settings ($U = 195.5$, $p < .001$).

Attitudes towards Science and their relationship to Psychotherapeutic Practice

Respondents had similar attitudes towards the idea that psychotherapeutic practice is a science ($M = 3.71$, $SD = .84$) and an art ($M = 3.77$, $SD = .87$), with modal responses of 4 on both items (using a 1-5 scale, with 1 representing *strongly disagree* and 5 representing *strongly agree*). Overall, participants also provided high ratings on the items evaluating individual skills and knowledge of science. For example, the mean rating on the item "*I have the necessary skills to understand science*" exceeded 4 ($M = 4.37$, $SD = .58$), as it did on the other item as well. Three items investigated the extent to which participants perceive science to be relevant to their practice. A first question at the beginning of the survey, using the same 1-5 scale as previous

questions, asked participants to rate their level of agreement with the statement "*Science is relevant to my psychotherapeutic practice*". The modal response to this question was 5, indicating a strong agreement ($M = 4.45$, $SD = .753$). Furthermore, two other items near the end of the survey examined similar topics with statements as follows: "*I trust science to inform my practice*" ($M = 4.09$, $SD = .74$) and "*I believe scientific findings from clinical trials are generalizable to a clinical population*" ($M = 3.35$, $SD = .84$). Scores visibly dropped in the latter item when a focus was placed on the relevance of clinical trials specifically. Finally, we attempted to evaluate if participants believe in the science-practice gap and to what extent they believe it is problematic. Using the same 1-5 scale, participants agreed on the item "*I believe there is a science-practice gap*" ($M = 4.01$, $SD = 0.8$) and on the item "*I believe the science-practice gap is problematic"* ($M = 3.51$, $SD = .94$). See table 7 for descriptives each item.

Kruskal-Wallis tests revealed statistically significant differences in responses to the item "*I am sufficiently informed about the scientific method*" based on primary setting of practice, ($H(4) = 12.13$, $p = .02$), highest level of education, ($H(3) = 21.46$, $p < .001$), and scholarly involvement in the past 5 years ($U = 2870.5$, $p < .001$). Specifically, post-hoc Mann-Whitney tests using Bonferroni-adjusted alpha levels revealed that participants working in university settings had higher levels of agreement than those working in private practice ($U = 239.5$, $p < .001$), participants with doctoral degrees had higher levels of agreement than those with master's degrees ($U = 3247$, $p < .001$) and those with bachelor's degrees ($U = 113$, $p < .001$), and participants who had been involved in scholarly activities in the past 5 years also had higher levels of agreement ($U = 2870.5$, $p < .001$) than those who had no involvement.

The item "*I have the necessary skills to understand science"* was statistically different based on highest level of education ($H(3) = 20.78$, $p < .001$) and scholarly involvement in the

past 5 years ($U = 3057.5$, $p < .001$). Post-hoc Mann-Whitney tests using Bonferroni-adjusted alpha levels indicated that participants with doctoral degrees ($U = 3333$, $p < .001$) and post-doctoral ($U = 3294$, $p < .001$) degrees had higher levels of agreement with this statement than participants with master's degrees. Participants who have been involved in scholarly activities in the past 5 years also rated this item higher than participants reporting no involvement ($U = 3057.5$, $p < .001$).

The item "*science is relevant to my psychotherapeutic practice*" was statistically different based on age group ($H(5) = 14.12$, $p = .02$) and therapeutic approach ($H(4) = 38.6$, $p < .001$). Post-hoc Mann-Whitney tests using Bonferroni-adjusted alpha levels revealed no significant pairwise comparisons for age groups, though there were significant differences in therapeutic approaches. Specifically, participants adopting a cognitive and/or behavioural approach agreed more highly with this item than participants adopting a humanistic/existential/person-centered approach ($U = 891.5$, $p < .001$) or a psychoanalytic/psychodynamic approach ($U = 1074$, $p < .001$).

Therapeutic approach also significantly contributed to the responses on other items of this section, namely "*I believe psychotherapeutic practice is truly a science"* ($H(4) = 17.04$, $p < .001$) *"I trust science to inform my practice*" ($H(4) = 12.95$, $p = .01$) and "*I believe scientific findings from clinical trials are generalizable to a clinical population*" ($H(4) = 10.99$, $p = .03$), though post-hoc Mann-Whitney tests using Bonferroni-adjusted alpha levels only revealed significant pairwise comparisons for the first two items. Specifically, participants adopting an "Other" primary therapeutic approach than those indicated on the survey had higher levels of agreement on the item "*I believe psychotherapeutic practice is truly a science"* than those adopting a psychoanalytic/psychodynamic approach ($U = 241$, $p = .01$), as did those adopting a cognitive

and/or behavioural approach ($U = 1338.5$, $p < .001$). With regard to the item *"I trust science to inform my practice*", participants adopting a cognitive and/or behavioural approach had higher levels of agreement than those adopting a humanistic/existential/person-centered approach ($U = 1184.5$, $p < .001$) or a psychoanalytic/psychodynamic approach ($U = 1455.5$, $p < .001$).

Attitudes towards Science and Possible Opposing Constructs

Most respondents disagreed with the idea that the five constructs presented (client input, the therapist, common factors, ethics and values, clinical intuition, wisdom, and judgment) are opposed to science in the context of psychotherapeutic practice. Depending on the construct in question, between 67.6% and 85.5% of participants disagreed with this idea, indicating that this sample of practitioners does not view the relationship between these constructs and science in the same way as some of the authors writing the articles included in the scoping review. See table 8 for frequency of responses to all five questions.

Discussion

What is the value of science in psychotherapy? This question holds important implications for practice. Despite psychology having transitioned from a philosophical to a scientific discipline over a century ago, the lasting presence of the science-practice gap indicates that psychotherapeutic practice has yet to reap all the benefits of science. Not only does this affect the credibility of professional psychology, but psychotherapy users are also directly impacted if they do not receive the best treatments available.

In the first phase of this study, we conducted a scoping review to better understand how professionals in psychology perceive the value of science in psychotherapy. In the second phase, we validated these findings within a specific population of psychotherapy providers, namely psychologists and psychotherapists in Quebec. We also explored whether the personal and

professional characteristics of the therapists surveyed impacted their attitudes about science. In light of these findings, we developed recommendations to help bridge the science-practice gap that could be considered by the OPQ or other stakeholders.

The scoping review examined 47 papers written by clinicians, researchers, and academics in psychology who expressed their opinion about the value of science in psychotherapy. Their views were categorized into six overarching themes. Half of the themes, namely those discussing how science could improve the practice of psychotherapy, protect services users, and improve mental health care delivery, included papers in which the authors readily acknowledged the value of science in psychotherapy. Science as a means of reducing the risk of harm for service-users was a common discussion point; many authors noted that disseminating psychological interventions lacking scientific evidence about their efficacy and tolerability can cause harm. Authors also advocated for the value of neuroscience, biological research, and implementation science. The value of science in guiding treatment planning and clinical decision making was put forth on several occasions, suggesting that psychological science does indeed inform the current practice of many professionals. Lastly, science was acknowledged as being valuable for its overall improvement of mental health care delivery, including increased credibility for mental health professionals.

The survey distributed to Quebec psychotherapy providers in phase two presented many of the items discussed above and overall, clinicals largely agreed with the value of science. The survey asked participants to provide their opinion on the current and potential value of science to these items. We were interested in exploring differences between the two in order to identify areas in which the value of science could be improved. Psychotherapy providers rated the potential value of science higher than the current value of science on nearly all items, suggesting

significant room for improvement.

Theme five of the scoping review suggests potential ways to optimize the value of science. Nearly half of the records included in the scoping review proposed at least one idea of how to increase the value of science to practice. These included better partnerships between researchers and clinicians, greater interdisciplinary conversations and collaborations, and a greater focus on specific topics in research (e.g., markers of therapeutic stagnation, mechanisms of change, etc.). The suggestions were then presented to Quebec practitioners, and our results indicate that survey respondents were highly agreeable to all items. Clinician input, the most frequent recommendation noted in the scoping review, also elicited the highest agreement among clinicians. As such, according to both our sample of Quebec psychotherapy providers and amongst professionals in psychology worldwide, science has the potential to become more valuable to psychotherapy should clinicians have greater input in research.

Psychotherapy providers did not however agree with all the themes and statements recovered from the scoping review. The first theme of the scoping review, namely how science is not the only valuable element for psychotherapy, included statements ultimately arguing that yes, science is important and useful in psychotherapeutic practice, but so are many other factors. Constructs such as ethics, values, the therapist themselves, client input, common factors, clinical intuition, wisdom, and judgment were proposed as also mattering. It appears that these constructs are viewed, at least to some extent, as distinct from science amongst these authors. This is notable given that scientific findings support the importance of these constructs in psychotherapy. Consequently, we argue that the constructs listed above are simply examples of ways in which psychological science has contributed to psychological practice. In the case of client input, science has shown that respecting the clients' input in terms of treatment options can

improve outcomes; for example, providing medication to a client who requests psychotherapy and providing psychotherapy to a client who wishes for medication has been associated with poorer outcomes (Lindhiem, Bennett, Trentacosta, & McLear, 2014). The same applies to common factors. Science has demonstrated that successful psychotherapy may be contingent on variables that are common across psychotherapeutic modalities (i.e., common factors) (e.g., Wampold, 2015). Empathy, for example, has been linked to client change and successful treatment outcomes in a plethora of studies (e.g., Watson, Steckley, & McMullen, 2014). Finally, science has examined the importance of the therapist and shown that the therapist's approach and alliance with the client is associated with therapeutic outcomes (e.g., Flückiger, Del Re, Wampold, & Horvath, 2018). In sum, the constructs proposed by authors in the scoping review as also mattering in psychotherapy are in fact part of empirically validated practice.

The presence of a distinction between science and these concepts raises questions about how the concept of science is understood. Perhaps a more restrictive definition or conceptualization of science, such as one that equates scientific evidence with manualized therapies, may account for why practitioners discuss the above-mentioned constructs as separate from science. Thus, when surveying the psychotherapy providers, we asked participants if they agreed that constructs such as client input and common factors are opposed to science in the context of psychotherapeutic practice. The psychotherapy providers largely disagreed with the dichotomies presented, suggesting differences in the conceptualization of science. It is surprising that the providers surveyed had a more nuanced outlook of the contributions of science to psychotherapy since, contrary to the authors featured in the review, most reported no recent scholarly involvement. Perhaps this discrepancy is due to differences in theoretical orientations among the two samples. Most of the clinicians surveyed were of a cognitive and/or behavioural

therapeutic approach, which as our results indicate, is a group that places especially high importance on science. Issues in knowledge translation and dissemination may also be responsible for variations in the way in which certain professionals conceptualize science and its contribution to psychotherapy.

The final scoping review theme to be discussed is that of science being limited in its clinical applicability to psychotherapy. The theme details how and why authors from the scoping review believe that science is not always relevant or valuable to their psychotherapeutic practice. Issues related to the specific topics addressed in research, the participants chosen for research studies, the methodologies, and the context were highlighted. Authors ultimately worry that research participants are not always representative of clinical populations. However, contrary to this belief, systematic reviews have in fact concluded that, at least for some disorders, effect sizes from research trials can reliably be replicated in community and routine settings (e.g., Ost, 2011). In the case of Cognitive Behavioural Therapy (CBT) for adult anxiety for example, efficacy trials have shown similar effect sizes to effectiveness trials conducted in real-world settings (Dobson & Beshai, 2013). Several other studies have concluded that the RCT literature may be more representative of treatment-seeking patients than previously thought (e.g., Stirman, DeRubeis, Crits-Christoph, P., & Rothman, 2005; Stirman, DeRubeis, Crits-Christoph, & Brody, 2003). As such, if some of these ideas have been debunked and professionals in psychology still feel like researchers do not understand or appropriately replicate their clinical realities, the value of scientific findings is certainly diminished as clinicians will be hesitant to rely on this information when working with their clientele.

As such, we believed this was an important issue to address. Respondents to our survey were thus asked if they believed science was relevant to their psychotherapeutic practice, if they

trusted science to inform their practice, and if they believed scientific findings from clinical trials are generalizable to a clinical population. Results suggested that participants strongly agreed that science was relevant to their psychotherapeutic practice and agreed that they trusted science to inform their practice. Levels of agreement dropped slightly when participants were asked about the generalizability of findings from clinical trials, suggesting a specific hesitancy regarding the relevance of clinical trials as opposed to science in general. Again, this may suggest a broader conceptualization of what science represents in psychotherapy amongst survey respondents in comparison to the authors of the records in the scoping review.

Thus far, our results suggest that in general, psychotherapy providers agree with the authors included in the scoping review regarding science's value in improving the practice of psychotherapy, protecting services users, and improving mental health care delivery. Moreover, they agree with the ideas proposed to increase the value of science in psychotherapy, especially the importance of clinicians being sought out to inform research. It also appears that psychotherapy providers may have a broader conceptualization of what science represents in psychotherapy, and their trust in science to inform their practice is relatively high. However, even amongst this small group of practitioners, significant group differences did arise, suggesting that opinions on some of these matters are associated to personal and professional characteristics such as education level, scholarly involvement, primary therapeutic approach, and practice setting.

CBT therapists appear to stand out in terms of the value they associate to science within psychotherapeutic practice. Although the entire sample rated their trust in science and the relevance of science to their psychotherapeutic practice as high, psychotherapy providers adopting a cognitive and/or behavioural primary therapeutic approach rated the relevance of

science to their practice and their trust in science significantly higher than those adopting psychoanalytic/psychodynamic or humanistic/existential/person-centered approaches. Moreover, CBT therapists had higher levels of agreement with the idea that psychotherapy is truly a science compared to psychodynamic therapists. They also reported stronger beliefs that science could be more valuable to psychotherapy if professionals were taught how to use research compared to humanistic therapists and rated the potential value of science for psychotherapeutic practice higher than psychodynamic and humanistic therapists.

Another important factor is an ongoing connection to academia. Our survey indicates that psychotherapy providers with higher education levels, some scholarly involvement in the past five years, or those working in university settings feel more sufficiently informed about the scientific method and more skilled in understanding science. Not only did those reporting some scholarly involvement feel more informed and skilled in science, but they also rated the potential value of science towards many items in psychotherapeutic practice higher than those reporting no scholarly involvement. This undoubtedly holds important implications for reducing the science-practice gap.

How can these findings be used to bridge the science-practice gap?

Our findings suggest that Quebec practitioners do have a broad conceptualization of science's role within psychotherapy, one that may differ from the opinions presented in the scoping review featuring international viewpoints. This highlights the importance of examining the science-practice gap within specific populations of psychotherapy providers, as needs, characteristics and potential solutions may differ. Not only do practitioners appear to conceptualize science differently, but results indicate that within our own sample of psychologists and psychotherapists theoretical orientation also plays a role. As such,

recommendations to bridge the science-practice gap may be more effective if they are tailored to specific populations of practitioners.

Our results highlight that Quebec practitioners believe that science's contribution to psychotherapy can be improved, especially if clinician input was more often sought out by researchers. Moreover, the psychotherapy providers who believed the strongest in the value of science and who trusted science and its relevance to their practice the most believed that professionals should be taught how to use research. Finally, any form of recent connection to academia increased respondents' self-reported skills in science. PRNs—networks comprised of clinical practitioners and researchers who collaborate on joint research projects aimed at generating knowledge within natural practice settings—are a potential solution that would optimize each of these outlets. An ongoing engagement with PRNs would allow psychotherapy providers the opportunity to voice their needs for clinically meaningful psychotherapy research while conserving their skills and knowledge about research and science developed in graduate school. This closer connection to the research world would facilitate a psychotherapeutic practice that is grounded in empirical evidence. We thus recommend that regulatory bodies advocate for practitioners' involvement in PRNs or other knowledge translation frameworks.

We also recommend that adjustments to continuing education requirements be considered to promote clinical involvement in research. As discussed in this paper, one barrier to the implementation of EBP and to the use of science in general is clinicians' lack of time and resources. If PRN contribution were to be integrated into the division of continuing education hours that clinicians must already respect, this should not represent a much heavier burden to their already heavy workloads. For example, in Quebec, all OPQ-registered members must complete 90 hours of mandatory continuing education (CE) per five years. A minimum of five

hours must be in the form of individual supervision, while the remaining 85 hours can be completed via workshops or other forms of training. We recommend that a portion of those 85 hours be transformed into mandatory PRN contribution hours once these networks are sufficiently established to allow this.

To ensure that psychologists and psychotherapists are continuing to offer psychotherapy that is scientifically validated, a system must be in place to maintain their connection to the research world once graduate training is complete. The OPQ has the authority to progressively incorporate this kind of system into their continuing education requirements and we recommend that this option be considered. Opportunities for practitioners to communicate their needs to those conducting the research guiding their practice are essential to enhance the credibility of the profession and the quality of services offered to individuals suffering from mental illness.

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Table 1

Thematic Categories and Statements regarding the Value of Science in Psychotherapy

Theme	Subtheme	Subtheme Description	Sample statement(s)
1. Science is valuable, but *not* the only valuable element for psychotherapy.	The therapist matters. n^1=2	The application of science in psychotherapy remains dependant on the therapist's epistemological stance, approach, and beliefs.	"...various combinations of methods, psychotherapists, patients, treatment relationships, and clinical contexts significantly impact on treatment results. Quite a lot points to the effect of the psychotherapist as having general significance, that he or she accounts for a ‘‘g-factor,’’ and that pure methods should be isolated from other operational parameters neither within psychotherapy research nor in their clinical application within the health-care system (Lindgren, Folkesson, & Almqvist, 2010).
	Ethics and values matter. *n*=4	Science can inform psychotherapy, but so can ethical and values-based imperatives.	Evidence-based practice in psychology gives scientific research precedence in psychotherapy practice. However, psychotherapy is complex and warrants reflection beyond the limits of science and into ethics (Berg, 2020). The primary focus of psychotherapy should be ethical, how to lead a good life. However, research is useful to understanding psychotherapy, and neuroscience research will bring breakthroughs in new treatments and understanding of psychopathology (Allen, 2013).

Client input matters. *n*=3	The application of science in psychotherapy must be done in conjunction with the client's preferences and involvement.	Postmodern therapist can utilize an evidence-based practice, but not to the exclusion or minimization of client input. It is the stance of the postmodern therapist that allows for such inclusion, integration, and adaptability (Jacobs, Kissil, Scott, & Davey, 2010).
Discovery and exploration matters. *n*=1	Practitioners sometimes encounter new types of psychological problems for which existing scientific theories and techniques might turn out to be ineffective. In these cases, discovery and exploration of new conceptualizations and techniques is necessary.	We need to explore the uncharted territory of psychotherapy: clinicians are always experimenting with new techniques and interventions in their practice, even without systematic research. (Iwakabe, 2013).
Clinical intuition matters. *n*=1	Clinical intuition, which can be defined as the therapist's mode of perceiving, relating, and responding to a client, is important in the clinical decision-making process.	Mainstream research devalues intuition, which is in fact generates insights that are useful to clinical practice (Carere-Comes, 2015).
Common factors matter more. *n*=1	Common factors, which can be defined as factors that are common across psychotherapeutic modalities (e.g., patient hope, empathy), are more important in psychotherapeutic practice than science.	Therapists should not be dominated by science because most of the benefits of psychotherapy are due to common factors. The author argues for "science informed humanism" (Allen, 2013).

The application of science rests upon clinical wisdom. *n*=5	The application of science in psychotherapy is dependent on clinical and practical wisdom, which can be defined as an integration of knowledge, experience, and deep understanding, as well as a tolerance for the uncertainty.	The first kind of "empirical knowledge" is what should drive the actual treatment recommendations themselves, but the second kind of "clinical knowledge" can flesh out the text of a guideline and help it come to life. Clinical wisdom has value. (Hollon & Teachman, 2019) Clinical expertise: the application of scientific results in psychotherapy practice hinges upon phronesis (practical wisdom), which is not inherently scientific. (Berg, 2020)
Clinical judgment is essential. *n*=1	Clinicians face many problems that fall outside the purview of scientific evidence. Clinical judgment is inevitable and legitimate.	I have come to view clinical psychology's preoccupation with empiricism as a naïve triumphalist narrative that is just not going to happen. That is, I do not expect another 50 or 100 years of research to solve most of the problems that confront clinicians on a daily basis. Clinicians will always have to deal with uncertainty, values, and uniqueness; they will always have to use their heads (Meehl, 1957/1973a) for certain purposes and to rely on clinical expertise, not only because the appropriate research has not yet been conducted, but also because that is the nature of clinical work. Therefore, an approach to EBP that privileges scientific over clinical evidence, however reasonable in principle, has the potential to diminish the quality of clinical practice and clinical training (Zeldow, 2009). Despite its many limitations (Kazdin, 2008), clinical judgment is the legitimate and appropriate

			context of justification for much clinical work (Zeldow, 2009).
	Psychotherapy is a science *and* an art. *n*=4	The integration of science, clinical judgment, wisdom, and intuition, patient characteristics and expectations can be viewed as not only a hard science but rather an art.	Although guidelines direct psychologists to weigh and consult scientific research, there are intangible, variable, and unpredictable aspects of therapy that point to therapy as an art more than a hard science (Powers, Rindler, & McCloskey, 2014). Such an integration of art and science or empiricism and practice allows for ‘‘a therapeutic stance that is pragmatic, creative, intuitive and curious (Larner, 2004, as cited in Jacobs, Kissil, Scott, & Davey, 2010)
2. Science can protect service-users engaging in psychotherapy.	Science can safeguard from bias. *n*=4	Clinical observations are prone to several kinds of biases (e.g., confirmation bias) so the methodology afforded by science is needed to safeguard against these.	Science sets up a safeguard against biases (Dozois, 2013). Clinical observations are prone to confirmation bias, so the methodology afforded by science is needed to safeguard from bias (Engelhard, 2012)
	Science can reduce errors in treatment selection and clinical decision making. *n*=2	Given the wealth of treatment options that exist in psychotherapy, science can guide practitioners in choosing the safest and most effective treatments that match their clients needs.	While EBP is by no means a panacea for all the ills of the current health care system, it can reduce errors in clinical decision making. By limiting treatment choices to interventions that have research support, EBP increases the likelihood that clients will receive treatments that are effective and safe, while decreasing the likelihood that clinicians will choose interventions that are ineffective or harmful (Sperry, 2015).

	Science can reduce the risk of harm. *n*=6	Patients are put at risk if they are treated with psychotherapeutic techniques or approaches that have no evidence-base, especially if there are better alternatives. Science can guide practitioners towards the safest treatment options that match their client's needs.	This requires a commitment to continually inform and/or be informed by research evidence so as to identify and select interventions and treatment strategies and maximize the chance of benefit, minimize the risk of harm, and deliver the most cost-effective treatment (Dozois et al., 2014). The science-practice divide can be harmful to patients, more so than debates about theoretical orientations, such as in cases wherein clinicians ignore important research findings (Constantino, Coyne, & Gomez Penedo, 2017).
3. Science can improve the practice of psychotherapy.	Neuroscience and biological research can contribute to advancements in psychotherapy. *n*=3	Neuroscience and biological research will continually increase our understanding of many topics in psychology (e.g., psychopathology) which will ultimately lead to improvements in the practice of psychotherapy.	Biological research holds potential to unveil mechanisms and benefit psychotherapy (Fonagy, 2010). The primary focus of psychotherapy should be ethical, how to lead a good life. However, research is useful to understanding psychotherapy, and neuroscience research will bring breakthroughs in new treatments and understanding of psychopathology (Allen, 2013).
	Findings from clinical trials are generalizable to a clinical population. *n*=2	Scientific findings can be directly applied to clinical settings to guide the psychotherapeutic work of practitioners with their clients. New research findings allow the practice of psychotherapy to evolve.	"Much research is dismissed on the grounds that the clients in the research trials are not representative of clinical reality and their difficulties are much less complex. Investigations into the reasons for exclusion from psychotherapy trials, however, find that most patients are excluded as they are not severe enough to meet diagnostic criteria for inclusion or are in partial remission at the start of trials (Stirman et al., 2005). Systematic

		reviews conclude that effect sizes from research trials can reliably be replicated in community and routine settings (Öst, 2011, as cited in Shafran, 2011). Although efficacy trials have been criticized for using patients with less severe conditions and fewer comorbidities, efficacy trials show similar effect sizes to effectiveness trials conducted in real-world settings (Dobson & Beshai, 2013).
Science can guide treatment planning. *n*=4	Practitioners can rely on scientific findings to choose the best-fitting treatments and interventions for their clients' needs, preferences, and characteristics.	Knowledge of empirically supported treatments allow for effective clinical decision-making about interventions to prioritize for which disorder (Dobson & Beshai, 2013). What this document reflects, however, is a reassertion of what psychologists have known for a century: The scientific method is a way of thinking and observing systematically, and it is the best tool we have for learning about what works for whom (APA Presidential Task Force on Evidence-Based Practice, 2006).
Science can guide clinical decision making. *n*=2	Practitioners can rely on scientific findings to help them gather and interpret data from their clients, to then choose the best treatment options for their clients, and to adapt psychotherapy as the process evolves.	EBP does not tell practitioners what to do, in terms of the provision of client services. It provides a structure on how we, in conjunction with our clients, can obtain enough information so as to decide what to do. The epitome of evidence in EBP, systematic reviews published by the Cochrane and Campbell Collaborations, summarizes the available evidence and draws legitimate conclusions as to the evidentiary base of

		practice methods. But they do not assert that a given intervention should or should not be used (Thyer, 2015).
Science can ensure ethical care. *n*=4	All codes of ethics recommend that ethical psychological practice be guided by empirical evidence. As such, science directly contributes to the provision of ethical care.	EBPP guidelines aim to help practitioners provide the best possible treatment. By providing a clearer structure for selecting efficacious therapies, EBPP helps ensure that clients receive treatment that will improve their lives. In this way, EBPP promotes ethical psychological practice (Powers, Rindler, & McCloskey, 2014).
Science can improve current psychotherapeutic treatments. *n*=5	New scientific findings allow current psychotherapies to evolve and improve.	Science can help understand how treatments work which can improve clinical treatments and open to possibilities of new applications (Engelhard, 2012). Researchers can work together with clinicians to keep putting real psychotherapies of all models, and combinations of models, at the forefront of public consciousness so that suffering people have options that go beyond either medication or symptom-targeted treatments of the briefest sort (McWilliams, 2017).
Science can explain the mechanisms of change in psychotherapy. *n*=1	Scientific findings can shed light on the mechanisms by which psychotherapies work (i.e., the "how" and "why" of therapeutic change).	Science can help understand how treatments work which can improve clinical treatments and open to possibilities of new applications (Engelhard, 2012).
Implementation science can improve psychotherapy by	Implementation science (i.e., the study of methods to promote the systematic	Implementation science can reduce the science to practice gap and ensure that discoveries made through psychological science actually reach those

	reducing the science-practice gap. *n*=1	uptake of research findings into routine practice) can improve psychotherapy by proposing ways in which clinicians can apply evidence-based practices to their practical work.	who will benefit from them (Stirman & Beidas, 2020).
4. Science can be limited in its clinical applicability to psychotherapy.	Science does not focus on the problems that clinicians treat in everyday practice. *n*=9	The topics examined in research studies differ from the topics that clinicians face in their clinical work. As such, practitioners tend not to view the results of scientific research as applicable to their psychotherapeutic work.	The current research paradigm focused (3rd generation psychotherapy outcome research) on disorders rather than specific focal problems (e.g., unassertiveness), is less relevant for what clinicians do in practice. It has also changed the focus from a more functional analysis of problems to disorders and comorbidities (Goldfried, 2016). Research often focuses on 'pure' categories of mental disorder according to a medical model which assumes that discrete conditions have different aetiologies and warrant different treatments. However, such categories may not reflect the types of patients and problems, particularly in the relational realm, seen in everyday clinical practice (Johnston, 2016).
	Scientific findings are not generalizable to psychotherapeutic work. *n*=2	The population, context, and problems examined in research studies differ from those that are presented in practitioner's offices. As such, practitioners tend not to view the results of scientific research as representative or	Clinicians make very little use of empirical research, and mostly do not even read it, because they do not find very useful for their practice the study of factors isolated from the context, given that their practice is basically contextual (Carere-Comes, 2015).

	generalizable to the population with whom they work.	
Science can be driven by prejudice. *n*=1	The topics of research studies or any steps within the scientific method have the possibility of being tainted by any form of prejudice on behalf of the researchers.	The author discusses the dangers of overreliance on science: The epistemology of science needs to be considered, such as in case of research conducted on homosexuality in the 1960s, which was driven by antigay cultural attitudes (Cerbone, 2017).
Science can be Eurocentric. *n*=1	A large portion of research studies are conducted on European or Euro-American populations. As such, the generalizability and applicability of results to other populations that practitioners may work with in psychotherapy can be questionable.	Authors argue for greater inclusion of ethnoracially diverse samples within clinical trials. Mainstream mental health practices typically originated out of the life experiences of Europeans and Euro-Americans, so they carry the risk of alienation, assimilation, or other associated harms. The problem goes beyond packaging therapies for ethnoracial and cultural minorities (Gone, 2015).
The limitations of certain methodologies (ex: RCTs, self-report measures) restrict their capacity to inform psychotherapeutic practice. *n*=3	The specific methodologies used by certain research studies (e.g., randomized controlled trials or self-report measures) have inherent limitations that limit the generalizability and applicability of their results to clinical practice in psychotherapy.	RCTs are limited in the conclusions they can draw, are underpowered to detect adverse events, and often subject to biased reporting of answers because they are expensive (incentive) (Fonagy, 2010). Measures are more easily designed to identify overt symptomatic or behavioural change but may fail to capture more complex intrapsychic or interpersonal processes that underlie personality difficulties and relationship problems. This is a particular issue with self-report measures (Johnston, 2016).

5. Science could be more valuable to psychotherapy.	Clinicians should inform research. *n*=12	Involving clinicians in the research process would allow researchers to better understand the specific needs of those in clinical practice. In turn, the data produced via scientific studies would be more clinically relevant and the receptivity of practitioners would increase. In sum, rather than a unidirectional flow of information in which researchers aim to inform clinicians, a bi-directional flow of information whereby clinicians also inform researchers on their ideas, needs, and concerns is proposed.	In order to rectify the schism between research and practice, it is necessary to create a new relationship between researchers and practitioners, one that is not a unidirectional flow of information from researchers to practitioners supplying laboratory-based findings to clinical practice, but one in which practitioners' concerns are incorporated in research questions, designs, and implementation so that their practice becomes the source that generates clinically relevant data (Iwakabe, 2013). An intersection of research and practice is helpful. Partnerships between researchers and clinicians can benefit the relevance of research produced by academics and the quality of innovation implemented by clinicians (Shaw & Pecsi, 2021).
	Professionals and students should be taught how to consume research. *n*=3	In order for science to be valuable to the psychotherapeutic practice, professionals and those in training must learn about the scientific method, how to understand scientific articles, and how to integrate scientific information into their clinical practice.	Psychiatrists, psychologists, and nurses who are both familiar with practice and research are needed, and clinical students need to be thought how to consume research (Engelhard, 2012) We need to train students how to think critically, respect, and understand scientific knowledge and empirical methodologies, and integrate this information to make scientifically informed clinical decisions within the context of a patient's needs and background (Dozois, 2013).

Interdisciplinary conversations and collaborations are important. *n*=3	Communication between various disciplines and organizations is necessary in order for scientific findings to remain relevant, clear, and distributed to the appropriate population of professionals. For example, research findings on the topic of trauma must be disseminated to practitioners working with clients suffering from this presenting problem. Similarly, clinicians working on trauma should communicate and collaborate with organizations conducting research on the topic.	Scientific societies and international or national public health organisations should join efforts to develop specific standards about the type and quantity of evidence required before a new psychological intervention, its treatment manual, and related implementation tools, are made available for everyday use in clinical practice (Purgato, Cuijpers, & Barbui, 2021)
What constitutes as evidence should be expanded. *n*=2	What is considered as "evidence" for the effectiveness of psychotherapy is debated. Other forms of evidence, such as clinical observations, should be taken into account just as much as scientific findings.	There are calls for greater diversity in what constitutes evidence beyond RCTs, including practice-based evidence and clinician observations. (Greene, 2014). The discourse concerning evidence, that is to say the discussion, the thinking, and the practice based upon the concept of evidence, is partly problematic and limiting in this context because of its strong connection between evidence and method. Psychotherapeutic methods that achieve evidence for their treatment results attract greater attention and status for their application than do other

		methods that are not investigated according to evidence-producing models with randomised controlled groups as a result of this evidence normativeness. In this manner, methods with evidence obtain priority in clinical practice regardless of whether it can be known, from a scientific basis, that the non-investigated methods are effective, since they have not been tested in randomised controlled experiments (Lindgren, Folkesson, & Almqvist, 2010).
Science should focus on mechanisms of change in psychotherapy. *n*=2	There is a need for research studies that examine mechanisms of change in psychotherapy (i.e., the theory-driven reasons that change occurs in therapy)	Research has not improved the effectiveness of psychotherapy in the last decades. There is need for more research on the causal mechanisms that make therapy work (Fonagy, 2010).
Science should focus on understanding *process* in psychotherapy. *n*=3	There is a need for research studies that examine *process* in psychotherapy (i.e., the flow of experience consisting of interactions and communication between the therapist and client).	...a combination of treatment methods, the psychotherapist, treatment relationships, and the patient create a successful or unsuccessful treatment. The conclusion is that the combination of such factors is itself an important topic of study in order to obtain scientific, evidence-based knowledge about psychotherapeutic treatment processes and their results (Lindgren, Folkesson, & Almqvist, 2010)
Science should focus on markers of therapeutic stagnation or failure. *n*=1	There is a need for research studies that examine stagnation or failure in psychotherapy (i.e., when the client or therapist is feeling	It is more important for clinicians to know what types of clients do not respond well to the treatment and what signs and markers indicate stagnation or unproductive processes that may result in therapeutic failures. The author proposes that

		"stuck", progress has halted, or psychotherapy is no longer providing beneficial outcomes or leading towards success).	systematic case studies can offer that while bridging outcome research with real-world clinical practice (Iwakabe, 2013).
	Science should focus on lifestyle factors. *n*=1	There is a need for research studies that examine lifestyle factors, such as nutrition and exercise, and how this topic can be integrated into psychotherapeutic work.	We urgently need to bridge the evidence–practice gap to bring lifestyle-based mental health care to people living with mental illness. The authors propose that the treatment of individuals with mental illness can be improved with scientific knowledge about lifestyle factors (Marx, Jacka, & O'Neil, 2021).
6. Science can improve mental health care delivery.	Science can increase the credibility of psychotherapy. *n*=3	In order for psychotherapy to be viewed equally as credible as other health disciplines, it must be informed by science and practice must be evidence based.	Our concern is that if psychologists do not do all of this [the authors discuss the use of science in psychology], health professionals from other disciplines will. However, if we do it, then we must ensure that our work is congruent with best practices and truly informed by science; failing to do so could jeopardize our credibility in the health-care environment and in the numerous other areas in which psychologists are involved (Drapeau & Hunsley, 2014). The reason psychiatrists, clinical psychologists, and clinical social workers (the basic disciplines that compose the majority of psychoanalysts) have a status different from that of spiritual healers, certified coaches, and simple motivational speakers is that our doctorates and MAs give our profession the status of belonging to the scientific world (Strenger, 2013).

Science can help in the reduction of expenses. *n*=2	If psychotherapy is evidence based and grounded in science, treatments delivered to clients should be efficient and cost-effective.	There are many patients, and there is little money. So knowledge needs to be used well. Efficiency studies can help to make mental healthcare less expensive (Engelhard, 2012). This requires a commitment to continually inform and/or be informed by research evidence so as to identify and select interventions and treatment strategies and maximize the chance of benefit, minimize the risk of harm, and deliver the most cost-effective treatment (Dozois et al., 2014).
Science can maintain the offer of diverse services to the public. *n*=1	Psychotherapy research allows the field to evolve, including the improvement and development of treatments and approaches that can be offered to a diverse clientele. The more evidence based practices that exist, the more a variety of services can be offered to clients.	Researchers can work together with clinicians to keep putting real psychotherapies of all models, and combinations of models, at the forefront of public consciousness so that suffering people have options that go beyond either medication or symptom-targeted treatments of the briefest sort. The author argues that research can justify long-term psychotherapy. (McWilliams, 2017).

[1] (*n*= number of papers discussing each subtheme)

Table 2

Demographic and Professional Practice Characteristics of Sample (n = 210)

Question	*n*	%	Question	*n*	%
Gender			Primary Therapeutic Approach		
Male	48	22.9	Cognitive and/or Behavioural	80	38.1
Female	158	75.2	Psychoanalytic/dynamic	51	24.3
Non-Binary	2	1	Humanistic/existential/ person-centered	43	20.5
Transgender	0	0			
Other	1	.5	Systemic	13	6.2
Prefer not to disclose	1	.5	Other	17	8.1
Age Range			Years of Clinical Experience		
20-30	17	8.1	Less than 1	2	1
31-40	39	18.6	1-5	31	14.8
41-50	59	28.1	6-10	28	13.3
51-60	52	24.8	11-15	28	13.3
61-70	29	13.8	16-20	34	16.2
70+	12	5.7	21+	80	38.1
Highest Degree			Primary Setting of Practice		
Bachelors	7	3.3	Private Practice	129	61.4
Masters	104	49.5	Hospital or Centre	35	16.7
Doctorate	85	40.5	University	9	4.3
Post-Doctorate	12	5.7	School	8	3.8
Field of Highest Degree			Other	23	11
Clinical Psychology	122	58.1	Scholarly involvement in last five years		
Counselling Psychology	39	18.6			
Experimental Psychology	4	1.9	Yes	59	28.1
Educational Psychology	6	2.9	No	146	69.5
Indus/Organiz. Psychology	3	1.4			
School Psychology	4	1.9			
Other	32	15.2			

Note. Two respondents did not specify age range or highest level of education. Six respondents did not indicate a response for their primary therapeutic approach or setting of practice, seven respondents did not indicate a response for their number of years of clinical experience, and five respondents did not specify if they had any scholarly involvement in the past 5 years.

Table 3

*Attitudes on Likert-Scale Statements Concerning the **Potential Value** of Science*

Question: In your opinion, how **potentially valuable** can science be to the following items?

Item:	*M*	*SD*	*Mode*	*Median*
Helping practitioners deliver cost-effective treatments.	3.3	1.26	3	3
Protecting clients from harm.	3.38	1.07	3	3
Facilitating ethical care.	3.39	1.15	3	3
Contributing to the maintenance of the diverse psychotherapeutic services offered to the public.	3.4	1.30	3	3
Reducing errors in clinical decision making.	3.41	1.02	3	3
Reducing errors in treatment selection.	3.42	1.04	3	3
Increasing the likelihood that clients will receive **safe** treatments.	3.42	.97	4	3.42
Explaining mechanisms of change.	3.44	.87	4	3.44
Safeguarding from clinician bias.	3.45	1.01	4	3.45
Improving current psychotherapeutic treatments.	3.46	.89	4	3.46
Increasing the likelihood that clients will receive **effective** treatments.	3.56	1.02	4	3.56
Overall advancements in psychotherapy.	3.58	.85	4	3.58
Increasing the credibility of psychotherapy.	3.6	.81	4	4

Note: Given that our data was not normally distributed, the modes and medians have been included in addition to the means and standard deviations.

Table 4

*Attitudes on Likert-Scale Statements Concerning the **Current Value** of Science*

Question:	The previous page addressed the potential value of science to certain items. On this page, we are interested in knowing how valuable you believe science currently is to these same items.			
Item:	*M*	*SD*	*Mode*	*Median*
Contributing to the maintenance of the diverse psychotherapeutic services offered to the public.	3.10	1.29	3	3
Facilitating ethical care.	3.22	1.18	3	3
Increasing the likelihood that clients will receive **safe** treatments.	3.24	1.01	3	3
Reducing errors in clinical decision making.	3.25	1.11	3	3
Helping practitioners deliver cost-effective treatments.	3.26	1.30	3	3
Protecting clients from harm.	3.26	1.13	3	3
Overall advancements in psychotherapy.	3.29	.96	3	3.29
Reducing errors in treatment selection.	3.30	1.16	3	3
Improving current psychotherapeutic treatments.	3.32	1.03	3	3.32
Safeguarding from clinician bias.	3.35	1.16	3	3.35
Explaining mechanisms of change.	3.35	1.07	4	3.35
Increasing the credibility of psychotherapy.	3.39	.95	3	3.39
Increasing the likelihood that clients will receive **effective** treatments.	3.48	1.08	3	3.48

Note: Given that our data was not normally distributed, the modes and medians have been included in addition to the means and standard deviations.

Table 5

Wilcoxon Signed-Rank Test Results Comparing Scores on Current Value of Science and Potential Value of Science

Item	*Z* value	*p*-value
Safeguarding from clinician bias.	-2.47	.01*
Facilitating ethical care.	-2.57	.01*
Protecting clients from harm.	-2.26	.02*
Reducing errors in treatment selection.	-2.39	.02*
Reducing errors in clinical decision making.	-2.73	.01*
Increasing the likelihood that clients will receive **safe** treatments.	-3.14	.00*
Increasing the likelihood that clients will receive **effective** treatments.	-2.13	.03*
Helping practitioners deliver cost-effective treatments.	-.67	.5*
Increasing the credibility of psychotherapy.	-4.4	.00*
Contributing to the maintenance of the diverse psychotherapeutic services offered to the public.	-2.83	.01*
Improving current psychotherapeutic treatments.	-3.28	.00*
Overall advancements in psychotherapy.	-4.75	.00*
Explaining mechanisms of change.	-2.29	.02*

Note: * = significant at $p < .05$ level: represents a significant difference between respondents' ratings of the current value of science and the potential value of science for each of the above listed items.

Table 6

Attitudes on Likert-Scale Statements Concerning Possible Ways in Which Science Could be Even More Valuable to Psychotherapy

Question:	Please rate the extent to which you agree with the following statements. Science could be **even more valuable** to psychotherapy if...			
Item:	*M*	*SD*	*Mode*	*Median*
A greater focus was placed on lifestyle factors (e.g., diet, sleep, exercise).	3.62	.98	4	3.62
Professionals were taught how to use research.	4.10	.83	5	4.1
A greater focus was placed on mechanisms of change.	4.25	.72	5	4.25
A greater focus was placed on markers of therapeutic stagnation or failure.	4.31	.70	4	4.31
There were greater interdisciplinary conversations (i.e., collaborations across disciplines in psychology).	4.33	.69	5	4.33
A greater focus was placed on understanding the interpersonal process between the client and therapist.	4.37	.68	5	4.37
Clinician input was more often sought to inform research.	4.46	.59	5	4.46

Note: Given that our data was not normally distributed, the modes and medians have been included in addition to the means and standard deviations.

Table 7

Attitudes on Likert-Scale Statements Concerning the Relationship between Science and Psychotherapeutic Practice

Question:	Please rate the extent to which you agree with the following statements.			
Item:	*M*	*SD*	*Mode*	*Median*
I believe scientific findings from clinical trials are generalizable to a clinical population.	3.35	.84	3	3.35
I believe the science-practice gap is problematic.	3.51	.94	4	3.51
I believe psychotherapeutic practice is truly a science.	3.71	.84	4	3.85
I believe psychotherapeutic practice is truly an art.	3.77	.87	4	4
I believe there is a science-practice gap.	4.01	.8	4	4
I am sufficiently informed about the scientific method.	4.09	.77	4	4
I trust science to inform my practice.	4.09	.74	4	4
I have the necessary skills to understand science.	4.37	.58	4	4.37

Note: Given that our data was not normally distributed, the modes and medians have been included in addition to the means and standard deviations.

Table 8

Frequency of Opinions Towards Science and Possible Opposing Constructs

Question:	In discussing science and psychotherapeutic practice, some authors have stated that: Science matters, but so does **[item]**. As written, this implies that these two constructs (science versus **[item]**) are opposed to one another. Do you agree that these two constructs (science versus **[item]**) are opposed to one another?

Item:	*YES* *n (%)*	*NO* *n (%)*
Client input	23 (14.5)	136 (85.5)
The therapist	23 (14.5)	136 (85.5)
Common factors	19 (11.8)	142 (67.6)
Ethics and Values	23 (14.6)	134 (85.4)
Clinical intuition, wisdom, and judgment	27 (17)	132 (83)

Note: Only approximately 75% of the sample responded to these questions, which were situated at the end of the survey.

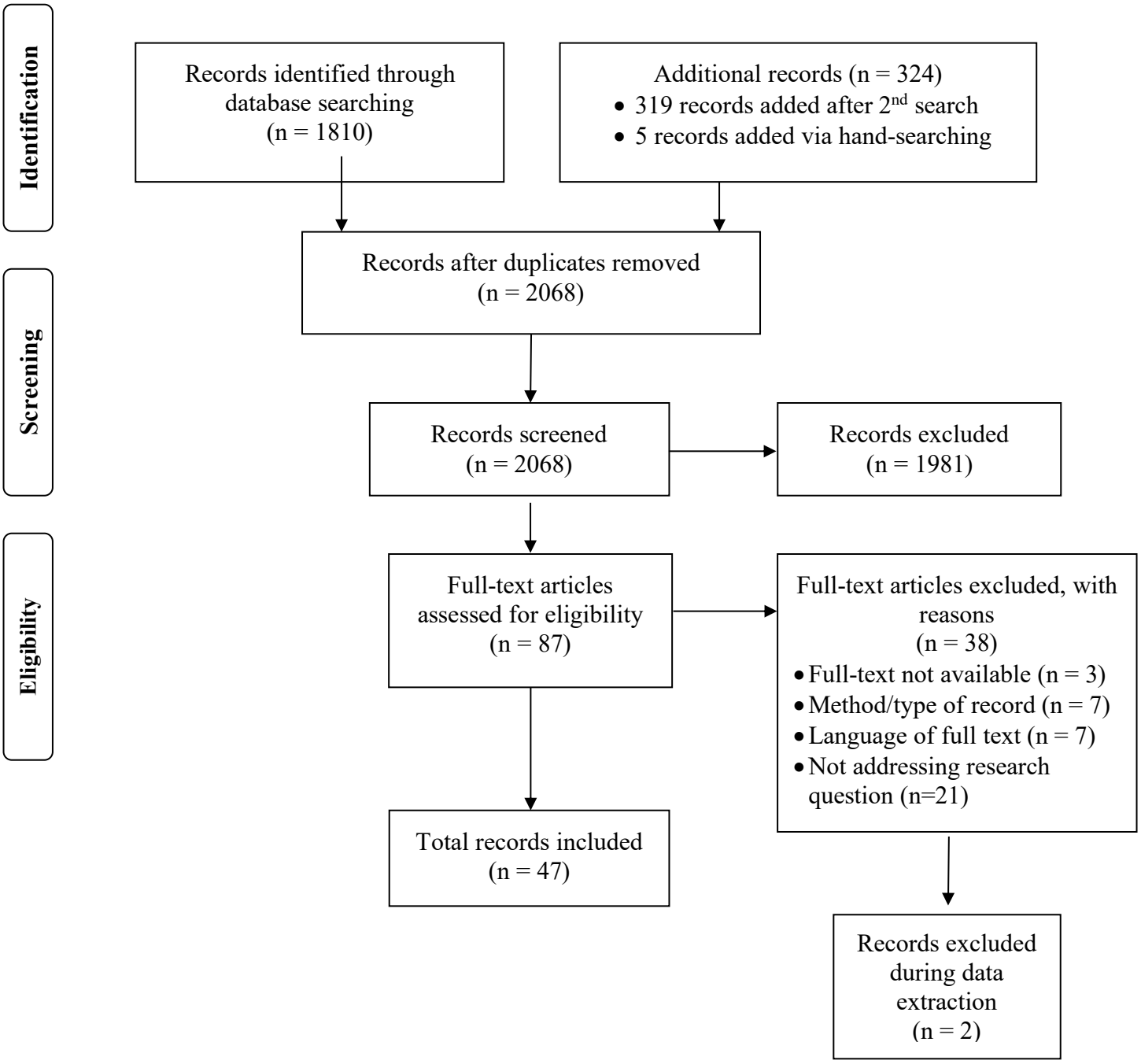

Figure 1. PRISMA (Moher et al., 2009) flowchart of study selection.

Chapter 5: General Discussion

Summary of Main Findings

The purpose of this research was to examine some of the factors underlying the science-practice gap in psychology with an approach that would allow us to make specific recommendations to be considered by a regulatory body responsible for the profession. This thesis focused on the population of psychotherapy providers in Quebec, as nearly half of all Canadian psychologists are practicing in this province. As such, this project contributes findings that are specific to the professional practice of psychology in Quebec, and calls on the OPQ, the psychology regulatory body in this province, to reflect on these findings and the recommendations that we offer.

Research indicates that one of the most opportunistic avenues for bridging the science-practice gap is via training opportunities (e.g., Hershenberg et al., 2012; Lilienfeld et al., 2013). Many studies have focused on improving graduate training programs, so that psychotherapy providers are better skilled in research-practice integration when beginning their career (e.g., Beck et al., 2014). However, little to no research has examined the continuing education (CE) opportunities that are available, and even mandatory, to practitioners throughout their career. The first part of this thesis thus focused on examining the quality of the CE opportunities accredited and promoted by the OPQ. Our findings indicated that nearly half of the psychotherapy modalities advertised in OPQ-approved workshops are not yet supported with research. These results are alarming given the OPQ's endorsement of the EBP model and its code of ethics stating that psychologists are expected to practice based on validated scientific principles and theories. And what does this imply for the science-practice gap in Quebec? Unfortunately, these findings suggest that the screening procedure currently in place by the OPQ to regulate the CE

trainings offered to their members is ineffective and likely helping to maintain this gap being science and practice. Psychotherapy providers will rightfully assume that OPQ-approved workshops are indeed evidence-based, when in fact this is not the case. The problem here is therefore not a resistance to integrate science and practice on behalf of the clinician, but rather the OPQ's failure to uphold their responsibility to promote evidence-based practice. Sharing in this responsibility are the trainers of these workshops, who are licensed professionals themselves, that are promoting psychotherapies with little research support.

The second part of this thesis took a broader approach to developing our understanding of the science-practice gap. Given the abundance of literature on EBP in psychology, we conducted a study that did not focus on the concept of EBP, but rather the concept of science in general. We sought to understand how professionals in psychology perceive the value of science in psychotherapy, with whatever conceptualization of science they may have. Our scoping review identified six relevant themes, which we then presented to the Quebec population of psychotherapy providers via an online survey. Our findings suggested that psychotherapy providers in Quebec may conceptualize science differently than the professionals in psychology whose papers were included in our scoping review. Though several reasons can account for these differences, these results ultimately highlight the importance of examining the science-practice gap within specific populations of practitioners, as minor nuances can become important when making recommendations for change. Our findings also indicated that psychotherapy providers believe science's contribution to psychotherapy can be improved, especially if clinician input was more often sought out by researchers. Moreover, when examining what kind of professional or personal characteristics may impact respondents' perception of the value of science in psychotherapy, we found that CBT therapists value science differently than therapists adopting

other approaches and that providers who believe the strongest in the value of science and who trust science to guide their practice the most believe that professionals should be taught how to use research. Finally, our results indicated that any form of recent connection to academia increased respondents' self-reported skills in science.

What do these findings mean for the science-practice gap in Quebec? Ultimately, a connection to the research world would ideally be maintained and supported for all psychotherapy providers, throughout their career. The providers in our sample, who were primarily clinicians working in private practice, clearly indicated that science could become more valuable to their psychotherapeutic practice should their input be sought out by researchers. That said, over 70% of our sample had not been involved in any scholarly activities leading to a scientific publication in the past five years, therefore we can assume that most of their practice is clinically oriented or at least focused on non-research related activities. There is a plethora of reasons for why clinicians disengage from the research world as they pursue their clinical careers, including time limitations, disinterest, and a lack of opportunities (Gallo & Barlow, 2012; Stewart et al., 2012). However, this disengagement needs to be addressed as it unfortunately perpetuates the science-practice gap.

PRNs (i.e., networks of community-based practitioners who collaborate with researchers to define research questions, design research protocols, and help conduct the studies) are relatively new collaborative enterprises that represent novel approaches to overcoming barriers to translating psychotherapy research to clinical practice (Tasca, Grenon, Fortin-Langelier, & Chyurlia, 2014). They aim to foster relationships between researchers and clinicians that will lead to changes in behaviour among both groups. Moreover, their structure implies that researchers, not only clinicians, have their share of responsibility in the science-practice gap

(Tasca et al., 2014). Ultimately, PRNs directly address many of the items that psychotherapy providers in our survey acknowledged as ways in which science could become more valuable to their practice. First, it allows for their input to be sought out by researchers. Second, providers agreed that science could be even more valuable to psychotherapy if a greater focus were placed on mechanisms of change, therapeutic stagnation/failure, and interpersonal processes. Within these networks, research questions are often generated or evaluated by the practitioner members, to keep the evolving research agenda practice relevant (Tasca et al., 2014). As such, practitioners participating in PRNs may communicate these needs for topic-specific research. And, if in fact these topics have already been researched (e.g., there is an extensive amount of research on mechanisms of change), PRNs also serve to summarize, synthesize, and critically analyze extant research and then broadly disseminate the information to practitioners (Tasca et al., 2014).

The match between the goals of PRNs and the ideas brought forth by providers responding to our survey led us to the recommendation that participation in these networks be incorporated as a mandatory component of the CE requirements imposed on practitioners. Given the heavy workload placed on clinicians and their limited time and resources, choosing to voluntarily participate in such networks may be a long shot, regardless of the value they may see in these networks. As such, if hours dedicated to PRNs counted towards CE credits, we believe the incentive would be sufficient to encourage clinicians to take part in these powerful initiatives to bridge the science-practice gap.

Implications of Findings and Direction for Future Research

The first part of this thesis shed light on an issue that may be maintaining the science-practice gap in Quebec, despite it rarely being discussed in the literature on this topic. Our findings suggest that the CE offered to psychotherapy providers in Quebec via their regulatory

body is sub-optimal and inconsistent with evidence-based practice, therefore not only is this a missed occasion to remedy the science-practice gap, but it is also perpetuating and likely widening this problematic gap. Practitioners may be spending 95% of their CE hours every five years training in psychotherapy modalities that have yet to be scientifically validated. This has a direct effect on the quality of psychotherapeutic services offered to the public, which is unacceptable for several reasons. First, service users have the right to be treated with the best interventions available for their presenting problem, and psychotherapy providers are expected to uphold this standard based on their code of ethics. Second, the waitlists to access mental health services in Quebec, and all of Canada for that matter, have reached tragic numbers. Although the solution to improve access to mental health care is complex, ensuring that effective, time-efficient, research supported treatments are being offered is certainly one part of the solution. As discussed by Purgato, Cuijpers and Barbui (2021, p.174), unlike pharmacological interventions, "there are no specific standards about the type and quantity of evidence required before a new psychological intervention is made available for everyday use". Although true, the OPQ can counteract this lack of standards by filtering the interventions they promote to their members, which are later delivered to all the service-users in their province. A revisiting of the criteria to accredit and promote the CE trainings offered to practitioners is a concrete, realistic change that could make an important difference in rectifying this gap between science and practice in Quebec.

Furthermore, the role of the CE requirements in Quebec could be optimized in a way that would encourage science practice integration while preventing any additional burden to practitioners' already heavy workloads. Should PRN contribution become a mandatory component within the breakdown of CE requirements, practitioners would, at the very least,

maintain a small connection to the research world post-graduation. Not only would this improve their perception of the value of science in psychotherapy, as suggested by our findings, it would favour a conversation about their needs for research, their concerns, and address many of the other barriers limiting a more evidence-based practice. As Dozois (2013, p. 3) described,

> "We have diversity of perspectives on the "truth" and what is important in therapy. At one end of the spectrum are researchers who work tirelessly to develop and disseminate the results from randomized controlled trials. These individuals may caricature some psychotherapists as flying by the seat of their pants rather than grounding their work in evidence. On the other end, we have front-line clinicians who work tirelessly to help their patients with complex comorbid problems. These practitioners may caricature researchers as ivory-tower academics who do not understand the clinical realities of day-to-day practice and study unrepresentative patients in highly controlled environments."

Perhaps efforts in knowledge translation and dissemination thus far have neglected the importance or benefit that contact and connection between researchers and clinicians may have. If Dozois (2013) is right, efforts to solve the science-practice gap need to focus on merging the realities of clinicians and researchers, and PRNs aim to do just that. Encouraging these collaborations via mandatory CE requirements would not only represent a concrete change to help bridge the science-practice gap but send an important message on behalf of the OPQ, one that speaks to the importance of evidence-based practice in psychotherapy within our province.

The findings from this thesis provide several directions for future research. In fact, following the publication of the first manuscript, Welch (2022) developed an alternative methodology to ours, one that is less rigorous but quicker, to examine the extent to which

psychological associations in Canada value and promote EBP. Although his work was not specific to CE, the interest in holding regulatory bodies accountable for aspects of the science-practice gap is evident. Consistent with our findings in the first part of this thesis, Welch (2022) determined that Canadian psychological associations do not appear to value or promote evidence-based practice to the extent possible.

This thesis recommended that the OPQ revisit the screening procedure in place to accredit and promote CE workshops, and it suggested that the breakdown of CE requirements be adjusted to incorporate a mandatory contribution to PRNs. Future research investigating pilot programs implementing these adjustments to the CE requirements would be helpful, particularly regarding the integration of PRNs. To that end, research examining the ways in which PRNs may be structured to facilitate contributions within a CE framework would be essential prior to their mandatory implementation. Most important, should any of the recommended changes be implemented, progress-tracking research will be vital. First, if the OPQ adopts changes to their screening procedure for trainings, a re-evaluation of the quality of the CE offerings advertised to their members should be conducted. Second, if PRNs do become a component of practitioners' CE, studies should be deployed to ensure that this additional component is having the intended effect, namely, better research practice integration.

Finally, although this thesis gathered information about psychotherapy providers' opinions of the value of science in psychotherapy and the ways it may be improved, we did not present any of our resulting recommendations back to practitioners. Future research may want to examine how practitioners react to the recommendations we have made to the OPQ, and perhaps even explore any further suggestions they may have concerning these ideas.

Limitations

There are a number of limitations that should be taken into account when considering the findings in this research. First, both manuscripts included database searches for articles/records meeting specific inclusion and exclusion criteria. Although these criteria are necessary to narrow down the number of results to a workable quantity, there is always a risk that certain papers may be missed and thus not included for analysis. In the first manuscript, "gray literature" was omitted as we focused on established sources of peer-reviewed information. In the second manuscript, outcome studies were excluded as we focused on papers in which authors were expressing their opinion, such as commentaries, editorials, etc. These decisions imply that we cannot be certain that all relevant papers were included and considered in both manuscripts.

Another limitation is related to the qualitative analysis conducted in phase one of the second manuscript. An essential issue when discussing qualitative content analyses is the presumption that texts contain multiple meanings. Some degree of interpretation is inevitable when conducting studies of this nature, which may have influenced results.

Finally, the sample size for our survey conducted in the second manuscript was relatively small. Although the demographic comparison with the most recent OPQ annual report (2020-2021) indicated that our sample was representative of the population of psychotherapy providers in Quebec, the participation rate was low. The generalizability of our findings regarding the perceived value of science in psychotherapeutic practice is thus limited by our sample size, and future research should focus on validating our findings at a larger scale using bigger samples.

Conclusion

To conclude, although our review of the literature highlighted many beliefs, concerns, and practical barriers behind the science-practice gap, our findings point to dissatisfactory

continue education trainings and nuances amongst different groups of practitioners regarding the value of science in psychotherapeutic practice as additional factors underlying this infamous gap. Prior research has not investigated the quality of continuing education being offered to psychotherapy providers, and most research on the science-practice gap is conducted on large populations of practitioners, limiting the specificity of any possible recommendations. Our focus on the Quebec population of psychotherapy providers has allowed us to make direct recommendations to be considered by the OPQ, if they indeed wish to continue promoting and endorsing the importance of science in professional practice. According to Drapeau & Hunsley (2014), practitioners will continue to operate in a largely prescientific manner until key organizations in psychology (i.e., professional associations and regulatory bodies) send a clear message about the value and importance of science and about how science needs to be considered in any service delivery.

This thesis argues that the CE requirements imposed on psychotherapy providers are one of the direct ways in which the regulatory body can influence the practice of its members – therefore the quality (i.e., the kind of training that is accredited) and its components (i.e., adding PRN participation to the mandatory breakdown, like the individual supervision component) should be re-evaluated and improved. If the greatest casualty of the science-practice gap is indeed the public at large (Kazdin, 2008), and the sole mandate of the OPQ remains the protection of the public, these recommendations merit further investigation and consideration on their behalf.

Overall, this thesis enhances our current understanding of the relation between the profession of psychology and the science of psychology in Quebec. Findings from these studies may be used to help bridge the science-practice gap, to increase the credibility of professional

psychology in the health-care environment and to ensure that high-quality mental health services are delivered in this province.

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