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First Steps Toward Positive Behavior Support in the Netherlands: A Pilot Study Exploring the Effectiveness of a Training for Staff

Marian Klaver[*,†], Annelies de Bildt[*,†,‡], Eke Bruinsma[*,†], Gerda de Kuijper[*,†], Pieter J. Hoekstra[†], and Barbara van den Hoofdakker[*,†,‡,§]

*Centre for Intellectual Disability and Mental Health, Assen, The Netherlands; [†]Department of Child and Adolescent Psychiatry, University of Groningen, University Medical Centre Groningen, Groningen, The Netherlands; [‡]Accare, University Centre for Child and Adolescent Psychiatry, Groningen, The Netherlands; and [§]Department of Clinical Psychology and Experimental Psychopathology, University of Groningen, Groningen, The Netherlands

Abstract

Despite the effectiveness of positive behavior support (PBS) in reducing challenging behaviors, the availability of PBS for individuals with intellectual disabilities is limited in many countries including the Netherlands. Training care staff supporting individuals with intellectual disabilities in PBS may be a way to improve the provision of PBS. We aimed to explore the preliminary effectiveness of a PBS training for staff in reducing challenging behaviors of individuals with intellectual disabilities. Using a one group, double pretest–posttest design, 24 staff members involved in the care of 11 adult individuals with intellectual disabilities and challenging behaviors participated. We assessed changes in challenging behaviors and quality of life of the individuals, in staff self-efficacy in dealing with challenging behaviors, and in the use of restraints, using staff rated questionnaires, structured interviews, and medical files. At posttest, we found significant reductions in challenging behaviors, improved quality of life, and increased staff self-efficacy, but no changes in the use of restraints. In contrast, no significant changes on any of the measures appeared between the two pretests. These findings suggest that a staff training in PBS may be effective for reducing challenging behaviors in individuals with intellectual disabilities.

Keywords: challenging behaviors, intellectual disabilities, positive behavior support, quality of life, staff training

Introduction

Positive behavioral support (PBS), a multicomponent approach drawn upon the discipline of applied behavior analyses (ABA), is widely acknowledged as an effective framework for reducing challenging behavior and improving quality of life in individuals with intellectual disabilities (Carr et al., 2002; Goh & Bambara, 2013; LaVigna, Christian, & Willis, 2005; LaVigna & Willis, 2012). While PBS has been investigated and implemented in intellectual disability services in the United States (e.g., Browning-Wright et al., 2007; Freeman et al., 2005; Kraemer, Cook, Browning-Wright, Mayer, & Wallace, 2008; Reid et al., 2003; Singh et al., 2018) and, to a lesser extent, the United Kingdom (e.g., Hassiotis et al., 2018; MacDonald, McGill, & Murphy, 2018; Rose, Gallivan, Wright, & Blake, 2014; Stocks & Slater, 2016), Ireland (e.g., Grey & McClean, 2007; McClean et al., 2005; McClean, Grey, & McCracken, 2007), and Australia (e.g., Wardale, Davis, Carroll, & Vassos, 2014; Wardale, Davis, & Dalton, 2014), individuals with intellectual disabilities and challenging behaviors living in many countries including the Netherlands have still limited access to PBS interventions. In the Netherlands, we found that, apart from one ABA-based intervention for children with autism and intellectual disabilities (Discrete Trial Teaching; Peters-Scheffer, Didden, Mulders, & Korzilius, 2013), a national database for interventions for individuals with intellectual disabilities contains neither an intervention that incorporates PBS characteristics nor an alternative evidence-based behavioral intervention aiming to reduce challenging behaviors (Vilans Databank Interventies, 2019). In this study, we will therefore explore the preliminary effectiveness of applying PBS in a setting in the Netherlands.

One approach to implement PBS is through training care staff supporting individuals with intellectual disabilities. Unlike the implementation via a single practitioner or via professional PBS teams, training staff may be particularly well suited to ensure the applicability and acceptability of PBS strategies in daily practice (Dunlap, Hieneman, Knoster, & Fox, 2000). In a PBS training programme, care staffs are trained to develop behavioral support plans, based on hypotheses derived from functional assessment of challenging behaviors. Rather than

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Correspondence: Marian Klaver, MSc, Centre for Intellectual Disability and Mental Health, P.O. Box 30007, 9400 RA Assen, The Netherlands.
E-mail: marian.klaver@ggzdrenthe.nl

repressing challenging behaviors by using restraints, staffs are trained in how to implement behavioral strategies such as manipulating the antecedents preceding challenging behaviors, teaching individuals alternative skills to replace challenging behaviors, and delivering effective reinforcers (Dunlap et al., 2000).

Internationally, promising training programmes have been developed and studied (MacDonald & McGill, 2013). The majority of these studies focused on staff outcome measures; however, the effectiveness of PBS training on reducing challenging behaviors of individuals with intellectual disabilities received less attention (MacDonald & McGill, 2013). Studies that did include outcomes concerning individuals with intellectual disabilities showed evidence for a decrease of challenging behaviors (Crates & Spicer, 2012; Dench, 2005; Gore & Umizawa, 2011; Grey & McClean, 2007; MacDonald et al., 2018; McClean et al., 2005; Singh et al., 2018), with the exception of a recently published cluster randomized controlled trial (Hassiotis et al., 2018); Based on data from 246 individuals with intellectual disabilities, this randomized controlled trial demonstrated that training staff in PBS was not more effective than treatment as usual in reducing challenging behaviors. Additionally, although the improvement of quality of life is one of the primary aims of PBS, only three studies (Dench, 2005; MacDonald et al., 2018; McClean et al., 2007) took quality of life outcomes into account. Of these studies, solely McClean et al. (2007) found significant effects on quality of life outcomes. However, this study had a very small sample size (n = 5), therefore it is not possible to draw a final conclusion on the effect of PBS on quality of life.

Regarding outcome measures considering care staff, changes in skills, knowledge, attributions, and emotional responses of care staff have been frequently studied (Browning-Wright et al., 2007; Davies, Griffiths, Liddiard, Lowe, & Stead, 2015; Freeman et al., 2005; Kraemer et al., 2008; Lowe et al., 2007; McGill, Bradshaw, & Huges, 2007; Reid et al., 2003; Rose et al., 2014; Stocks & Slater, 2016; Wardale, Davis, Carroll, et al., 2014; Wardale, Davis, & Dalton, 2014; Wills, Shephard, & Baker, 2013). These outcome measures were chosen as care staff often have doubts, concerns, and questions on how to manage challenging behaviors (Jahoda & Wanless, 2005; Ravoux, Baker, & Brown, 2012; Whittington & Burns, 2005). Such feelings of uncertainty may indeed lead to staff experiencing a range of distressing emotions and using restraints too soon (Hawkins, Allen, & Jenkins, 2005). In a PBS training, staffs are provided with behavioral management strategies that may well enhance their self-efficacy in dealing with challenging behaviors, and diminish the need to use restraints. However, outcome measures on staff self-efficacy in dealing with challenging behaviors and their use of restraints have received little research attention.

The current pilot study aimed to explore the preliminary effects of a staff training in PBS on challenging behaviors and quality of life of individuals with intellectual disabilities and on care staff self-efficacy in dealing with challenging behaviors and their use of restraints. We investigated this in a setting in the Netherlands where PBS had not been implemented yet. Keeping previous research in mind, we hypothesized that the PBS training would result in a decrease in challenging behaviors of the individuals, an increase in staff self-efficacy, and a decrease in the use of restraints. Furthermore, in line with the aims of PBS, we hypothesized that quality of life outcomes would improve after the PBS training.

Material and Methods

Participants and Setting

Participants were care staff referred from a service provider that delivers day and residential services to individuals with intellectual disabilities in the Northern part of the Netherlands. This particular service provider was selected as its size and type of care appeared to be representative for the Netherlands.

The service provider delivers care to approximately 1,300 individuals (across all ages) with all levels of intellectual disability and/or autism. The care includes day and residential services, such as day-care centers with varying group-sizes and 24-h care units with 6–12 individuals. The service provider delivers care in traditional settings (secluded areas) and in participatory settings, such as adjusted homes within districts of villages and cities. Relatives and friends of the individuals with intellectual disabilities are free to visit whenever they want. Depending on an individual's relationship with his or her relatives and friends, he or she can visit them outside of the institution regularly.

To be eligible to participate in the study, a staff member had to meet the following criteria: (1) 80% or more of the team in which the staff member worked was able to participate in the training; (2) The staff member was responsible for the care for at least one individual who met all of the following criteria: (a) the individual lived in a residential setting, and he or she received 24 h of care each day; (b) the individual had a mild, moderate, severe, or profound intellectual disability; and (c) the individual displayed one or more of the following behaviors: aggression, self-injurious behavior, property destruction, sexually inappropriate behavior, overactivity, inappropriate social conduct, withdrawal, and the eating of inappropriate objects. The psychologist of the care unit assessed whether the individual met these inclusion criteria.

Additionally, the psychologist of the service recruited care staff for the study. Three teams decided to participate. These three teams consisted of 30 staff members in total. Twenty-seven out of 30 staff members had given their informed consent for participation. However, before the first baseline assessment, three staff members withdrew from the study (one job change, one long-lasting holiday, and one did not disclose a reason for withdrawal). Thirteen individuals with intellectual disabilities under the responsibility of these teams of staff met the inclusion criteria. For 11 out of these 13, legal representatives had given consent for access to the medical file by signing the informed consent form. This led to the participation of 24 staff members working with 11 individuals with intellectual disabilities and challenging behaviors. The 11 individuals with intellectual disabilities all lived in two 24-h care units in the secluded areas of the institution. All individuals spent their day at day-care. Staff members in the current study saw the individuals with intellectual disabilities at their care units (n = 19) or during day-care (n = 5). Baseline characteristics of the participating staff members and individuals with intellectual disabilities are presented in Tables 1 and 2.

TABLE 1
Staff characteristics (n = 24)

Age, mean (SD)	38.96 years (12.9)
Gender, n (%)	
Female	20 (83.3)
Male	4 (16.7)
Education level[1], n (%)	
Low	5 (20.8)
Middle	14 (58.3)
High	5 (20.8)
Time worked with, mean (SD)	
Individuals with ID	12.42 years (8.1)
Individuals with ID and CB	12.17 years (7.5)

[1] Coding of education level was based on the Dutch standard classification of education (Centraal Bureau voor de Statistiek;, 2016).

CB, challenging behaviors; ID, intellectual disabilities; SD, standard deviation.

TABLE 2
Characteristics of the individuals with intellectual disabilities (n = 11)

Age, mean (SD)	47.45 years (12.2)
Gender, n (%)	
Female	4 (36.4)
Male	7 (63.6)
Level of disability, n (%)	
Moderate	4 (36.4)
Severe	6 (54.5)
Profound	1 (9.1)
Challenging behaviors[1], mean (SD)	
Irritability	15.36 (11.7)
Lethargy	5.64 (6.7)
Stereotypic behavior	3.64 (3.1)
Hyperactivity	14.73 (9.2)
Inappropriate speech	2.73 (2.9)

[1] As measured by the ABC (Aman, Singh, Stewart, & Field, 1985).

ABC, aberrant behavior checklist; SD: standard deviation.

Study Design and Procedures

We used a one group pretest–posttest design with a double pretest. Immediately after inclusion, participants completed the first baseline assessment (Pretest I). The second baseline assessment (Pretest II) took place in the 2 weeks before the start of the training, that is, 16 weeks after Pretest I. The duration of the training was 17 weeks. Posttreatment measurements (Posttest) were assessed immediately after the last session.

All three measurements included staff-rated questionnaires and structured interviews. All staff members completed the questionnaires on the staff-related factors. Additionally, for each individual with an intellectual disability, we selected one staff member to fill in the questionnaires on the characteristics of that particular individual. Furthermore, at all measurements, the selected staff member participated in a 30-min structured interview. The questionnaires were completed through the online questionnaire program Unipark. All interviews were administered by the first author.

This study did not fall under the Medical Research Involving Human Subjects Act (WMO) as was decided by the Medical Ethical Committee of the University Medical Centre Groningen. Therefore, ethical approval was waived.

Intervention

The training included eight 180-min sessions led by experienced cognitive behavioral therapists. Since training sessions took place approximately once every 2 weeks, the total training period lasted 17 weeks. The training consisted of four parts. In the first part, staff received education about the difference between observation and interpretation of behaviors. Also, in this part of the training staff were encouraged to establish, for each individual with intellectual disabilities, a collective goal for intervention and were trained to apply functional behavior assessment. In the second part, staff practiced with interventions based on the hypotheses derived from the functional assessment and directed at the manipulation of antecedents of behavior, including environmental adjustments and strategies aimed to teach alternative skills to replace challenging behaviors. The third part of the training covered the manipulation of consequences, in particular behavioral management techniques directed at reinforcement of desired behaviors. The final part was focused on registering the bespoken strategies in the individual's behavior support plans. Staff wrote a document containing the PBS plan that had been developed in the training. This document was integrated with the individual's support plan and could be consulted after the training. In order to contribute to long-term implementation of learned strategies, staff in the third part of the training learned to generalize the strategies to other challenging behaviors (i.e. behaviors that had not been discussed in the training).

Each session started with discussing homework assignments, consisting of exercises with learned skills, followed by the introduction of a new subject, and ended with the preparation of the following homework assignment. Recorded interactions between staff and individuals with intellectual disabilities were used throughout the training, in order to learn to apply functional behavior assessment and analysis and to illustrate the use of new skills.

All PBS plans included interventions directed at the manipulation of antecedents of behaviors and reinforcement strategies. A typical example of such a PBS plan concerns the handling of self-injurious behavior. After conducting a functional behavior assessment, staff may hypothesize that these behaviors serve the function to gain stimulation or attention during periods without activities or challenges. Interventions in this PBS plan will be mostly antecedent-based, that is, directed at changes in the daily routine (more activities). Furthermore, staff responses to the self-injurious behaviors have to be avoided and desired behaviors, that is, active engagement in daily activities, should be reinforced by positive attention (e.g., a smile, comment, and/or compliment).

Outcome Measures and Instruments

Our primary outcome was challenging behaviors of the individual with intellectual disabilities as measured with the Irritability subscale of the Aberrant Behavior Checklist (ABC; Aman et al., 1985). The ABC aims to assess challenging behaviors in individuals with intellectual disabilities. The Irritability subscale of the ABC consists of 15 items rated on a 4-point rating scale (0–3). These items include behaviors such as aggression, self-injurious behavior, and destructiveness. The ABC is widely used in research in individuals with intellectual disabilities and challenging behavior and has good internal consistency (α range: 0.86–0.94), inter-rater reliability (r range: 0.55–0.69), and test–retest reliability (r range: 0.96–0.99; Aman et al., 1985).

The staff rated total score on the Personal Outcome Scale (POS; Van Loon, van Hove, Schalock, & Claes, 2008) was used to measure quality of life of the individuals with intellectual disabilities. The POS has eight subdomains and three domains: personal development and self-determination (domain level of independence); interpersonal relations, social inclusion, and rights (domain social participation); emotional, physical, and material well-being (domain well-being). The POS has a good internal consistency (α range: 0.40–0.86) and inter-rater reliability (r range: 0.29–0.79; van Loon et al., 2008).

Staff-perceived self-efficacy in relation to challenging behaviors was measured using the Challenging Behavior Self-efficacy Scale (CBSES; Hastings & Brown, 2002). The CBSES includes five items rated on a 7-point scale: feelings of confidence; control; satisfaction in dealing with challenging behaviors; positive impact on dealing with challenging behaviors; and difficulty of working with individuals with challenging behaviors. Hastings and Brown (2002) have not reported on reliability information on the CBSES.

Information regarding the frequency, severity, and types of physical restraints were collected from the medical files of the individuals concerned. In addition, severity and type of physical restraints were classified according to the classification scheme of Scheirs, Blok, Tolhoek, Aouat, and Glimmerveen (2012, table 1 on p. 115). This classification system rates severity of restrictive measures/restraints on an ordinal scale, based on both the duration of its application (temporary vs. long-lasting) and on its intensity (less intense, moderately intense, or very intense).

TABLE 3
An overview of the sum scores on physical restraints collected from the medical files of the individuals with intellectual disabilities (n = 11)

Individual with ID	Pretest I	Pretest II	Posttest
Individual 1	4	4	4
Individual 2	4	4	9
Individual 3	0	0	4
Individual 4	0	0	0
Individual 5	9	9	9
Individual 6	16	16	4
Individual 7	11	11	11
Individual 8	0	0	0
Individual 9	1	1	1
Individual 10	0	0	0
Individual 11	0	0	0

Note: Restraints were classified according to the classification scheme of Scheirs et al. (2012, table 1 on p. 115).

Statistical Analyses

Data were analyzed using SPSS version 23.0 (IBM SPSS Statistics for Windows, version 23.0). Since this study involved a small sample size and data was non-normally distributed, Friedman's analysis of variance (ANOVA) was used. We assessed whether the mean ranks of the outcome measures (challenging behaviors and quality of life of the individuals, staff perceived self-efficacy in dealing with challenging behaviors and use of restraints) changed between Pretest I, Pretest II, and Posttest. When the results of Friedman's ANOVA were significant, Wilcoxon signed-rank tests for within group change were used to follow up these findings. We applied two steps: First, we assessed whether the mean ranks of the outcome measures significantly differed between Pretest I and Pretest II. Subsequently, we compared these same outcome measures between Pretest II and Posttest. A Bonferroni correction was applied and so all effects are reported at a .025 level of significance.

Results

The results of the Friedman ANOVA indicated statistically significant differences in scores on the Irritability subscale of the ABC (χ^2 (2) = 6.22, $p < .05$), quality of life (χ^2 (2) = 17.71, $p < .05$) and staff self-efficacy in dealing with challenging behaviors (χ^2 (2) = 13.76, $p < .05$) across the three time points. Table 3 shows an overview of the sum scores on physical restraints collected from the medical files of the individuals with intellectual disabilities. Scores on restraints did not change significantly between the three time points ($\chi^2(2) = 0{,}67$, $p > .05$).

In Table 4, the results of the comparison between Pretest I and Pretest II are displayed, showing that there were no significant changes in any of the measures during the baseline period. Table 5 summarizes the comparison between Pretest II and Posttest, showing that challenging behaviors decreased significantly from immediately before to after training. Furthermore, after behavioral staff training, quality of life of the individuals and staff self-efficacy in dealing with challenging behaviors significantly improved.

Discussion

In the United States, PBS is rather commonly available and its efficacy has repeatedly been studied in this context (e.g., Browning-Wright et al., 2007; Freeman et al., 2005; Kraemer et al., 2008; Reid et al., 2003, Singh et al., 2018). However, in a Dutch database concerning interventions for individuals with intellectual disabilities, PBS is not mentioned (Vilans

TABLE 4
Comparisons of Pretest I with Pretest II using Wilcoxon signed-rank tests

	Pretest I			Pretest II				
	Min	Max	Median	Min	Max	Median	*Z*	*p*
ABC irritability	2.00	35.00	14.00	0.00	40.00	11.00	0.00	1.000
POS	80.00	106.00	92.00	82.00	103.00	91.00	−0.90	.370
CBSES	17.00	32.00	26.50	14.00	32.00	25.50	−0.78	.433

ABC, aberrant behavior checklist (Aman et al., 1985); CBSES, challenging behavior self-efficacy scale (Hastings & Brown, 2002); POS, personal outcome scale (van Loon et al., 2008).

TABLE 5
Comparisons of Pretest II with Posttest using Wilcoxon signed-rank tests

	Pretest II			Posttest				
	Min	Max	Median	Min	Max	Median	*Z*	*p*
ABC irritability	0.00	40.00	11.00	0.00	25.00	10.00	−2.53	.011
POS	82.00	103.00	91.00	84.00	110.00	95.00	−2.94	.003
CBSES	14.00	32.00	25.50	18.00	35.00	28.00	−3.24	.001

ABC, aberrant behavior checklist (Aman et al., 1985); CBSES, challenging behavior self-efficacy scale (Hastings & Brown, 2002); POS, personal outcome scale (van Loon et al., 2008).

Databank Interventies, 2019). In order to investigate the application of PBS, the present pilot study aimed to explore the preliminary effect of staff training in PBS in the Dutch context, with regard to changes in challenging behaviors of individuals with intellectual disabilities, changes in the individual's quality of life, in staff self-efficacy in dealing with challenging behaviors, and in the use of restraints.

We found statistically significant reductions in challenging behaviors of the individuals after the training, based on care staff reports. This finding is in line with our hypothesis and previous studies with similar designs (e.g., Baker, 1998; Dench, 2005; McClean et al., 2005). Yet, it is in contrast with a recent cluster randomized controlled trial (Hassiotis et al., 2018) that found no reductions in challenging behaviors after PBS training plus treatment as usual compared to treatment as usual. A possible explanation for these contrasting findings could be that Hassiotis et al. (2018) used a randomized controlled design while we used a one group pretest–posttest design. In our study, we cannot rule out that factors other than the intervention have produced the changes after the training although no changes were reported between the two pretreatment measurements. However, since PBS was not a widely used approach in the Netherlands, we had to be modest in our goals and first investigate the effects in a small trained group. The current findings indicate that the next step would be to study the intervention using a controlled design in a larger sample.

Another explanation for the contrasting findings between our study and the study conducted by Hassiotis and colleagues (2018) could be the lack of compliance and treatment fidelity to the PBS model, as found by Hassiotis et al. (2018). In order to accomplish the implementation of learned strategies, the PBS training that was used in the current study included integration of the PBS plan with the individual's behavior support plan, which was supported by the trainers. However, we have not collected data on whether the strategies discussed in the training lead to changes in the behavior support plans of the individuals with intellectual disabilities. Therefore, we have no data on the actual provision of the strategies and were not able to demonstrate whether the reductions in challenging behaviors were directly related to the training.

Our findings regarding quality of life suggest that the PBS training may enhance quality of life outcomes. Although we did not investigate how these results on quality of life emerged, various PBS intervention strategies could have affected the quality of life of individuals, such as skill teaching and positive adaptions to the individual's physical and social environment. Given the scarcity of previous studies incorporating quality of life measures, more research is needed to confirm and elaborate our findings.

Staff reported significant improvements in self-efficacy, indicating that they feel more secure to prevent and respond to challenging behaviors. This finding is in line with previous studies (Davies et al., 2015; Lowe et al., 2007; Stocks & Slater, 2016). Again, longer term follow-up would be of great value in order to understand whether this gain in self-efficacy will last.

We did not find changes in the use of restraints. However, this may be due to the inaccuracy of registration of restraints. Research has clearly demonstrated that half of the intrusive procedures (e.g., behavior control medication, physical restraint, and seclusion) remain undocumented (Feldman, Atkinson, Foti-Gervais, & Condilac, 2004). Recently, Schippers, Frederiks, Van Nieuwenhuijzen, and Schuengel (2018) found that, in the

Dutch context, independent observers and colleague staff members (not directly involved in the restraint) registered a restraint more often as a restraint when the staff member (directly involved in the restraint) did not. The other way around happened much less often, suggesting that restraints usage is not reliably recorded and may likely be underreported in daily practice. Since we used medical files as the sole source of data on restraints, we may have missed changes in restraints.

The study was strongly embedded within daily care practice. Additionally, we combined outcome ratings concerning care staff and individuals with intellectual disabilities, and had no dropouts during the training (apart from the three care staff that withdrew before the start of the training). Yet, the study was small and lacked a control group and follow-up measurements. As a result, caution must be exercised in the interpretation of these results since expectancy bias and overestimation may have been present.

Conclusion

Our results indicate that a training for staff in PBS may be effective in reducing challenging behaviors and improving quality of life of individuals with intellectual disabilities. Furthermore, staff training in PBS may be a fruitful approach to enhance staff self-efficacy in dealing with challenging behaviors. More research is needed to examine the long-term effect of staff training, especially in comparison to untrained teams. Additionally, further research is required to improve the reliability of registration of restraints.

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