

Attitudes towards and organizational support for evidence-based practices: A comparison of education and allied health professionals in autism

Author

Paynter, J, Sulek, R, Trembath, D, Keen, D

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**Attitudes Towards and Organizational Support for Evidence-based Practices:
A Comparison of Education and Allied Health Professionals in Autism**

Running head: Autism, EBP Attitudes, Culture.

Abstract

Background: Evidence-based practices (EBPs) have been developed for clients on the autism spectrum across allied health and education. However, there remains a significant gap between research and practice. We explored the similarities and differences between educators and allied health professionals in two key factors that may link to uptake: individual attitudes and organizational culture support for EBP.

Method: Allied health ($n = 156$) and education professionals ($n = 95$) completed measures of their individual attitudes and perceived organizational support for EBP.

Results: Moderate levels of support for each were found within both groups. Educators however, showed more positive individual attitudes, whereas allied health professionals showed more positive organizational support toward EBP.

Conclusions: These results add to the scant literature comparing professions, highlighting discipline differences in attitudes and organizational support across professionals for EBP in autism. These findings highlight the need for targeted knowledge translation approaches as opposed to development of generic models across contexts and disciplines.

Keywords: Evidence-based practices; empirically supported; autism; autism spectrum disorder; implementation science

Attitudes Towards and Organizational Support for Evidence-based Practices: A Comparison of Education and Allied Health Professionals in Autism

Autism spectrum disorder is a lifelong neurodevelopmental disability characterized by impairments in social communication and the presence of restricted and/or repetitive behaviors and interests (American Psychiatric Association, 2013). Autism occurs in approximately 1 in 59 individuals (Centers for Disease Control and Prevention, 2018) and is one of the largest and highest growing disability groups in both education and allied health systems (e.g., Boyle et al., 2011; Department of Education and Training, 2017; National Disability Insurance Agency, 2018). Individuals on the autism spectrum tend to face more barriers in achieving positive educational (Australian Bureau of Statistics, 2014), and broader life outcomes (for a review see Levy & Perry, 2011), compared to their peers without autism. Both educators and allied health professionals (e.g., psychologists, speech pathologists) play important roles in supporting the development of individuals on the autism spectrum, including in the provision of intervention. While educators primarily support children in the school setting, allied health professionals in Australia (the context of the current study) provide services across both the public (including in schools) and private sectors. While it is important for both groups to utilize evidence-based practices (EBPs: practices supported by sufficient research evidence) in the provision of intervention, gaps exist between available research and actual implementation by professionals (Dingfelder & Mandell, 2011; Guldberg, 2017). To date, minimal research has explored the similarities or differences between allied health professionals and educators in two key factors linked to the implementation of EBPs: individual attitudes towards EBP and organizational culture support for EBP (e.g., Locke, J., Kang-Yi, C., Frederick, L., & Mandell, 2019; Paynter et al., 2017; Paynter & Keen, 2015). Understanding similarities or differences in needs across groups is important to promoting a collective voice, as well as providing training or supports to develop collaborative teams who work with the same individuals as highlighted by Australian research with parents, teachers, and allied health professionals (Saggers et al., 2019; Vlcek, Somerton, & Rayner, 2020).

While there is no single best intervention practice recommended for all individuals on the autism spectrum, practice selection should be guided by an EBP framework in which service providers (e.g., educators or allied health professionals) utilize the best available evidence in their

clinical decision making, while also drawing on their clinical expertise and client preferences (Sackett, Richardson, Rosenberg, & Haynes, 2000). Several reviews have set out to identify the evidence base of available autism interventions which target a range of outcomes (for the most recent reviews see Steinbrenner et al., 2020; Whitehouse et al., 2020). While these reviews serve as a tool to assist in guiding the selection of specific interventions when working with autistic individuals, the use of unsupported practices persists.

There has been increasing emphasis on bridging the “research to practice” gap in the field of autism broadly (e.g., see Guldberg, 2017; McGrew, Ruble & Smith, 2016). This emphasis is in response to non-use of EBPs as well as continued use of practices unsupported by research including among educators (Carter, Stephenson, & Strnadová, 2011; Hess, Morrier, Heflin & Ivey, 2008; Sulek, Trembath, Paynter & Keen, 2018) and allied health professionals (Accardo & Finnegan, 2019; Paynter, Sulek, Luskin-Saxby, Trembath & Keen, 2018) in both Australia and internationally. Attempts to bridge this gap have traditionally embodied a knowledge deficit model including unidirectional attempts such as one-off trainings or provisions of information from researchers to practitioners in attempts to disseminate EBP into practice settings (Stahmer & Aarons, 2009). Such approaches have been largely ineffective in changing practice; this is hypothesized to be due to omitting “practice-to-policy” communication whereby stakeholder feedback informs implementation efforts (Fixsen, Karen, Metz & Van Dyke, 2013, p. 216). Similarly, provisions of practice guidelines alone (e.g., Australian Good Practice Guidelines, Roberts, Williams, Smith & Campbell, 2016) appear to have had limited impact (for a discussion and examples see Fixsen et al., 2013), including not reaching intended audiences (e.g., only 60.6% of participants in an early intervention study reported receiving information on practices from the Australian Good Practice Guidelines, Paynter et al., 2017). Such approaches fail to account for individual differences in knowledge, attitudes, or organisational culture that may impact on translation efforts.

Understanding the personal or organizational enablers or barriers to EBP, may be important to translate knowledge more effectively in autism, in line with models for knowledge translation (e.g., Knowledge to Action Framework, see Graham, 2006). Enablers or barriers may include personal traits (e.g., knowledge, attitudes to EBP or motivation) and organizational factors (e.g., the implementation climate such as extent to which use of a practice is expected, resources available for implementation) that facilitate or hinder the translation of EBP into practice. Consistent with these knowledge

translation models, previous Australian research links individual attitudes such as openness to using new practices, and organizational culture support, to the uptake of EBP by early intervention staff (Paynter et al., 2017; Paynter & Keen, 2015). Further, research in the US links individual attitudes (perceiving a practice as required or appealing) and organizational culture (e.g., organizational adaptability) with teacher implementation success with students on the autism spectrum (Locke et al., 2019). Thus, understanding attitudes and broader organizational culture across service settings (educators vs. allied health) may be important to tailoring effective knowledge translation efforts for differing populations and settings.

Attitudes Towards Evidence-Based Practice

Attitudes towards evidence-based practice may vary across professional groups. Aarons (2004) examined the association between health professionals' attitudes toward adoption of EBPs in early intervention (EI) staff, and factors such as provider education level, and professional status (i.e., intern vs. professional staff) in the United States (US) using the evidence-based practice attitude scale (EBPAS). The EBPAS measures individuals' attitudes towards evidence-based practice in terms of impact of requirements to use, intuitive appeal, openness to use, and divergence (i.e. different to usual practice). They found interns, compared to professionals, (a) endorsed more positive global attitudes towards the adoption of evidence-based practices; (b) were more likely to adopt EBPs if they were intuitively appealing; (c) were more open to adopting new practices; and (d) were less likely to reject EBP, or view EBP as not relevant to clinical practice, compared to professionals. Thus, differences across levels of training were found with interns more supportive of EBP than professionals.

Stahmer and Aarons (2009) compared attitudes to EBP across general mental health providers (marriage and family therapy, social work, psychology, psychiatry, and other) and autism EI providers (including teachers, early childhood educators, and developmental/behavioral specialists) also using the EBPAS in the US. Overall, EI providers demonstrated more positive global attitudes toward EBP compared to mental health providers in the populations surveyed. EI providers were also more likely to adopt EBPs if required by their organization, and, similar to interns surveyed in Aarons (2004) who were more likely to adopt EBP if they were intuitively appealing, were more open to trying new practices, and were less likely to reject EBP or view them as not relevant to clinical practice compared to mental health providers. Conversely, the generalized and specialized (child and

adolescent) experience of mental health professionals was associated with decreased openness towards adopting new practices. This finding is consistent with more recent research with psychologists with resistance to adoption of EBP in the US documented by Lilienfeld, Ritschel, Lynn, Cautin, and Lutzman (2013), who highlighted a multitude of contributing factors including general misunderstandings of EBP, and the belief that if clinicians perceive a therapy to work the need for controlled research is negated. Thus, across allied health and early intervention there appears to be differences in attitudes to EBP, which in this study is taken to mean not that one group is superior to another, but that that different approaches may be best suited to different groups in attempting to foster the uptake and use of evidence-based practices. With each of these studies situated in the US context which varies from other countries in terms of codes of ethics, health registration or accreditation pathways, and training, future research in other countries is needed.

In the education context, research suggests that educators in the US may be skeptical of the EBP concept and show a variety of attitudes. Boardman, Argüelles, Vaughn, Hughes, and Klingner (2005) examined 49 US special education teachers' perspectives about educational research fifteen years ago, and found many teachers reported being more likely to employ practices based on feelings of what 'worked' for specific students, rather than requirements of what or how to teach. Here, the implication is not that educators had anything other than their students' best interests in mind, but they had reservations about the research evidence. For instance, while some educators interviewed supported the use of 'research-based' practices, many felt that the research conducted was not suited to their context and were therefore skeptical about the validity of these findings. More recently, Carter, Stephenson, and Hopper (2015) found similar results when surveying 209 Australian final year teaching students; consideration of the empirical evidence of teaching practices was ranked below practicum experience and personal preferences when engaging in instructional decision making. While this provides us with emerging information regarding educators' attitudes towards EBP, quantitative, psychometrically sound measures such as the EBPAS (Lewis et al., 2016), as well as research with qualified Australian teachers, would provide important further insight into educators' attitudes to EBP and allow comparison to other groups such as allied health professionals in Australia which to our knowledge, has yet to be compared in the research literature in the field of autism.

Organizational Culture

Organizational and workplace factors might also impact the extent to which EBPs are implemented by professionals working in education and health settings. In a series of focus groups conducted with early intervention staff, including program supervisors and group leaders, working in the home or center-based settings supporting autistic individuals in the US, Stahmer, Collings, and Palinkas (2005) highlighted that time available to staff, and training in EBP influenced implementation in practice. Consistent with this, in their review of factors impacting EBP implementation in health care settings, Williams, Perillo, and Brown (2015) identified five broad organizational barriers to EBP implementation: staff workload, attitudes of staff or the organization towards EBP, lack of resources, lack of authority to change practice, and workplace culture resistant to change. These findings are reflected in research conducted with education professionals.

In their interviews of nine special education teachers of students with intellectual and developmental disabilities in Canada, Greenway, McCollow, Hudson, Peck, and Davis (2013) found that a lack of tools (including resources and training) impacted EBP implementation, with educators further citing difficulties in identifying and accessing relevant research and training in these practices. Similarly, Kucharczyk et al. (2015) highlighted that educators, administrators and community providers recruited for a series of focus groups in the US reported that time, access to resources including appropriate professional development, and 'buy-in' of educators and schools were barriers to implementation of EBP with adolescents on the autism spectrum. In addition to its impact on implementation or use of EBP, organizational culture has also been associated with clinician attitudes towards EBP.

Relationship Between Organizational Culture and Attitudes

Organizational culture has been found to have links with attitudes to EBP in clinicians working in mental health settings. It has been suggested that organizational culture will influence attitudes towards EBP in a manner that aligns with the expectations of the organization (Aarons et al., 2012). For example, Aarons et al. (2012) found that in a large-scale survey of mental health clinicians in the US, clinicians working in highly proficient workplaces (i.e., where clinicians were expected to be up to date in their knowledge and put the needs of the client first) reported more positive attitudes to EBP. Patterson, Dulmus, and Maguin (2013) similarly found that openness to adopting new practices was associated with an organizational culture that was more proficient, and less resistant to change, in a

sample of health service workers (including therapists and residential care workers) in the US. However, in contrast, Locke et al., (2019) found in a study of US teachers of students on the spectrum that organizational culture (implementation climate) was not significantly linked to attitudes towards EBP. Organizational culture did not link to EBP uptake in this study, however attitudes linked to use of one EBP (discrete trial training) but not two others included. While these studies provide insight into the relationship between organizational culture and individuals' attitudes towards EBP, and how this may impact EBP implementation within disciplines, differences across professions (e.g., allied health versus education) within the same country and at the same time, that may inform future initiatives are yet to be examined.

Purpose of Study

Within the field of autism, both allied health professionals and educators are encouraged to use EBP. Understanding both the attitudes and organizational culture towards EBP adoption experienced in each group is important to inform knowledge translation efforts such as provision of professional learning, development of specialist autism tertiary courses (e.g., diplomas and masters in autism studies), and supporting collaborative multidisciplinary teams who may work with the same individuals across varying contexts. This may then inform whether similar or different dissemination models and targets for intervention (e.g., attitudes) are of value across each group, given likely differences in the contexts in which intervention is provided. The key aims in this study were to examine the similarities and differences in attitudes and organizational culture in allied health and education professionals working with individuals on the autism spectrum. While attitudes and organizational culture are likely to impact actual implementation of EBP, their link to use of specific practices were not examined in this study. No specific hypotheses were made due to the paucity of comparative research in this area. We also examined the links between attitudes and culture to EBP. Our aim was to elucidate potential group differences as an initial focus of Australian research given much of the previous research has been situated in overseas contexts to identify directions for future more fine-grained analysis of factors that may drive differences if found. We note explicitly that the intention was not to compare the two groups with a superior/inferior frame of reference, but rather to explore differences with the view to tailoring future strategies for supporting the uptake of EBP in ways most relevant to each group.

Methods

Participants

This study was conducted with approval from the Human Research Ethics Committee of that author's institution (*approval number withheld for blind review*) that covered extracting and comparing data from two previously conducted surveys of educators and allied health professionals separately (*approval numbers withheld for blind review*) investigating organizational culture and attitudes towards evidence-based practice, in addition to participant knowledge and use of evidence-based practices. Recruitment of both cohorts was primarily conducted via advertisement on social media (e.g., Australian allied health and educator special interest groups on Facebook) and with professional networks of the authors encouraged to disseminate the call for participants. For the allied health cohort, inclusion criteria required the participants to be an allied health professional (psychologist, occupational therapist, speech pathologist or behavior analyst) currently working with autistic individuals. For educators, inclusion criteria required participants to be currently teaching students on the spectrum (including classroom teachers, special education teachers, and Heads of Special Education Services). All participants were required to indicate consent prior to completing the survey. While the educators survey was originally made available to teacher aides their responses ($n = 6$) have been excluded from these analyses due to not addressing the target group of the research question. A total of 170 allied health professionals and 91 educators completed the online surveys, with 14 and 11 participants dropping out of the allied health and education professional surveys, respectively, after completing participant demographics. Demographic information for the remaining 156 allied health professionals and 80 education professionals is displayed in Table 1.

[Insert Table 1 about here]

For both the education (96.2%) and allied health groups (94.2%) the majority of participants were female, with no significant differences in the gender proportion between groups, $\chi^2(1) = .447, p = .504$. The allied health cohort showed a significantly higher proportion of participants with a postgraduate qualification (51.9%), compared to education professionals (38.8%), $\chi^2(2) = 9.37, p = .009$. Of note, nine participants in the allied health cohort held additional qualifications in an education related field including a Master of Special Education ($n=6$) and Master of Educational and Developmental Psychology ($n=3$). The majority of participants in the education cohort were aged between 36 to 50 years (37.5%), and the majority of allied health cohort aged between 26 to 35 years

(42.9%), with differences in proportions significant, $\chi^2(3) = 17.86, p < .001$. There were no significant differences in time working with students/clients on the autism spectrum between education ($M = 8.65$ years, $SD = 6.33$ years) and allied health participants ($M = 10.04$ years, $SD = 8.18$ years), $t(194.14) = 1.45, p = .150, d = 0.110$. Participants in the education cohort reported a longer time in their profession ($M = 13.05$ years, $SD = 10.50$ years) compared to allied health professionals ($M = 10.38$ years, $SD = 8.79$ years), $t(234) = -2.06, p = .040, d = 0.311$.

Measures

Demographics

Questions included age bracket, work setting (e.g., school, hospital, private practice), current role and profession, highest academic qualification, and time working with individuals on the autism spectrum.

Attitudes to EBPs

The Evidence-Based Practices Attitudes Scale (EBPAS; Aarons, 2004) is a 15-item scale which measures individual's attitudes towards the adoption of evidence-based practice, where higher total scores indicate more positive attitudes towards adoption of evidence-based practice. The EBPAS has four associated subscales: requirements (three items), appeal (four items), openness (four items), and divergence (four items). Participants rated statements from 0 = Not at all to 4 = To a very great extent. Minor changes were made to the wording in the educator version of the survey to better reflect the settings in which they worked, for example "clients" became "students", "agency" became "school". The EBPAS has been found to show good internal consistency, and structural validity (see Lewis et al., 2016). Across the two samples, poor (divergence $\alpha = .62$) to good (requirements $\alpha = .91$; appeal $\alpha = .84$; openness $\alpha = .75$, total $\alpha = .83$) reliability was found for all scales. Although poor internal consistency for the divergence scale was found in the present data, this was consistent with the scale development paper (Aarons, 2005, divergence $\alpha = .59$), and was thus retained to allow comparison to previous research. The EBPAS has been used in previous research in autism with both teachers and allied health professionals (e.g., Locke et al., 2019; Paynter & Keen, 2015; Paynter et al., 2017).

Organizational Culture

The Organizational Culture Questionnaire (OCQ; Russell et al., 2010) is an eight-item scale which gathers information on an organization's characteristics and culture towards research,

measurement, and evidence-based practice, with higher scores indicating more organizational support for EBP. The OCQ includes three scales: resources (four items), culture (three items) and supervisor (single item), as well as a total score (all eight items). Participants rated their level of agreement with each statement from 1 = Not at all to 10 = To a great extent. Across both versions of the survey, minor wording changes were made to the scale to better reflect the settings in which participants worked, changing the term “organization” to “workplace” throughout. All scales with multiple items showed good reliability across the samples (total, $\alpha = .95$; resources, $\alpha = .88$; culture, $\alpha = .95$), consistent with previous research within autism early intervention that included teachers and allied health professionals (e.g., Paynter & Keen, 2015; Paynter et al., 2017).

Procedure

Data for the allied health cohort were collected between July and November of 2016 using the Survey Monkey online survey software. Data for the education professional cohort were collected between November 2017 and April 2018 using the Qualtrics online survey software. For both cohorts, participants first read the Participant Information Sheet and were required to indicate consent before proceeding. Participants then completed the remainder of the survey, which took approximately 30 minutes. All survey responses were anonymous. Please note that autistic individuals, or members of the autism community, were not involved in the conduct of this research.

Data Analysis

Data screening for assumptions of parametric analyses were conducted. Potential confounds between groups given significant differences in qualifications, age group, and time in profession as outlined in the participants section were screened. This screening was conducted using analysis of covariances (ANOVAs) with age group and qualification as independent variables and dependent variables of organizational culture and individual attitudes. To screen for time in profession correlations with organizational culture and individual attitudes were conducted. Data were also screened comparing the full dataset to only those who worked in private practice. This screening was then used to inform the next stage of analyses as outlined in data screening. To address the key research question of whether groups differed or not on organizational culture or attitude variables between groups t-tests (IV of allied health vs. education) were conducted with the exception of organizational culture total score for which an ANOVA was conducted to control for group differences in age group following screening. To address the links between organizational culture and attitude

variables bivariate correlations were conducted. Due to the exploratory nature of the current study due to the paucity of previous comparative research, increased risk of Type 1 errors was considered less of a concern than Type 2 errors. As such, although the study design necessitated multiple analyses, potentially increasing familywise error, correction (e.g., Bonferroni) was deemed too conservative (e.g., Perneger 1998). Thus, a p-value of 0.05 was retained for all analyses. Statistical Package for the Social Sciences (SPSS) was used for analyses.

Results

Data Screening

Missing values analysis revealed non-completions at item level (0% to 33.1% across the data base) and listwise deletion was used for each analysis. Investigation of skew and kurtosis revealed violations of normality for EBPAS appeal and requirements subscales for both educators and allied health cohorts, and the EBPAS total score and OCQ culture subscale for allied health professionals only. Outliers, identified using boxplots, were Winsorized to within 2.5 SD of the mean. Mild violations to normality remained for the EBPAS Appeal subscale (educator cohort only), and the OCQ culture subscale, however, no further transformations were made to the data for ease of interpretation.

As significant differences were found between the allied health and education groups in qualifications, age group, and time in their profession (see participants section), the links between these variable and the dependent variables (organizational culture and individual attitudes) were analyzed to inform whether these should be controlled in analyses. The only significant difference was between age group of participants and total organizational culture scores, $F(3, 192) = 3.33, p = .021, \eta^2 = .040$, with all other analyses $p > .05$. Tukey's post hoc comparisons revealed that participants between the ages of 36 and 50 years ($M = 7.10, SD = 2.18$) had significantly higher total scores ($p = .022$) compared to participants aged between 18 and 25 years ($M = 5.51, SD = 2.24$). As such, an ANOVA was conducted with age group and profession as independent variables to compare allied health to education groups (with age group thus controlled).

All analyses were conducted with the full set of participants, with a secondary analysis conducted excluded the approximately one third of allied health professionals who reported working in private practice (31.4%). These secondary analyses were conducted as substantive differences in work settings (i.e., working in private practice with presumably more flexibility to set their own terms of

practice vs. working within a more rigidly structured multi-disciplinary practice or school setting) might impact potential differences in organizational culture and attitudes and to thus compare those working within organizations to each other only. As results did not change (statistical significance and effect sizes) in attitudes to EBP comparisons, the full sample is reported. Conversely, results showed differences with exclusions for organizational culture, and therefore both sets of analyses are reported.

Group Comparisons

Attitudes to EBP

Mean scores on the EBPAS appeal subscale were significantly lower for allied health professionals compared to educators, $t(129) = 3.54, p = .001, d = 0.53$ (see Table 2 for group means). Mean scores on the EBPAS openness subscale were significantly lower for allied health professionals compared to educators, $t(129) = 6.29, p < .001, d = 1.12$. Mean scores on the EBPAS requirements subscale were significantly lower for allied health professionals compared to educators, $t(129) = 2.40, p = .018, d = 0.74$. Mean scores on the total EBPAS scale were significantly lower for allied health professionals compared to educators, $t(129) = 3.49, p = .001, d = 0.63$. No differences were found between allied health professionals and educators on the EBPAS divergence subscale, $t(129) = 1.61, p = .110, d = 0.28$.

[Insert Table 2 about here]

Organizational Culture

Mean scores on the OCQ culture subscale were significantly higher for allied health professionals compared to educators, $t(129) = 3.61, p < .001, d = 0.63$, see Table 2. Mean scores on the OCQ supervisor subscale were significantly higher for allied health professionals compared to educators, $t(129) = 2.87, p = .005, d = 0.51$. Mean scores on the OCQ resources subscale were significantly higher for allied health professionals compared to educators, $t(129) = 2.43, p = .017, d = 0.43$. For total OCQ scores no interaction was observed between group and age, $F(3, 188) = 2.28, p = .081, np^2 = .035$. A significant main effect of group, $F(1, 188) = 7.09, p = .008, np^2 = .036$, was reported, with allied health professionals reporting higher overall total scores. There was no main effect of age, $F(3, 188) = 2.20, p = .090, np^2 = .034$.

Following removal of participants working in private practice, group differences on the resources subscale were no longer significant, $t(110) = 1.57, p = .118, d = 0.30$. Additionally, the main

effect of group was no longer significant, $F(1, 163) = 2.77, p = .098, \eta p^2 = .017$, with the main effect of age now reaching significance, $F(3, 163) = 2.94, p = .035, \eta p^2 = .053$. Multiple comparisons highlighted that participants between the ages of 36 and 50 years ($M = 7.25, SD = 2.23$) had significantly higher total scores ($p = .014$) compared to participants aged between 18 and 25 years ($M = 5.51, SD = 2.24$).

Correlations between Attitudes and Organizational Culture

Allied health cohort

All subscales of the EBPAS and OCQ were significantly correlated with their total scale scores (all p 's $< .05$), see Table 3. A statistically significant, small, negative correlation was found between the EBPAS appeal subscale and OCQ supervisor ($p = .002$) and total OCQ scores ($p = .010$). Small, significant correlations were also observed between the EBPAS divergence subscale and OCQ resources ($p = .028$), culture ($p = .023$), and supervisor ($p = .042$) subscales. EBPAS openness was also weakly, negatively correlated with OCQ total scores ($p = .023$).

[Insert Table 3 about here]

Educator cohort

As expected, all subscales of the EBPAS and OCQ were significantly correlated with their total scale scores (all p 's $< .05$). No other significant correlations were observed, see Table 4.

[Insert Table 4 about here]

Discussion

The aim of this study was to explore the similarities or differences in attitudes towards and organizational culture support for EBP between educators and allied health professionals working with individuals on the autism spectrum. Educators generally reported more positive individual attitudes towards EBP including overall (total score), appeal, openness, and requirements. Only divergence showed non-significant findings. In contrast, allied health professionals reported more positive organizational culture support for EBP. Several significant associations were observed between organizational culture and attitudes of allied health professionals in the current sample; however, this was not replicated in the educators cohort.

While both groups reported moderate to high support for EBP as indicated by mean scores across each domain of the EBPAS (range between 2.72 and 3.62 on a 0-4 scale), educators tended to show more positive global overall attitudes towards EBP, were also more open to trying new practices, and were more likely to report being willing to adopt EBPs if required by their organization compared to allied health professionals. This is consistent with findings from Stahmer and Aarons (2009) who found autism early intervention providers (predominantly educators) compared to mental health providers (typically allied health) showed more positive attitudes towards EBPs. This is also consistent with Lilienfeld et al.'s (2013) reports of resistance to EBP by psychologists. However, it is somewhat in contrast to previous research with educators that has indicated skepticism to EBP in special educators (Boardman et al. 2005) and final year teaching students (Carter et al. 2015), although these studies did not compare these populations to other groups. It may be that there are differences that have emerged over time, across countries (with Boardman et al. 2005 conducted in the US), or between practicing and pre-service teachers.

Differences in attitudes to EBP across educators and allied health may be impacted by differences in client population, and contexts in which intervention is delivered. While both groups reported working with individuals on the autism spectrum, educators in Australia typically work in a specific setting (e.g., general, or special education) with a specific student age range (e.g., primary school or high school) in a group setting (typically over 20 students in a class). In contrast, allied health practitioners may see a broader population of individuals on the autism spectrum, including adults, typically in a 1:1 or small group (6-12) context across a variety of settings (e.g., home, community, clinic, school). These differences may impact on how applicable EBPs are viewed by practitioners in each field. Consistent with this possibility, differences in heterogeneity and setting were posited by Stahmer and Aarons (2009) as a potential explanation for differences they found between mental health and early intervention staff. It must be acknowledged that potential concerns around the applicability of EBPs to specific populations is not unfounded; while EBPs have been established in autism (e.g., Wong et al. 2015; Steinbrenner et al., 2020) much of the research/established practice has been with children with far more limited research/evidence with adults, and those with the highest levels of needs under-represented in treatment studies (see review by Stedman, Taylor, Erard, Peura, & Siegel, 2019). Thus, differences in attitudes may reflect differences in presentations seen by each group.

Moderate levels of organizational support for EBP (range between 5-7 on a 1-10 scale) were reported by both educators and allied health professionals. However, allied health professionals indicated a more supportive research culture within their workplaces and greater expectations from supervisors to use research in their decision-making, compared to educators. While a novel finding in need of replication, we tentatively hypothesize that these differences may arise from the following sources. The opportunity for culture support for research may be impacted by specific mandates within professions regularly encountered in making such decisions in terms of ethical mandates (e.g., Speech Pathology Australia, 2016) as well as in restrictions in funding to support the implementation of specified EBPs (e.g., Psychological Services, Commonwealth of Australia, 2019), which may be more salient for allied health professionals. Further, it is possible that differences in responses across professions reflect differences in familiarity and use of terminology related to evidence-based and empirically supported practices that may impact on perceived culture within each organizational context. In each case, understanding the factors underlying differences, rather than the differences themselves, will be most fruitful in future research in informing methods for supporting the uptake of evidence-based practices across professions.

The differences observed between educators and allied health professionals with regards to organizational resources to support research appeared to be driven by those working in private practice. The resulting lack of difference between cohorts in reports of organizational culture towards the access and or/provision of resources is consistent with previous research suggesting both educators and allied health professionals each experience resources as a potential barrier or enabler to implementation of EBP (e.g., Greenway et al. 2013; Kucharczyk et al. 2015; Williams et al. 2015). For example, some commonly used practices (e.g., Picture Exchange Communication System) in the field of autism require extensive and costly training to implement (Paynter, Ecker, Trembath, Sulek and Keen, 2019) and the resource-intensive nature of such strategies may be a shared barrier across professions, particularly in organizations where funding decisions may be made at a broader level or be based on public funding, compared to individuals in private practice who may have more control over funding decisions or resourcing. Thus, for both groups, organizational support may form a barrier and reduce implementation of EBPs for both allied health professionals and educators working for organizations.

We found differing associations between organizational culture and individual attitudes for educators compared to allied health professionals. In the educator group there were no significant associations between organizational culture and individual attitudes consistent with previous US research (Locke et al., 2019). In contrast, in the allied health group only, albeit with small effects, more expectations of supervisors to utilize research in practice, and an organizational culture more supportive of research were linked to reports of a lower likelihood to use EBPs if they appealed. Additionally, allied health professionals reported a higher tendency to feel EBPs were different to typical practice where workplaces with a more supportive research culture, more available resources to engage in research, and greater expectations from supervisors to use research in practice. Given the unexpected direction of these findings, this might indicate a backfire effect, as documented in the cognitive science literature where attempts to correct misinformation (e.g., regarding the evidence-base of practices) may be met with resistance or increased belief (for a review of misinformation and its correction see Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012). While in need of replication, the potential for efforts to increase organizational culture (higher in the current allied health sample relative to educators) leading to backfire effects of reducing individual attitudes (lower in allied health sample relative to teachers) which may include *reduced* implementation of EBPs is a topic worthy of further investigation to support effective knowledge translation efforts avoiding such unintended consequences. This effect however was not observed in the educator group, and these divergent findings between groups suggest that differing relationships between professions may indeed occur.

This study has contributed to a gap in the literature of understanding potential broad discipline differences between professionals working with individuals on the autism spectrum that may impact on uptake of EBP. Nevertheless, the exploratory nature of this study is acknowledged, and results should be interpreted in line with acknowledged limitations. First, no attempts were made to compare educators to the different types of allied health professionals who responded to the survey. However, the training, codes of ethics, discipline norms, settings in which services are delivered, presenting client needs and level of empirical evidence for specific practices within the scope of practice for a specific discipline may differ across professions (e.g., psychology vs. speech pathology) which may impact on attitudes and culture towards EBP within each profession. Some evidence of this is observed in the results of the current study, whereby the inclusion and/or exclusion of allied health professionals working within private practice settings affected group differences. Further, educators

may likewise show differences in preservice and in-service professional learning varying by early childhood vs. secondary, by state, and by special vs. inclusive education. Investigation of potential differences within the educator and allied health groups including the influence of experience in autism such as the nature and level of needs of students/clients worked with through recruitment of larger sample sizes and collecting of more fine-grained participant data would thus be of value in future research to explore possible within group differences. Finally, as participants were recruited via social media and via researcher networks, self-selected and participated voluntarily, they may have been more generally supportive of research and results may not generalize to the broader population of individuals working with people on the autism spectrum. Future research that draws from qualitative approaches may extend this work through providing additional understanding of the experiences of using evidence-based practices and clinical decision-making processes across professions.

The present study adds to the scant comparative research across professionals in attitudes and organizational culture support of EBP. Findings highlight there may be discipline differences in attitudes and organizational across professionals working with the same or similar client groups, in this case autism. The implications of these findings, given associations between attitudes, organization support and implementation of EBPs in autism (Locke, et al., 2019; Paynter et al., 2017; Paynter & Keen, 2015), is that different factors may facilitate or form barriers to implementation of EBPs for each group. In the case of educators while showing more positive attitudes to EBP, organizational barriers such as the research culture and implementation climate such as supervisor expectations for use of EBPs may be more likely to form barriers to EBP implementation. Conversely, for allied health professionals, their organizations may be more likely to be supportive of research and expect research to be used in decision-making, but they may be less open to trying new practices or resistant to organisational mandates which may be barriers to EBP implementation at a group level. Understanding and addressing these differences is important in multidisciplinary professional learning such as online training modules (e.g., those available from the Australian Autism Cooperative Research Centre) targeting a range of professionals, and tertiary and other training courses such as emerging postgraduate diplomas and degrees in autism. Further, these findings highlight the need for targeted knowledge translation approaches as opposed to development of generic models across contexts and disciplines when working with only one discipline group. Finally, while in need of replication, the low correlations between measures indicates attitudes and culture may be distinct

factors to consider in such efforts and may each benefit from targeting where identified as potential barriers to EBP implementation. This may include for example evaluating potential barriers and enablers within an implementation context (e.g., school region, community setting) and drawing from a compilation of implementation strategies (e.g., Cook, Lyon, Locke, Waltz, & Powell, 2019) to match the needs identified. For example, in the case of allied health, targeting attitudes as shown to be amenable to change in intervention may then facilitate greater EBP implementation as demonstrated in previous research (Cook et al., 2015).

Future research could further investigate factors underlying discipline differences such as pre-service training, epistemology, or possible back-fire effects and links to implementation of EBPs. Such research has ramifications for service users and clients who may receive therapy, education, or services that cut across differing systems such as transitioning from early intervention that may be delivered by allied health, through to school/education delivered predominantly by education professionals. Thus, transitioning between services may bring unique challenges in terms of attitudinal or organizational enablers or barriers that may impact on the continuity of services or practices received. Bridging the 'research-to-practice' gap in autism may therefore require multifaceted solutions tailored to each context addressing the unique strengths and needs to ensure EBPs are not only translated to practice in one context, but across differing contexts to achieve the best possible outcomes for individuals on the autism spectrum across their lifetime.

Conflicts of Interest

This work was supported by funding (see details below). The authors report no other conflicts of interest.

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Table 1*Participant Demographics*

		Education	Allied Health
		<i>n</i> (%)	<i>n</i> (%)
Age			
	18 – 25 years	5 (5.3)	21 (13.5)
	26 – 35 years	24 (30.0)	67 (42.9)
	36 – 50 years	30 (37.5)	56 (35.9)
	50+ years	21 (26.3)	12 (7.7)
Gender			
	Male	3 (3.8)	9 (5.8)
	Female	77 (96.2)	147 (94.2)
Setting			
	Public school	57 (71.3)	
	Independent school	7 (8.8)	
	Catholic School	3 (3.8)	
	Special School	13 (16.1)	
	Single Discipline (e.g., Private practice)		49 (31.4)
	Multi-disciplinary setting		47 (30.1)
	Organization (e.g., Government)		41 (26.3)
	School		11 (7.1)
	Other		6 (3.8)
Highest Academic Qualification			
	Bachelor's degree	44 (55.0)	74 (47.4)
	Postgraduate Degree	31 (38.8)	81 (51.9)
	Other	5 (6.3)	1 (0.6)
Current Role			
	General education teacher	36 (45.0)	
	Special education teacher	37 (46.3)	
	Head of Special Education	7 (8.8)	
	Speech Pathologist		69 (43.6)
	Occupational Therapist		35 (22.4)
	Psychologist		35 (22.4)
	Behavior Analyst		18 (11.5)
Disability Specific Qualifications			
	Yes	16 (20.0)	36 (23.1)
	No	64 (80.0)	120 (76.9)

Table 2*Attitudes and Organizational Culture across Participant Groups*

	Allied health	Educator
	M (SD)	M (SD)
Attitudes to EBP (EBPAS) (0 = <i>Not at all</i> to 4 = <i>To a great extent</i>)		
Appeal*	3.14 (0.71)	3.55 (0.56)
Openness*	2.68 (0.67)	3.37 (0.55)
Requirements*	2.79 (1.03)	3.21 (0.89)
Divergence	2.88 (0.70)	2.67 (0.77)
Total*	2.88 (0.48)	3.19 (0.50)
Organizational Culture (OCQ) (1 = <i>Not at all</i> to 10 = <i>To a great extent</i>)		
Culture*	7.60 (2.34)	5.99 (2.75)
Supervisor*	7.04 (2.87)	5.51 (3.18)
Resources*	6.97 (2.17)	6.00 (2.37)
Total*	7.21 (2.16)	5.93 (2.39)

Note. * $p < .05$, EBPAS: Evidence-Based Practices Attitude Scale; OCQ: Organizational Culture Questionnaire

Table 3

Correlations between EBPAS and OCQ scales for allied health cohort

	OCQ Total	OCQ Resourc es	OCQ Cultur e	OCQ Supervis or	EBPAS Appeal	EBPAS Divergence	EBPAS Openness	EBPAS Requirement s
OCQ Resources	.955**							
OCQ Culture	.942**	.815**						
OCQ Supervisor	.838**	.732**	.771**					
EBPAS Appeal	-.287**	-0.184	-0.19	-.336**				
EBPAS Divergence	0.213	.228*	.234*	.227*	0.024			
EBPAS Openness	-.255*	-0.137	-0.174	-0.17	.524**	0.004		
EBPAS Requirements	-0.15	-0.148	-0.124	-0.02	.505**	0.101	.376**	
EBPAS Total	-0.186	-0.1	-0.106	-0.106	.775**	.409**	.688**	.777**

Note. ** Correlation significant at the .001 level; * Correlation significant at the .05 level

Table 4*Correlations between EBPAS and OCQ scales for educator cohort*

	OCQ Total	OCQ Resources	OCQ Culture	OCQ Supervisor	EBPAS Appeal	EBPAS Divergence	EBPAS Openness	EBPAS Requirements
OCQ Resources	.941**							
OCQ Culture	.945**	.791**						
OCQ Supervisor	.883**	.748**	.830**					
EBPAS Appeal	0.04	0.083	0.02	-0.06				
EBPAS Divergence	0.119	0.129	0.1	0.066	0.17			
EBPAS Openness	-0.026	0.005	-0.051	-0.021	.554**	0.016		
EBPAS Requirements	0.148	0.216	0.067	-0.096	.542**	0.131	.426**	
EBPAS Total	0.103	0.155	0.066	-0.066	.808**	.525**	.649**	.767**

Note. ** Correlation significant at the .001 level; * Correlation significant at the .05 level