Ten-year review of the *International Journal of Positive Behavioural Support*

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Abstract

The *International Journal of Positive Behavioural Support* (IJPBS) reached its 10th anniversary in 2021. Previous reviews have examined several variables that illuminated trends, biases and gaps in behaviour analytic journals and it was considered that a similar review of IJPBS would be equally valuable. This review aimed to determine the general status of IJPBS articles by coding (empirical and non-empirical) articles published between 2011 and 2020. The data indicated a high level of collaboration between practitioners and academics with an expanding range of authors over time. There was a strong focus on service delivery in non-empirical studies. Most intervention research articles concerned adult participants with severe intellectual disabilities and behaviours that challenge. Some reported features of interventions and outcome measures indicated key components of positive behavioural support (PBS), consistent with the Gore et al., (2013) UK definition. However, some components of this definition were less evident and may require better representation in future research.

Background

Research syntheses, such as literature, and systematic and meta-analytic reviews, are often used to integrate findings across studies for a given intervention (Matson and LoVullo, 2009). This enables researchers to appraise the effectiveness of an intervention or procedure. Another, less common type of analysis is a journal review, which helps to evaluate a journal's research and trends. Prominent behavioural science journals have benefitted over the years from periodic journal reviews. For example, reviews of the *Journal of Applied Behaviour Analysis* (JABA) have identified gaps or limitations in research that have included a scarcity of social validity measures (Ferguson et al., 2019), a paucity of non-US publications (Martin et al., 2016) and an increase in publications from frequent contributors—rather than an expansion in the range of contributors (Dunlap et al., 1998).

The *Journal of Positive Behavior Interventions* (JPBI) has also been subject to several reviews. O'Dell et al., (2011) analysed the extent to which intervention articles reflected the key features of PBS as described by Carr and colleagues (2002). The authors found encouraging signs that JPBI research was aligning with these features of PBS, with a high proportion of studies demonstrating stakeholder participation and positive changes to aspects of participants' quality of life. Clarke et al., (2018) later examined research published in JPBI to determine whether publication trends reflected the development and growth of school-wide positive behaviour support (SWPBS). The authors reported a decrease in assessment-based interventions and a steady increase in research conducted in mainstream education settings. Dunlap and Lee (2018) offered further support for the identified shift in focus of JPBI, reporting a substantial reduction in articles that included participants with severe disabilities and a similar trend for participants displaying severe behaviours that challenge.

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IJPBS

IJPBS was established in 2011 with the aim of defining, developing and disseminating positive behavioural methodologies from across the world, with a primary focus on people with intellectual or developmental disabilities and behaviours that challenge (Baker and Allen, 2011). The journal is intended as a platform to share good PBS practice and develop high-quality papers that contribute to the PBS knowledge base. Its aim is to demonstrate how PBS can support people with intellectual and developmental disabilities and behaviours that challenge by providing high-quality specialist support and constructional approaches to enhance an individual's quality of life and mitigate risk factors associated with the development and maintenance of behaviours that challenge.

The abuse of people with intellectual and developmental disabilities in services, for example, Winterbourne view (2011) and the subsequent government responses (DOH, 2012) promoting the use of PBS approaches for service delivery, prompted the 2013 special edition, which included the Gore et al., (2013) paper that sought to expand on existing definitions of PBS to help guide practice, research, service delivery, and commissioning in the UK. The definition categorised ten overlapping components of PBS into three overarching themes: values, theory/evidence-base and process. This work clarified that PBS practice should be values-led and informed by behavioural approaches and other evidence-based technologies to produce long-term improvements in the quality of life of the focal individual, and those who support them, and reduce the risk of behaviours that challenge. The 2013 framework is widely cited and, along with other papers in the 2013 special edition (e.g., Denne et al., 2013), influenced the development of the PBS Academy's Positive Behavioural Support Competence Framework (PBS Coalition, 2015) and PBS standards for service providers, PBS training and individual practitioners (PBS Academy, n.d.). More recently, this definition was refined and updated in a special edition of IJPBS (2022) by a diverse group of 24 contributors. The updated definition remains consistent with the fundamental components described in 2013 but sought to better reflect a UK context and ongoing developments in the field.

The field of PBS has evolved significantly since the first publication of IJPBS. In 2021, the journal reached its 10th anniversary, which provided an opportune time to conduct a review of its contents. The purpose of this study was to provide a description and evaluation of research published in IJPBS. Of particular interest were the outcome measures reported in the journal's intervention research and the extent to which these aligned with some of the key components of a PBS framework as described in the Gore et al., (2013) definition. The current review evaluated the contents of IJPBS articles across the ten years of publication. It was hoped that this data would provide an overview of the journal and offer some insight into trends in the field of PBS.

Method

Procedures for study identification

All empirical and non-empirical articles from the first ten years of IJPS publications (2011–2020) were included in the review. News articles and book reviews were excluded from the analyses.

Coding scheme

A coding scheme for recording details of articles was developed that contained coding categories and operational definitions. The scheme was developed through discussions informed by the journal's editors and previous journal reviews (e.g., Clarke et al., 2018). Definitions for each category are described below in abbreviated form.

Study type

The studies were assigned descriptor codes informed by the Clarke et al., (2018) definitions. Studies were first categorised as empirical (articles that collect and/or analyse data) or non-empirical (data not collected or analysed). Non-empirical research was coded as either a conceptual paper (article developed theoretical concepts or frameworks or defined practices or principles) or a review/report or position paper (summary of research in a particular area or outcomes of an intervention without accompanying data). If research was coded as empirical, it was further coded as data-based intervention (DBI) (described the effects of an independent variable (IV) on one or more dependent variable (DV)) or other data-based research (ODB) (where data was collected on outcomes but there was not a manipulation of an IV or a measure of the effects of an IV on a DV). DBI articles were then categorised by study design as single-case design (SCD) (IV manipulated to document effects on individual participant(s) using an experimental design); group design (IV manipulated to evaluate the effect on a sample of participants); or case studies (measured effect of an IV on outcomes for an individual participant(s) using a non-experimental design (see *Figure 1* for a display of research designs).

Coding categories and definitions

Authorship

Author affiliation

The definitions for author affiliation were based on and modified from Shoenfeld et al., (2013), with adaptations to fit international contexts. Author affiliation was coded as one or more of the following: academic (e.g., higher education institutes), practitioner (e.g., clinicians) or other (e.g., law firms).

Nationality of affiliation

The Martin et al., (2016) procedures were adapted to code the nationality of authors' affiliation. Authors' affiliations were assigned to the UK, other European (all European countries excluding countries of the UK), Australasian, North American or Asian.

Behaviour analyst certification

Given that the theoretical underpinnings and processes of PBS incorporate concepts, principles and practices from applied behaviour analysis (ABA), authors' status with the Behaviour Analysts Certification Board (BACB) was investigated. Data collection was limited to the top ten most prevalent IJPBS authors as their contribution to the journal accounted for over half of all articles.

General intervention information

Participant characteristics

DBI articles were coded for participant gender (male, female, other); age (0–5, 6–11, 12–17, 18–24, 25–39, 40–59, 60+ years); and diagnostic/descriptive label (autistic or autism, intellectual disabilities, traumatic brain injury, trauma, attention deficit hyperactivity disorder, mental health issues). Intellectual disabilities were further categorised as severe (profound/severe) or not severe (mild/moderate) based on author descriptions (e.g., 'moderate intellectual disability'. The proportion of articles with one or more individuals with a severe intellectual disability was calculated to allow for a comparison with the Dunlap and Lee (2018) study.

Behaviours that challenge

The topography of behaviours that challenge was coded as one or more of the following: aggression, self-injurious behaviour (SIB), absconding, non-cooperation, disruption, inappropriate sexual behaviour. As with the Dunlap and Lee study (2018), the severity of behaviours that challenge was also coded as severe or not severe (moderate/mild) based on the author's description of the behaviour (e.g., 'severe SIB'). The proportion of articles where one or more individuals displayed severe behaviours that challenge was calculated to allow for a comparison with previous research.

Primary participant

The primary participant was coded for intervention articles as either a focal person with intellectual or developmental disabilities or another stakeholder (e.g., family member or staff). In cases where the behaviour of a focal individual and another stakeholder were both measured, the primary participant(s) were taken to be those for whom the majority of outcomes were measured (50% or more).

Setting

The primary location within which the intervention occurred was coded as one or more of the following: mainstream education; special education (including special education school classrooms within mainstream schools); home (i.e., natural residence other than residential accommodation); residential (e.g., supported living); medical (e.g., treatment and assessment unit); clinic (e.g., outpatient facilities) or community facility. One or more settings could be scored if the article contained participants in different settings or the outcome was targeted/measured equally in multiple settings.

Quality evaluation

The Reichow et al., (2008) evaluative method, which analyses the rigour of research articles based on their alignment with primary (n = 6) and secondary quality indicators (n = 6), was used to assess the quality of studies. Primary indicators relate to the overall validity of a study (e.g., descriptions of IVs and DVs) and secondary indicators are important but non-essential elements of research design (e.g., measures of social validity). The evaluative method tool was selected due to its congruence with established SCD criteria (Wendt and Miller, 2012) and its capability to derive a final quality rating score and appraise both SCDs and group designs, thus allowing for a comparison. As in previous reviews (Brady et al., 2019), the requirement for diagnoses to be operationalised to attain the top ratings on the 'participant' criteria was excluded to ensure participants without formal diagnoses could still score highly. Additionally, to improve the sensitivity of the tool, the final rating scores were expanded from three to five by including 'borderline adequate' and 'borderline strong' ratings (see Tomlinson et al., 2018).

Topic

To understand the focus of non-empirical and ODB research in IJPBS, a basic content analysis was conducted. Articles were assigned a descriptive code based on their primary focus. Patterns in the codes were identified and broader coding categories (topics) were developed.

Intervention characteristics

The following categories were coded for DBI articles for focal individuals based on their alignment to the Gore et al., (2013) key components of PBS. We selected those definitional components of PBS that could most readily be operationalised for this research review task as follows:

- Evidence that professionals collaborated with other stakeholders in selecting and developing the intervention goals and procedures before implementation (key component 3: 'Stakeholder participation informs, implements and validates assessment and intervention practices' Gore et al., 2013).
- Evidence that stakeholders (e.g., support staff or family carers) were involved in implementing the intervention (key component 3: 'Stakeholder participation informs, implements and validates assessment and intervention practices' Gore et al., 2013).
- Evidence of a functional behavioural assessment (FBA) that informed the intervention (key component 8: 'Functional assessment to inform function-based intervention' Gore et al., 2013).
- Evidence that the intervention had several elements, including proactive strategies (e.g., antecedent interventions) and non-aversive reactive strategies (e.g., strategic capitulation) (key component 9: 'Multicomponent interventions to change behaviour (proactively) and manage behaviour (reactively)' Gore et al., 2013). Due to there not being an established number of elements that qualify an intervention as being 'multi-component', the studies were coded as containing either 5+, 3–4 or 1–2 intervention elements.
- Evidence the intervention was evaluated over the long term. Interventions that lasted for 6 months or longer, inclusive of maintenance data, were coded as being long term (key component 10: 'Implementation support, monitoring and evaluation of interventions over the long term' Gore et al., 2013).

Outcomes

Only outcomes in DBI articles in which the primary participant was a focal individual (rather than another stakeholder) were coded for this review. The outcomes of all articles that met the criteria were recorded, after which a basic content analysis using the procedures described previously was conducted, resulting in nine categories:

- behaviours that challenge,
- skill-development (e.g., supporting communications),
- engagement (e.g., community outings),
- reduction in restrictive practices (e.g., reduction in physical restraint),
- physical and emotional health and wellbeing (e.g., participants' weight or anxiety ratings),
- social validity,
- service costs (e.g., cost savings of intervention or placement change),
- stakeholder behaviour (e.g., staff or parent) and
- other.

The measures were then separated into anecdotal evidence or formal measures. In studies where there was more than one participant, an average for each outcome was calculated by dividing the number of participants by the total number of outcomes measured. For example, if there were four participants and eight different skill-development outcomes measured across these participants, then the article would be assigned two skill-development outcomes. Scales that measured a variety of categories (e.g., The Health of the Nation Outcome Scales) were analysed to identify the specific outcome of each item and coded individually.

Analyses

Following coding, graphic displays were created for all data to facilitate visual analysis of trends. Similarly, to Clarke et al., (2018), the data was delineated into two five-year periods (2011–2015 and 2016–2020) to more readily aid analysis of differences over time.

Inter-Rater Reliability (IRR)

IRR data was limited to intervention characteristics to assess the reliability of coding with regards to PBS components. A post-graduate ABA student independently assessed a random sample of 32% (N = 8) of the DBI articles with focal people. IRR was calculated for each item using the following formula: (number of agreements/ number of agreements + disagreements) X 100. The mean agreement across all components was 97.5% (range 87.5%–100%). Given close overall agreement, the first author's original coding was used for all further analysis.

Procedure

The first author coded the relevant information, which related to seven general areas: a) article type, b) study design, c) authorship, d) participant(s) and setting, e) study quality, f) topics and g) outcome measures. The information for a, b and c was coded for all articles; d and e for all DBI articles (i.e., studies that described the effects of an intervention on participants' performance); g for DBI articles for focal individuals only; and f for non-empirical articles and ODB research articles.

Results

Studies identified and research design

Figure 1 shows the breakdown of studies by research design. In total, 92 articles that met the inclusion criteria were published in the ten years (M = 4.9 articles per issue). Empirical research accounted for the majority of articles across the ten-year period (see *Table 1* for yearly data). A large proportion of empirical research was DBI (65% or n = 41) with reviews/reports being the most common non-empirical article.

Table 1: Frequency and percentage of empirical and non-empirical research in IJPBS

	Frequency (%)	
	Empirical research	**Non-empirical research**
2011	4 (80%)	1 (20%)
2012	9 (81.8%)	2 (18.2%)
2013	4 (50%)	4 (50%)
2014	7 (77.8%)	2 (22.2%)
2015	6 (60%)	4 (40%)
2016	7 (87.5%)	1 (12.5%)
2017	7 (70%)	3 (30%)
2018	3 (37.5%)	5 (62.5%)
2019	7 (70%)	3 (30%)
2020	9 (69.2%)	4 (30.8%)

Group design articles were primarily within group, with AB and multiple baseline designs most prevalent in SCDs. There was an increase in the proportion of articles using SCDsm, which rose from 9% to 30.4% while group designs decreased from 50% to 26.1% across the two periods.

Authorship

Affiliation

A total of 195 authors had published in IJPBS from ten countries. Authors with a practitioner affiliation represented 53.1 % of articles (n = 187) with 45.9% (n = 163) being affiliated with academic institutes. Authors were primarily UK affiliated (70%). *Figure 2* shows a slight increase in the proportion of non-UK authors between the two time periods (23.6% to 36.5%). US and Australian authors accounted for 84.9% of the non-UK authors (n = 79).

Prevalent authors and BACB status

Of the top ten most prevalent authors, 80% were affiliated with academic institutes and all were UK-based. The most prevalent authors contributed to 54.7% of articles analysed.

Figure 3 shows a decrease in the proportion of publications by the most prevalent authors (66.2% to 43.1%) with a corresponding increase in non-prevalent authors. As of July 2021, 50% of these authors were BACB certified.

Author affiliation and article type

Across all articles, a collaboration between academics and practitioners was common, accounting for 52.3% of articles (n = 48). This figure varied little between empirical (54%) and non-empirical research (50.4%). Articles with exclusively academic authors (20.7% or n = 19) were evenly distributed between empirical (n = 10) and non-empirical research papers (n = 9). For articles published by practitioners (25% or n = 23), the vast majority were empirical (n = 18) with a high number of these articles being case studies (n = 9).

Figure 1: Study type and research design breakdown

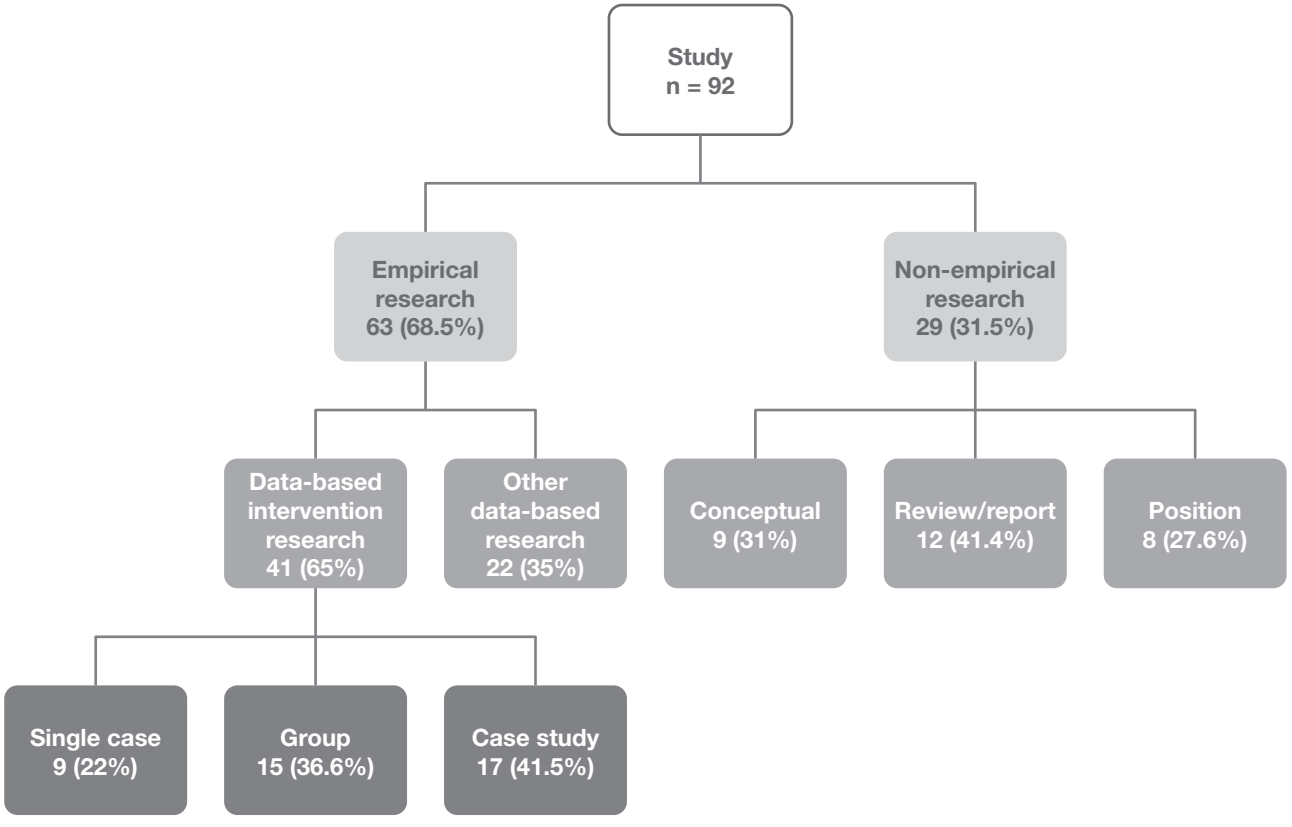


Figure 2: Percentage of IJPBS UK and non-UK affiliated authors in 2011–2015 and 2016–2020

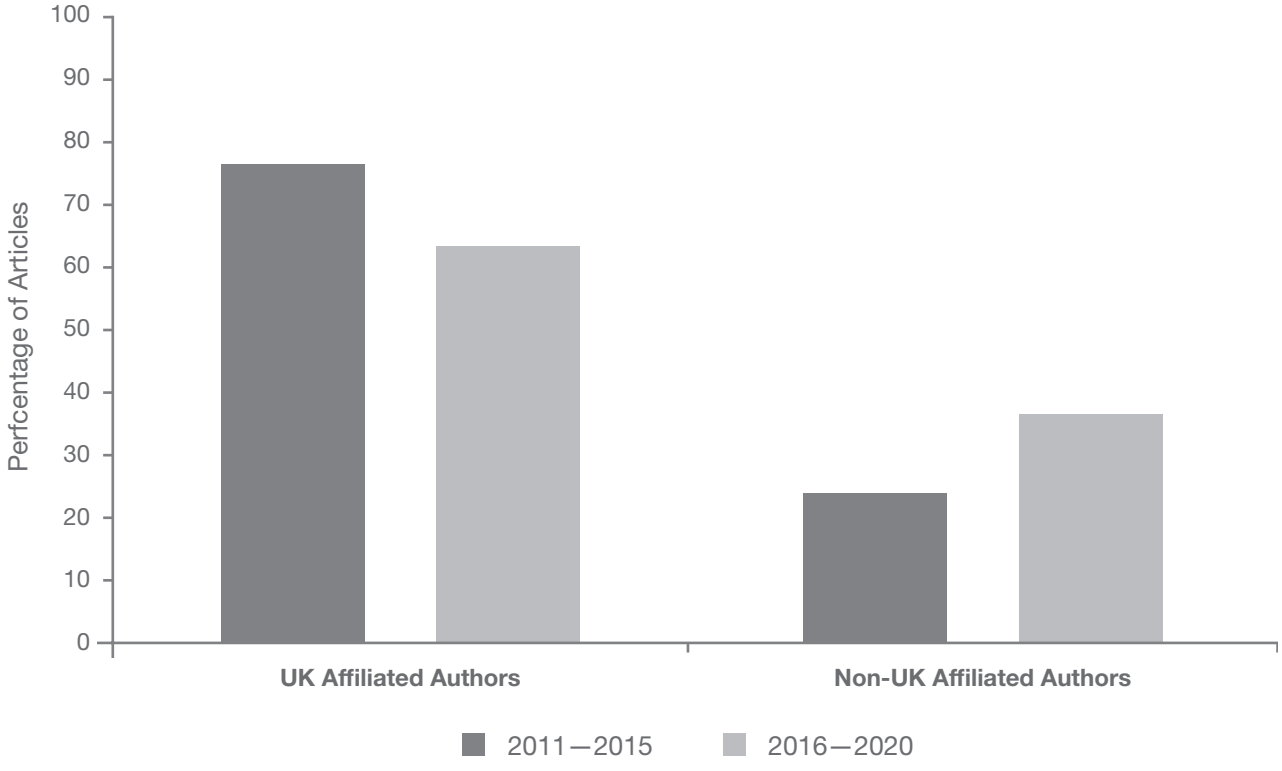
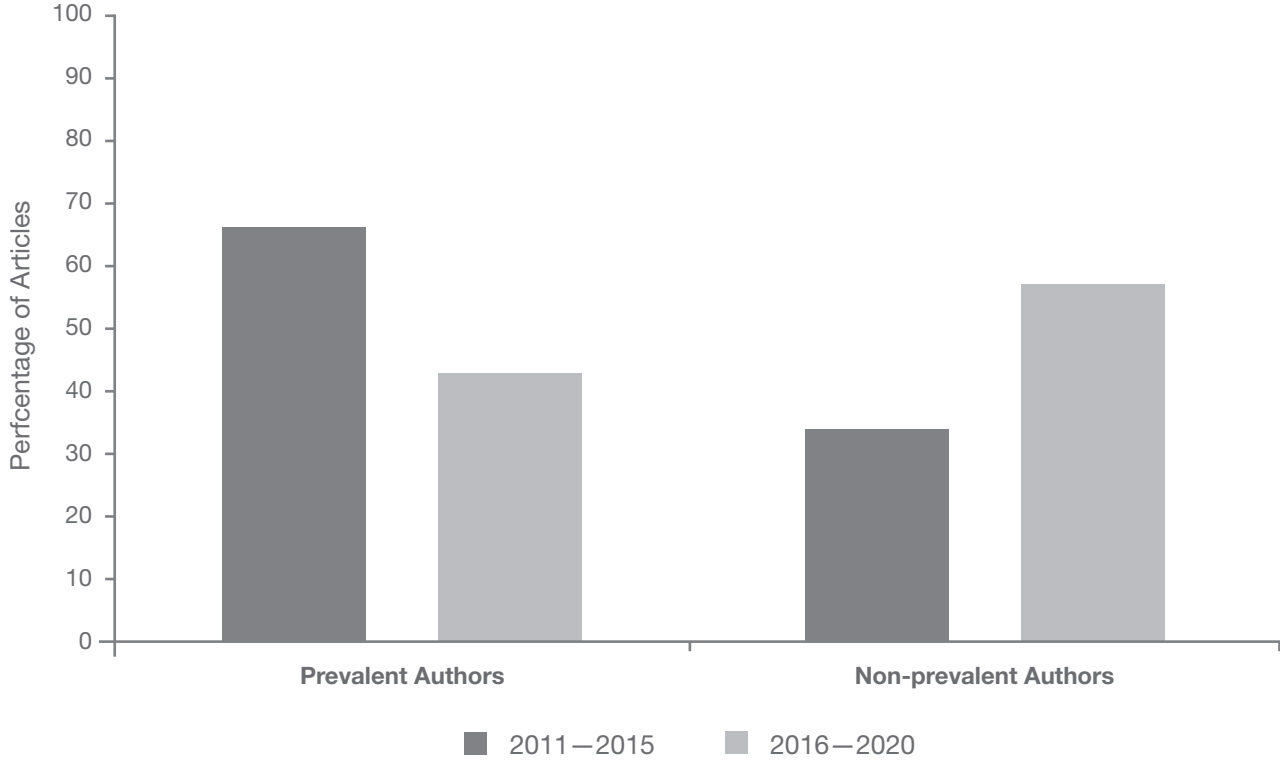


Figure 3: Percentage of articles published by most prevalent and non-prevalent authors in 2011–2015 and 2016–2020



Analysis of non-empirical research and ODB research

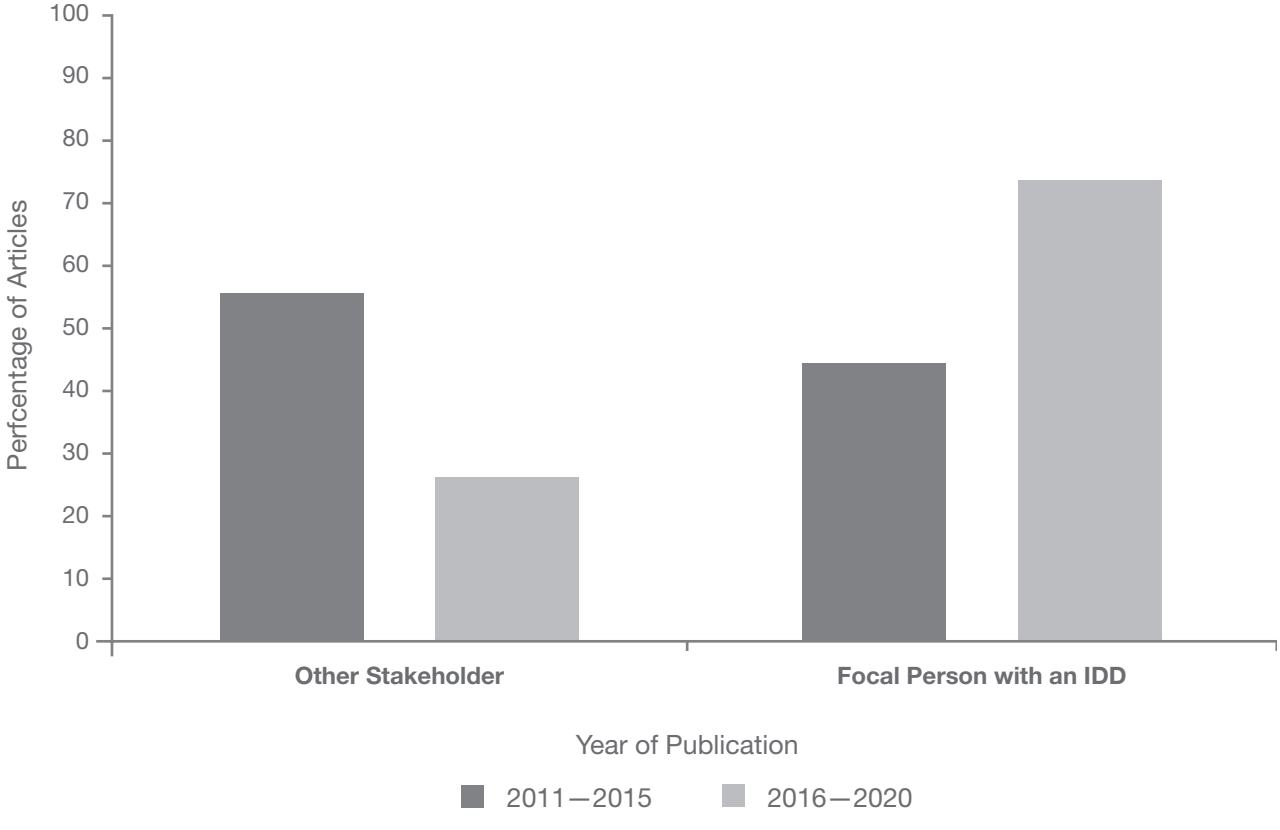
Topic

Table 2 provides the frequency of articles by topic for non-empirical and ODB research. From 51 ODB and non-empirical research articles, eight key topics emerged. The most prevalent topics related to implementing PBS (n =14), understanding behaviours that challenge (n = 9), workforce competency and training (n = 8) and reducing restrictive practice (n = 6). All topics were demonstrated in both non-empirical and ODB studies although, from the most prevalent topics, implementing PBS was more common in non-empirical articles (n = 9) while workforce competency and training was more frequently reported in ODB articles (n = 5). A high proportion of articles focused on reducing restrictive practice were published by non-UK authors (n = 4 or 66.7%) predominantly from Australia (n = 3). Additionally, policy and legislation articles were also mostly published by Australian authors (n = 2).

Table 2: Topics and Frequency of Non-Empirical and Other Data-Based Research in IJPBS

	Frequency	
Topic	**Non-empirical**	**ODB**
Implementing PBS	9	5
Understanding and assessing behaviour	4	5
Workforce competency and training	2	5
Reducing restrictive practices	3	3
Policy and legislation	3	1
PBS impact and outcomes	1	3
Mental health	3	1
Non-aversive reactive strategies	1	1

Figure 4: Percentage of DBI articles with focal individuals with intellectual or developmental disabilities and other stakeholders as the primary participant 2011–2015 and 2016–2020



General DBI Information

Participants

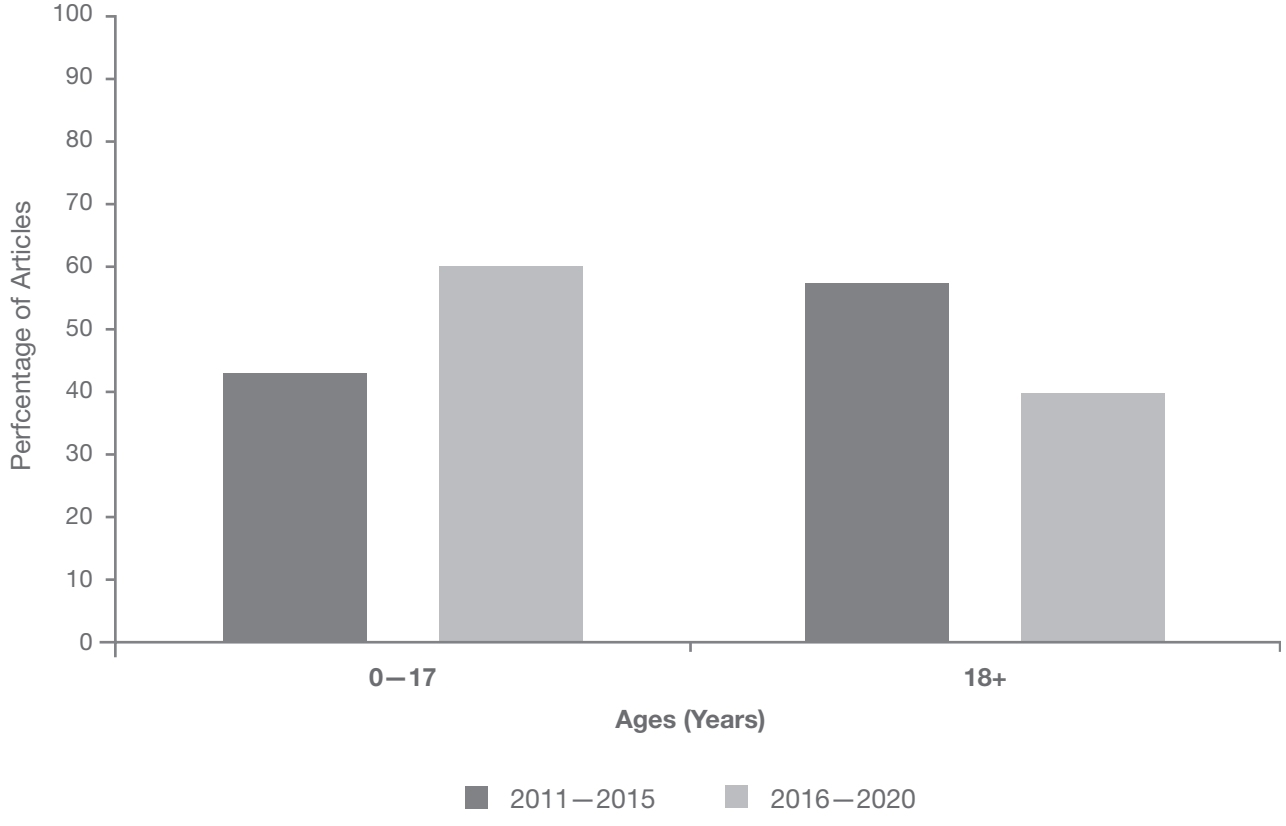
Primary Focus of intervention. *Figure 4* shows the proportion of DBI articles in the two time periods with focal individuals and other stakeholders as the primary participant. Across the ten years, over half (59.2% or n = 25) of DBI articles had focal individuals as the primary participant. There was an increase in the proportion of DBI articles that focused on focal individuals between the two time periods with the opposite being true for stakeholder-focused DBI articles.

Gender. In total, there had been 740 participants in DBI articles. For intervention studies with a focal individual as the primary participant (n = 187), the majority were male 62% (n = 116). In contrast, when interventions focused primarily on other stakeholders, 76.9% were female (n = 425).

Age. Over the ten years, across all DBI articles, the most frequent age category for participants was 25–39 years (35.7% or n = 10), followed by 12–17 (21.4% or n = 6); 6–11 (17.9% or n = 5); 40–59 (14.3% or n = 4); and 0–5, 18–24 and 60 + (3.6% or n = 1 for each). There was an increase in the proportion of young people between the two time periods for DBI articles with focal individuals (42.9% to 60%) (*Figure 5*).

Behaviours that challenge. For articles with focal people as the primary participants, a large proportion included individuals that displayed behaviours that challenge (96% or n = 24). By far the most common topography described was aggression (64.8%). There was a decrease in the proportion of articles that included one or more participants reported as displaying severe behaviours that challenge (100% to 69.2%) as depicted in *Figure 6*.

Figure 5: Percentage of participants aged 0–17 and 18+ years in 2011–2015 and 2016–2020 in DBI articles with focal individuals

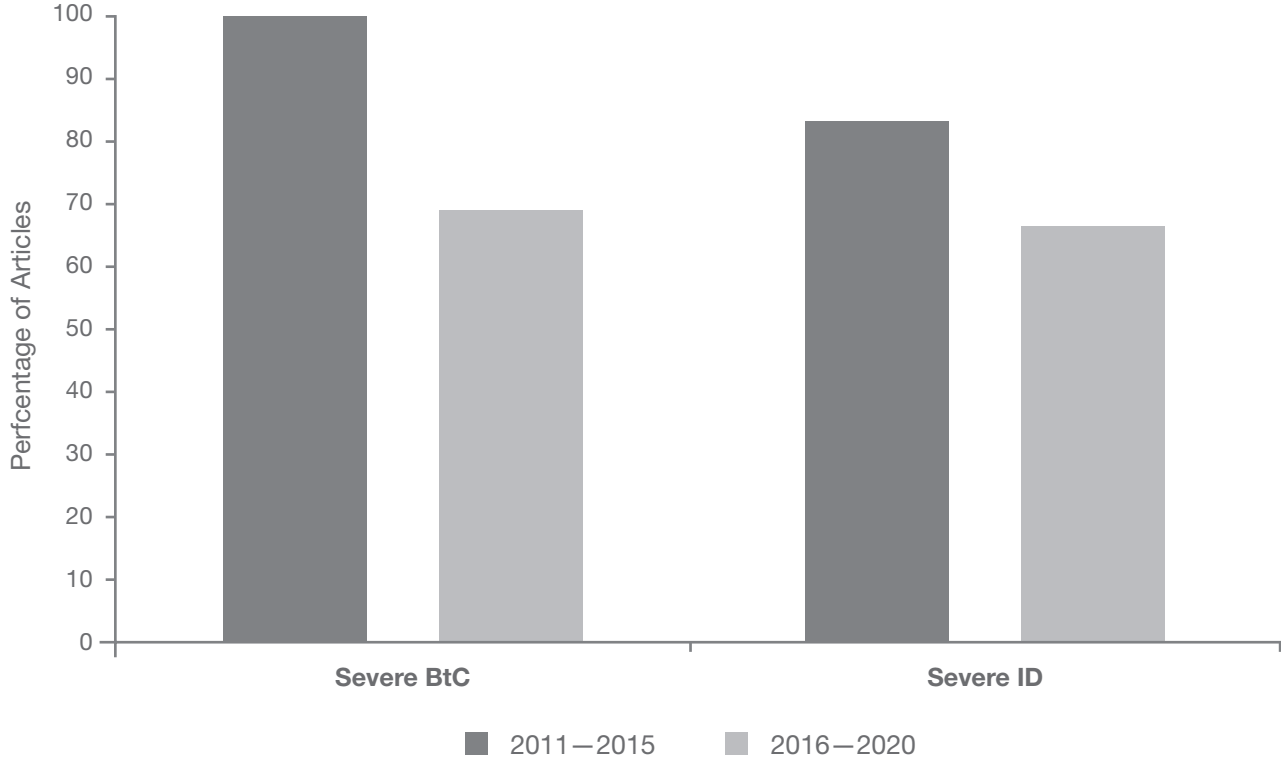


Diagnosis/descriptive labels. Of the 141 diagnostic and descriptive labels listed in DBI articles with focal people, the most prevalent was an intellectual disability (64.5% or n = 91) followed by autism (22.2% or n = 31), then mental health issues (6.4% or n = 1) with the remaining categories represented infrequently. Of 15 articles where the severity of an intellectual disability was known, 11 included one or more participants with severe intellectual disabilities (73.3%). There was a slight decrease in the proportion of articles with individuals identified as having severe intellectual disabilities between the two time periods (83.3% to 66.7%) (*Figure 6*).

Setting

In DBI articles for both focal people and other stakeholders, residential settings were most common (39.3%). Other frequently reported settings included homes (17.9%), medical facilities (17.9%) and special education (14.3%). However, it is worth noting that for a substantial portion of articles, the setting was unspecified (30% or n = 12), with most of these studies focusing on 'other' (83.3% or n = 10).

Figure 6: Percentage of DBI articles with focal individuals with a severe intellectual disability (ID) and severe behaviours that challenge (BtC) in 2011–2015 and 2016–2020



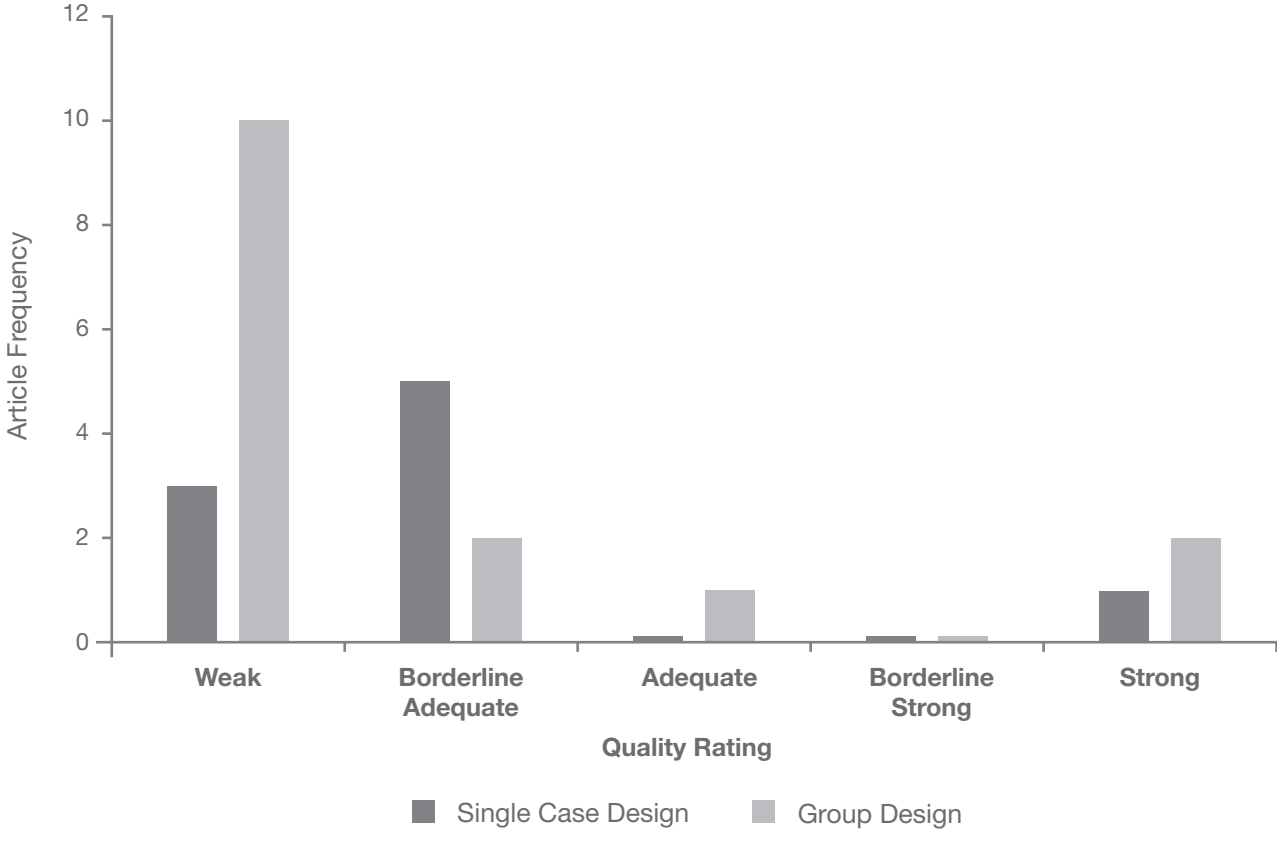
Quality of research for SCD and group designs

Figure 7 depicts the quality ratings for SCDs (n = 9) and group design research (n = 15). The most common rating was weak (54.2% or n = 13), whilst a small proportion of articles were categorised as strong (12.5% or n = 3). The limiting factor for SCDs tended to be a lack of experimental control with the use of AB designs often the reason for 'unacceptable' ratings (four out of five studies). For group designs, the absence of a control/comparison group frequently impeded higher quality ratings with 66.7% (n = 10) of studies scoring 'unacceptable' ratings on this indicator.

Intervention characteristics

FBAs were reported to inform interventions in 79.2% (n = 19) of articles with evidence of stakeholders taking part in the development of interventions in 28% of articles (n =7). Stakeholders were involved in implementing interventions in nearly all articles (96% or n = 24). Where specified (n = 24), over half of interventions included both proactive and reactive strategies (62.5% or n = 15) and all included one or more proactive strategy (100% or n = 24). Regarding the total number of elements (proactive and reactive strategies) in each intervention where specified (n = 23), 65.2% (or n = 15) evidenced 5+ elements, 8.7% (n = 2) 3–4 elements and 26.1% (n = 6) 1–2 elements. For articles that reported the duration of the intervention (n = 21), 66.7% (n = 14) lasted six months or more; with several lasting for three or more years (28.6% or n = 6).

Figure 7: Evaluative method ratings for single case and group design articles



Outcomes

Formal measures

In DBI articles with focal people as the primary participant, formal measures of behaviours that challenge was the most prevalent of all outcomes with 88% (n = 22) of articles reporting one or more formal measure in this area (*Table 3*). Measures of behaviours that challenge were further categorised by frequency (88% or n = 22) and severity (40% or n = 10). Engagement was the next most common category measured (44% or n = 11) followed by skill development (40% or n = 10).

Table 3: Percentage of formal measures and anecdotal evidence for each outcome in DBI articles with focal individuals

	Percentage (%) of articles	
Outcome measures	**Formal measures**	**Anecdotal evidence**
Behaviours that challenge	88	8
Engagement	44	24
Skill-development	40	0
Reducing restrictive practices	20	12
Social validity	20	20
Physical and emotional health and wellbeing	16	12
Service costs	16	12
Stakeholder behaviour	12	0

Figure 8 shows that between the two time periods, there was a decrease in formal engagement measures (62.5% to 35.3%), reduction in formal restrictive practice measures (37.5% to 11.8%), formal behaviours that challenge measures (100% to 82.4%) and formal service costs measures (50% to 0%). There were notable increases in the second period in formal social validity measures (0% to 29.4%) and formal stakeholder behaviour measures (0% to 17.7%).

A high proportion of formal skill development outcomes (90% or n = 9) were associated with younger participants (under the age of 18 years of age). Formal engagement measures (54.6% or n = 6) and reduction in restrictive practice measures (60% or n = 3) were most often associated with adults.

Anecdotal evidence

In total there were 35 studies that reported anecdotal evidence, with the most common category relating to engagement (24% or n =6) (*Table 3*). Examples of anecdotal evidence of engagement included participants 'attending church more regularly' 'finding voluntary work' or 'sitting on grandmother's knee'. Half of the social validity measures were anecdotal (50% or n = 5), with examples being 'the family was satisfied with the results of the intervention'.

Discussion

IJPBS was developed to bridge the gap between research and practice in PBS while developing and disseminating best practice from across the world. This review analysed the first ten years of IJPBS publication to provide an overview of the key elements of empirical and non-empirical research articles.

Authorship

In recent years, there have been concerted efforts to facilitate practitioner publications through the introduction of brief articles and dedicated mentoring for authors (Baker et al., 2019). Across the ten years, a large portion of articles were co-authored by practitioners and academics while case studies were the most prevalent DBI article type, suggesting that IJPBS is going some way to fulfilling this mission. However, when looking specifically at the top ten most prevalent authors, nearly all were academics. The most prevalent authors in IJPBS account for a large proportion of articles, though this (in contrast to JABA authorship patterns, Dymond and Critchfield, 2001; Kranak et al., 2020), appears to be decreasing with time and may signal a growing pool of IJPBS authors.

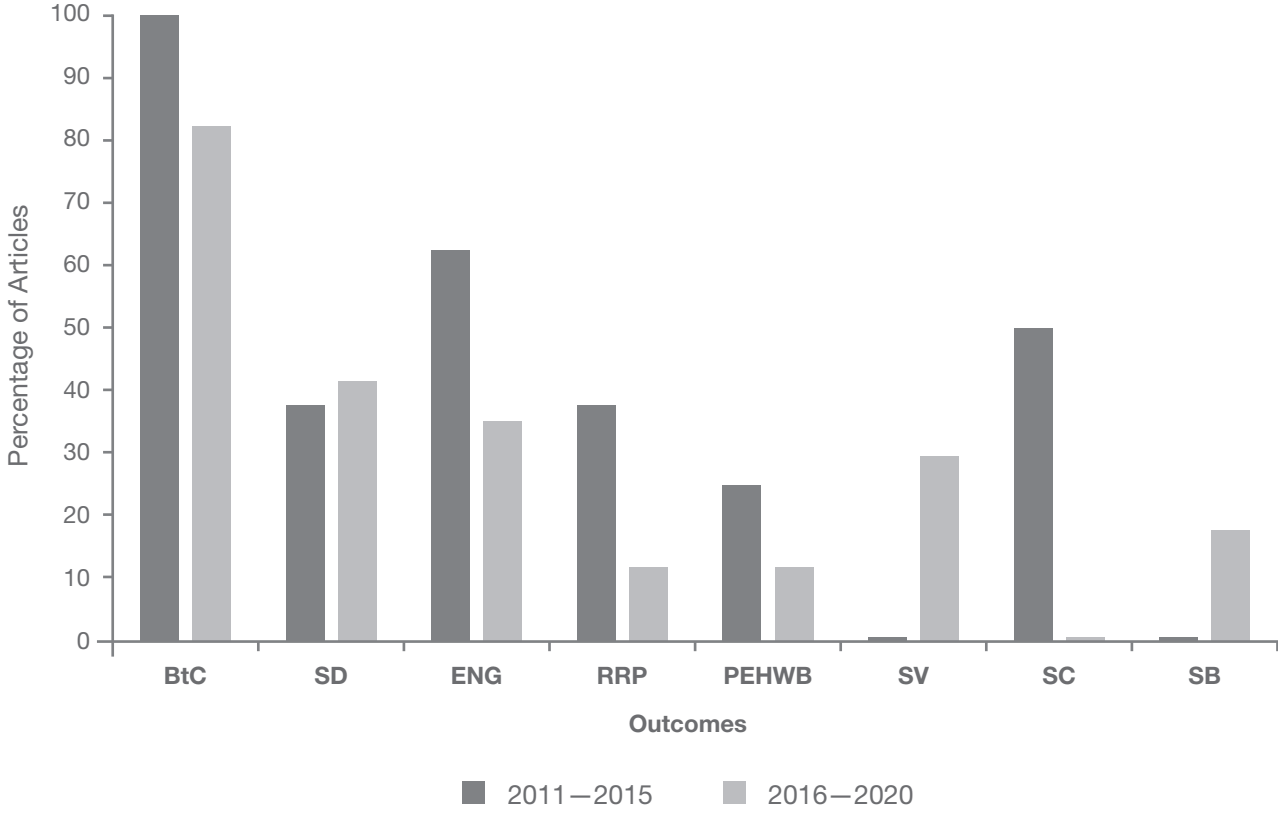
While the journal was intended to disseminate research and practice from across the world, authorship data suggests the journal is predominately UK-focused. Reviews of JABA indicate non-US authorship accounts for less than 10% of publications (Martin et al., 2016), whereas the figure is approximately three times this for non-UK-affiliated authors in IJPBS.

Topics

The bulk of ODB research and non-empirical studies has centred on implementing PBS practice, understanding and assessing behaviours that challenge, and workforce competency and training. Following several scandals in recent decades concerning the abuse of people with intellectual or developmental disabilities and behaviours that challenge, provision of effective and ethical service delivery has drawn increased attention in policy and practice spaces (DOH, 2014). Thus, the strong focus in IJPBS on service provision and developing workforce skillsets, particularly at a community level, is highly relevant.

Another prominent theme in the journal related to the reduction and elimination of restrictive practices. This theme was investigated comprehensively with articles discussing restrictive practices in different countries, settings and perspectives (including that of service users) and novel forms (e.g., psychosocial restraint). Of note, most of the articles were non-UK based with over half being published by Australian authors. There has been a significant push in the last decade in Australia to eliminate restrictive practices (Australian Psychological Society, 2011) and local practice has been described as heavily invested in this goal (Hayward et al., 2019). The case may be that the PBS framework is being discussed and applied in different ways depending on a country's political and social climate.

Figure 8: Formal outcome measures in DBI articles with focal individuals for behaviours that challenge, skill development (SD), engagement (ENG), reducing restrictive practices (RRP), physical and emotional health and wellbeing (PEHWB), social validity (SV), service cost (SC), stakeholder behaviour (SB) and other (OT).



Research design

While the proportion of empirical research has varied little over ten years, there has been an increase in the proportion of DBI articles using SCDs while the proportion of group design research has declined. A possible explanation is that the focus of intervention research has changed over time, necessitating a shift in research design. The proportion of research with wider stakeholders (e.g., staff training), which has almost exclusively been evaluated using group designs, has decreased substantially over time. Thus, this apparent trend in research designs reflects an increase in studies with focal individuals.

The severity of behaviours that challenge and intellectual disabilities

The analysis of the focal individuals in DBI research indicates that participants have a higher level of need than identified in JPBI intervention articles. Indeed, over half of the articles that specified the severity of the participants' intellectual disability and behaviours that challenge were classified as severe. Dunlap and Lee (2018) reported that the representation of individuals with severe behaviours that challenge and disabilities was in the minority, and decreasing, while Clarke et al., (2018) highlighted the prominence of school-based interventions for children without disabilities in JPBI. In the current review, there was an increase in the proportion of participants under the age of 18 years and a decrease in severe behaviours that challenge and severe disabilities in DBI articles between the two time periods. This may indicate that PBS is being researched at earlier life stages, potentially as a preventative measure for young people with less complex needs.

Quality

The methodological quality of intervention research, as measured using the Reichow evaluative method (2008), has generally been low. For group research, the lowest scoring element was due to a lack of a comparison group. While conducting group research with a comparison group increases the robustness of the design, it also requires more resources than a within groups design, which may be a limiting factor for IJPBS researchers. The lowest scoring element for SCDs was experimental control, often due to the use of a non-experimental AB design. The most rigorous SCDs for demonstrating experimental control are reversal designs (e.g., ABAB) (Kazdin, 2019) however, this entails removing an intervention to return behaviours that challenge to pre-intervention levels and may thus cause unnecessary risk of harm to the individual and others. A possible solution is the use of multiple baseline designs, including nonconcurrent designs to demonstrate experimental effects. As previously discussed, participants in IJPBS DBI research commonly display severe behaviours that challenge and the use of AB designs may therefore reflect a compromise between ethical concerns and attempts at demonstrating some degree of experimental control.

Intervention features and outcomes

The data indicate that IJPBS intervention research is demonstrating several of the key PBS components described by Gore et al. (2013). The use of FBAs to assess behaviours that challenge was a defining feature of many articles. A high proportion of interventions were implemented by stakeholders, comparable to the results found in the O'Dell et al. (2011) analysis of JPBI articles. This may suggest that generally PBS is being researched with caregivers and people in the focal individual's life, an encouraging finding given suggestions that this will result in more positive outcomes and improve the sustainability of support systems (Horner et al., 2002). However, evidence of stakeholder involvement in developing interventions and validating practices post intervention was less evident. Nonetheless, social validity measures did increase between the two time periods which may indicate an increasing focus on assessing the acceptability and appropriateness of interventions. Evidence of intervention packages including multiple proactive and reactive strategies was also strongly evidenced in the articles. It has been suggested that due to the complexity of behaviours that challenge, multicomponent interventions are often required (Baker and Allen, 2011) and given that a substantial proportion of participants in IJPBS research displayed severe behaviours that challenge, multi-component interventions may be a necessity. Moreover, the majority of DBI articles with focal people lasted six months or longer. This suggests these individuals are receiving ongoing support to create durable behaviour change. Other PBS and ABA reviews have indicated that long-term support is relatively uncommon (Clarke and Dunlap, 2008; Clarke et al., 2018). O'Dell et al. (2011) propose that the brief interventions found in JPBI may be attributed to the success of the strategies to rapidly alter behaviour. As discussed, IJPBS tends to focus on more severe behaviours that challenge than other journals and therefore a longer-term focus may be required.

The analysis of intervention outcome measures indicates that reducing behaviours that challenge has been the overwhelming focus of intervention research. This finding may be expected given that nearly all articles included participants that displayed behaviours that challenge. Gore et al. (2013) describe how PBS should support quality of life, enhance wellbeing, and increase meaningful participation. The outcome measures suggest that measures related to engagement are commonly measured, yet physical and emotional health and wellbeing were reported to a lesser extent. Measures of reductions in restrictive practices and skill development are reported at moderate rates, thereby offering further evidence of IJPBS intervention articles aligning with key PBS components. Skill development measures were far more common in studies with younger participants. This may reflect behavioural research on supporting early functional skills as best practice (Reichow, 2012) but may also be indicative of a reduced emphasis on skills teaching with adults, despite there being a continued need (Beadle-Brown et al., 2015).

A possible explanation for the absence or the low rate of certain measures or components may simply be that authors did not report these, despite them being present during the intervention, perhaps due to publication restrictions on word count. Furthermore, the current IJPBS guidelines for research papers do not explicitly stipulate evidencing components of PBS (e.g. stakeholder involvement or social validity measures). Evidencing skill development for participants of all ages, collaboration with stakeholders in the development of interventions and formal measures of social validity appear to be areas that IJPBS authors can build on to align more closely to key PBS components.

Limitations

It is important to note several limitations when interpreting these data and analyses. Firstly, due to limited resources, IRR checks were limited to a small portion of the data coded, hence the reliability of the entire data set is unknown. Additionally, the low number of intervention articles published meant that interpreting trends across the ten years was tenuous and the differences reported between the two periods may be speculative. Lastly, statistical analyses would have aided in the interpretation of apparent trends.

To conclude, the current data indicates IJPBS has had some success in its mission of bridging the research and practice gap, disseminating PBS practice and developing PBS research. There are a high proportion of practitioner-affiliated authors with a decrease in prevalent authors which may indicate an increasing author pool. Intervention research is generally comprehensive and designed to support individuals with complex behaviours and diagnoses. Over time IJPBS may be developing a reputation for specialisms in particular areas with authors appreciating these trends and submitting articles that closely align, thereby further reinforcing this position. It is suggested that the IJPBS guidelines for research papers be revised to stipulate that interventions should provide clear evidence of utilising the full breadth of PBS components.

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