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# Research in Developmental Disabilities



## Staff attributions of the causes of challenging behaviour in children and adults with profound intellectual and multiple disabilities



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### ABSTRACT

A study has shown that staff do not generally perceive challenging behaviour in people with profound intellectual and multiple disabilities (PIMD) as being of serious consequence. In this study we aimed to gain a better understanding of the causal explanations that direct care and support staff give for challenging behaviour in this group. The purpose of this study was twofold: (1) to determine the way staff attribute challenging behaviour in children and adults with PIMD; and (2) to analyse whether more experienced staff attribute challenging behaviour in children and adults with PIMD differently than less experienced staff. In total, 195 direct support staff and an equal number of children and adults with PIMD participated in the study. Direct support staff filled out the Challenging behaviour Attribution Scale (five causal explanatory models of challenging behaviour) to explain challenging behaviour in one individual that they supported. The results show that direct support staff as a whole report the biomedical model as the most plausible explanation for challenging behaviour in children and adults with PIMD. However, in the present study the mean scores on all models are low. This might indicate that a large number of staff found none of the models particularly useful as possible explanations of challenging behaviour in people with PIMD. This could mean that staff have difficulties stating the cause of challenging behaviour in this group. Another possible explanation could be that there is little scientific knowledge about causing and maintaining factors of challenging behaviour in people with PIMD. It could also mean that staff have additional explanations for challenging behaviour in this target group that are not mentioned in the instrument used. Future research should address these issues. No differences were found between more experienced and less experienced direct support staff.

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## 1. Introduction

Recent decades have provided ample research findings on the prevalence and prevention of challenging behaviour in people with intellectual disabilities. These studies show that individuals with intellectual disabilities are more at risk of displaying challenging behaviour than the average population. Studies show a varying prevalence of challenging behaviour

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in people with intellectual disabilities, from 5 to 15% in large population-based studies (e.g. Emerson et al., 2001; Holden & Gitlesen, 2006) to around 80% in specific settings (e.g. Csorba, Radvanyi, Regenyi, & Dinya, 2011; Lundqvist, 2013; Poppes, Van der Putten, & Vlaskamp, 2010; Rojahn, Matson, Lott, Esbensen, & Smalls, 2001). Emerson (2001, p. 3) defines challenging behaviour as ‘culturally abnormal behaviour(s) of such intensity, frequency or duration that the physical safety of the person or others is likely to be placed in serious jeopardy, or behaviour which is likely to seriously limit use of, or result in the person being denied access to, ordinary community facilities’. The Royal College of Psychiatry, British Psychological Society & Royal College of Speech & Language Therapists 2007 has updated this definition to: ‘Behaviour can be described as challenging when it is of such an intensity, frequency or duration as to threaten the quality of life and/or the physical safety of the individual or others and is likely to lead to responses that are restrictive, aversive or result in exclusion’ (RCP, BPS, & RCSLT, 2007, p. 10). This definition emphasizes the social construction of challenging behaviours as a product of an interaction between the individual and their environment.

Factors described in the literature as influential in the onset and maintenance of challenging behaviour are the degree of intellectual disability (Chadwick, Kusel, & Cuddy, 2008; Holden & Gitlesen, 2006; McClintock, Hall, & Oliver, 2003; Wulffaert et al., 2009), the degree of motor impairment and the presence of sensory impairments (Chadwick, Piroth, Walker, Bernard, & Taylor, 2000; Došen, 2007; Holden & Gitlesen, 2006), additional health problems (e.g. epilepsy, mental health problems, sleeping problems) (Doran, Harvey, & Horner, 2006; Došen, 2007; Oliver & Richards, 2010) and communicative problems (McIntyre, Blacher, & Baker, 2002; Totsika, Felce, Kerr, & Hastings, 2010).

These factors are all present in children and adults with profound intellectual and multiple disabilities (PIMD). This group has an estimated intelligence quotient of 25 points or lower (meaning that they need comprehensive support) and severe or profound motor impairments, which is reflected in not being able to move independently and having limited use of their hands/arms (Nakken & Vlaskamp, 2007). People with PIMD have major difficulties with receptive or expressive communication, resulting in them understanding and using a small number of words at most or relying completely on non-symbolic forms of communication. In addition, this group frequently has sensory problems and many additional health problems such as epilepsy, bowel and abdominal problems and pulmonary and respiratory problems (Böhmer, Taminiau, Klinkenberg-Knol, & Meuwissen, 2001; Codling & MacDonald, 2009; Van der Putten & Vlaskamp, 2011; Watt-Smith, 2009).

Challenging behaviour is thus expected to be more common amongst individuals who frequently have these types of comorbidity, such as people with PIMD. A study (Poppes et al., 2010) conducted into the prevalence rates for all types of challenging behaviour in 181 children and adults with PIMD shows that prevalence rates are indeed high (self-injurious 82%, stereotypical 82%, withdrawn 84% and aggressive/destructive behaviour 45%). Examples of behaviours that occur with high frequency (i.e. on a daily or hourly basis) include hitting themselves on the head, screaming and shouting and having a closed, sagging posture or making repelling gestures in response to activities that were offered for much of the day. Even though challenging behaviour seems to be very common in people with PIMD, staff usually report it as being of minor consequence for the individuals themselves (Poppes et al., 2010). One of the consequences of this perceived low severity could be that challenging behaviour is not systematically addressed in daily practice, as shown in a study by Poppes, Van der Putten, and Vlaskamp (2014). Where interventions aimed at reducing or preventing challenging behaviour are included in individual comprehensive service plans, they seem simplistic, and there are virtually no goals to document, reduce or prevent challenging behaviour in people with PIMD (Poppes et al., 2014). This is a cause for concern, as challenging behaviour not only has physical consequences for the individuals themselves, but can also have serious consequences for their ability to establish a relationship with the world around them. For example, stereotypical behaviour that occurs on an hourly basis may ‘capture’ the attention of the person with PIMD for much of the day, and consequently hinder communication with their environment and therefore reduce opportunities to build and maintain relationships with others. These relationships are vital to people with PIMD as a means of gaining experience and exerting influence on their own lives (Vlaskamp & Van der Putten, 2009).

In general, it is believed that challenging behaviours are social behaviours that can be influenced by the actions of others in the environment (Hastings & Remington, 1994). Staff beliefs/attributions regarding the cause of challenging behaviour may affect the actions staff undertake in relation to people displaying challenging behaviour. Heider (1958) developed an attribution theory that assumes that when people perceive an event, they try to find a cause for it or attribute responsibility. Direct support staff’s attributions/beliefs about challenging behaviour might affect their responses to the challenging behaviour displayed, as well as their beliefs about effective intervention strategies (Dowey, Toogood, Hastings, & Nash, 2007; Hastings, 1997). It is assumed that the behaviour of direct support staff is determined by emotional responses and cognitions (beliefs/attributions) about the challenging behaviour (Hastings, 2002, 2005; Hastings & Remington, 1994; Snow, Langdon, & Reynolds, 2007; Weiner, 1985). The things that direct support staff may or may not do in their work with people with PIMD as a result of these beliefs may determine, at least in part, the emergence and persistence of challenging behaviour (Hastings & Remington, 1994; Hastings, 2002; Weiner, 1985). Hastings (1997) proposed five causal models of challenging behaviour: learned behaviour (negative and positive reinforcement processes), biomedical (e.g. physical or medical problems), emotional (e.g. anger, stress, fear), physical environment (e.g. auditory environment, bright lights) and self-stimulation (e.g. boredom, not being offered activities) (Hastings, 1997). If staff attribute challenging behaviour to an internal cause that is difficult to modify (e.g. biomedical), they might respond differently to the behaviour than if they believe it has an external, modifiable cause. Attributions by direct support staff and subsequent responses to challenging behaviour may even lead to a situation where attributions and consequent responses endorse that behaviour and contribute to its long-term maintenance (Hastings & Remington, 1994; Jones & Hastings, 2003).

Tynan and Allen (2002) found in their study that the severity of the intellectual disability influenced the attributions staff made regarding aggressive behaviour. Staff considered the biomedical model of more causal relevance for aggressive behaviour in people with severe intellectual disabilities than in people with mild intellectual disabilities. Hastings, Remington, and Hopper (1995) found differences between attributions in experienced and inexperienced staff. More experienced staff were more likely to give behavioural and biological explanations for challenging behaviour than less experienced staff. Research indicates that staff see behaviour as more problematic if it has a direct impact on themselves or is inconvenient for the organization (Elgie & Hastings, 2002; Hastings, 2005; Lowe, Felce, & Blackman, 1995; Poppes et al., 2014). Hastings (2005) suggests that staff are therefore less inclined to intervene in behaviour that has little or no effect on themselves or their organizations, such as stereotypical behaviour.

Forster, Gray, Taffe, Einfeld, and Tonge (2011) found in their research on behavioural and emotional problems in people with severe and profound intellectual disability that there are significant differences between groups of people with severe and profound intellectual disabilities regarding challenging behaviour and emotional problems. They suggest that these two groups should be treated as single groups in research. Since the research carried out regarding staff attributions on challenging behaviour so far in this field has not focused on people with PIMD, we were interested in direct support staff's attributions regarding challenging behaviour in this target group. Two studies conducted in the Netherlands (Poppes et al., 2010, 2014) show that staff do not generally perceive challenging behaviour in children and adults with PIMD as being of serious consequence and they rarely include goals aimed at reducing or preventing such behaviour in individual comprehensive service plans. It is important to gain a better understanding of the explanations staff give for challenging behaviour in children and adults with PIMD because it may offer clues for the reduction or prevention of this behaviour and consequently for developing an appropriate intervention. The purpose of this study has been twofold: (1) to determine the way staff attribute challenging behaviour in children and adults with PIMD; and (2) to analyse whether more experienced staff attribute challenging behaviour in children and adults with PIMD differently than less experienced staff.

## 2. Method

### 2.1. Participants

Direct support staff were recruited from ten organizations across the Netherlands using the following inclusion criteria: supporting a person with a profound intellectual disability (IQ of 25 or below) and a profound or severe motor disability (manifested in the inability to move independently), where the age of onset was before their 18th birthday (Nakken & Vlaskamp, 2007). In addition, the direct support staff had to support a person with PIMD who exhibited challenging behaviour at least once in the previous two months (scored using the Behaviour Problem Inventory for people with PIMD: see Poppes et al., 2010; Rojahn et al., 2001). Informed consent, including written permission to take part in the study, was given by the parent(s) or legal representatives of the individuals with PIMD and informed consent was given by participating staff.

A convenience sample was retrieved from a total of 195 direct support staff. The participating direct support staff was predominantly female (186, 95.4%). Their mean age was 38.5 (SD: 11.3, range: 20–64). Data on the direct support staff's level of education was missing for 18 participants. Most participants had attended senior secondary vocational education ( $n = 122$ , 62.2%); the remaining participants ( $n = 55$ , 28.2%) had attended vocational college. On average the direct support staff had 14 years of working experience, with a minimum of 1 year and a maximum of 40 (SD: 9.1). Data on working experience was missing for one participant.

The direct support staff completed a semi-structured questionnaire to determine the personal characteristics of the person with PIMD – age, gender (male/female) – as well as the prevalence of sensory problems and chronic health problems (yes/no/I do not know) for the person they supported.

Of the people with PIMD, 105 were male and 90 were female. Their mean age was 30.4 years (SD: 16.1 range: 3–67, missing data: 6). In our study 44 participants, all children, lived at home. The remaining 145 people with PIMD lived in group homes, with an average of 7.8 people per residential unit. In general, two direct support staff were present during the day, either in the unit or at the day-service setting. Most of the 145 individuals with PIMD lived in a community setting (a total of 84), and 61 in a residential facility. Table 1 presents information on additional health problems.

### 2.2. Measures

#### 2.2.1. Attributions

Direct support staff completed the translated version of the Challenging Behaviour Attributions Scale (CHABA; Hastings, 1997; translated version Lambrechts, Kuppens, & Maes, 2009). The questionnaire consists of 33 items, each of which states a possible reason as to why a person with intellectual disability may engage in challenging behaviour. The 33 items relate to five causal models: learned behaviour (beliefs that challenging behaviours are maintained by positive and negative enforcement processes; six items, e.g. he/she wants attention); medical/biological factors (beliefs that challenging behaviours are related to biological/medical causes; six items, e.g. because of the medication that he/she is given); emotional factors (beliefs that challenging behaviours are related to emotional factors; seven items, e.g. because he/she is angry); aspects of the physical environment (beliefs that challenging behaviours are related to environmental circumstances; eight

**Table 1**  
Additional health problems of children and adults with PIMD ( $n = 195$ ).

	Number of people with PIMD ( $N$ missing data)	% (% missing data)
<i>Sensory problems</i>		
Auditory	57 (6)	29.2 (3.1)
Visual	111 (2)	56.9 (1.0)
Tactile	79 (7)	40.5 (3.6)
<i>Health problems</i>		
Epilepsy	128 (5)	65.6 (2.6)
Bowel and abdominal problems	146 (5)	74.9 (2.6)
Sleeping problems	55 (8)	28.2 (4.1)
Lung and respiratory problems	49 (5)	25.1 (2.6)
Eating and drinking problems	132 (4)	67.7 (2.1)
Dental problems	56 (5)	28.7 (2.6)
Mental health problems	39 (5)	20.0 (2.6)

items, e.g. because high humidity makes him/her uncomfortable); and self-stimulation (beliefs that challenging behaviours are related to self-stimulatory functions; six items, e.g. because he/she is bored).

Direct support staff were asked to rate each of the 33 items on a five-point scale ( $-2 =$  very unlikely,  $-1 =$  unlikely,  $0 =$  equally likely/unlikely,  $1 =$  likely and  $2 =$  very likely). Each subscale score was calculated by summing the number of individual items within a particular subscale and dividing by the number of items. A subscale score above zero suggests that the particular causal model is considered applicable to the behaviour. A subscale score below zero suggests that the respondent considers the particular causal model as unlikely to apply to the behaviour. The internal consistency of the five subscales was assessed using Cronbach's alpha. For all five scales, the values of alpha were between .75 and .80, which indicates an acceptable internal consistency (Field, 2009). These values compared favourably with the alpha values originally described by Hastings (1997), which ranged from .65 to .87 and those found by Tynan and Allen (2002), which ranged from .65 to .74. Although there is a lack of specific studies on the validity of the CHABA, the instrument is used in a wide variety of research on staff attributions (e.g. Lowe et al., 2007; McGill, Bradshaw, & Hughes, 2007; Schmidt, Balandin, Reed, & Sigafos, 2007; Tierney, Quinlan, & Hastings, 2007).

### 2.3. Procedure

Arrangements were made with organizations that were willing to participate to fill in the questionnaires. The direct support staff then completed the CHABA with respect to one person with PIMD who they worked with. This happened at a meeting of the direct support staff and the researcher. The participating organizations made sure that they obtained approval for the study from their ethical committees, as well as permission from parents or legal representatives.

### 2.4. Analysis

Only participants who filled in more than 75% of the items of the CHABA were included in the analysis. This meant that 15 participants were excluded; two of those participants only filled in four or six items of the questionnaire, and 13 participants did not fill in any items. The analysis was performed on 180 participants, 40 of whom did not fill in all 33 items of the CHABA. For these 40 people, the scale descriptives were calculated based on the items they filled in.

There was no significant difference between the 15 excluded participants and the 180 participants included in the analysis in terms of the age ( $t(190) = -.50, p = .62$ ) or gender ( $\chi(1) = 2.75, p = .10$ ) of the children and adults with PIMD. A comparison of the age ( $t(193) = -.60, p = .55$ ), gender ( $\chi(1) = .78, p = .38$ ), educational level ( $\chi(1) = 2.65, p = .10$ ) and working experience ( $t(192) = .88, p = .38$ ) of the direct support staff also showed no difference.

Scale means were calculated for each causal model of the CHABA by adding up the scores of the items belonging to the causal models and dividing them by the number of items. A subscale score of less than zero means that the direct support professional does not consider this causal model to be a likely explanation for the behaviour and a subscale score of more than zero means that he or she considers this causal model a likely explanation (Hastings, 1997). Descriptive statistics were given on the scales. Mean, SD and range were calculated. The frequency of direct support professional's scoring  $[-2$  to  $-1.01]$ ,  $[-1.0$  to  $-0.01]$ ,  $[0.0]$ ,  $[0.01-0.99]$  or  $[1.0-2.0]$  was also given for the five scales.

To determine which CHABA scale the direct support staff attributed the most behaviour to, significant differences in mean scores between the scales were analysed. Ten paired sample  $t$ -tests were performed in order to see whether there were significant differences between the scores on the scales. Significance levels are reported at  $p \leq .005$  (Bonferroni correction was used because of the number of comparisons). 95% confidence intervals were calculated around the mean differences between scales that differed significantly from each other.

The relationship between the five CHABA subscales and the number of years' experience of working with people with ID was calculated using five Pearson's correlation coefficients.

### 3. Results

Table 2 shows that the mean score on the biomedical scale is above zero and mean scores on the other scales are below zero, indicating that participants on the whole considered the biomedical model to be applicable in accounting for challenging behaviour in children and adults with PIMD. When looking at the frequency distribution of the scores in the different scales, we see that a total of 55.6% direct support staff ( $n = 100$ ) scored the biomedical model as a likely explanation (see Table 2). A total of 41.1% ( $n = 75$ ) scored the emotional scale as a likely explanation. 38.9% of direct support staff ( $n = 71$ ) scored learned behaviour as a likely explanation for challenging behaviour in children and adults with PIMD. Stimulation and physical environment models were rated as least relevant, with 29.4 ( $n = 53$ ) and 27.2% ( $n = 50$ ) of direct support staff scoring these scales as likely explanations.

Table 3 shows that the mean score on the biomedical model differs significantly from the other four models. The score on the physical environment model is lowest, and differs significantly from all but one model. This model can therefore be considered the least relevant. When looking at the differences between the other three scales, we note one significant difference in mean scores, with the emotional model scoring significantly higher as an explanation for challenging behaviour than the stimulation model.

There were no significant correlations between the direct support staff's number of years of working experience with people with intellectual disability and the different CHABA models. Correlations between the variables ranged from  $-0.01$  for physical environment to  $-0.08$  for the biomedical model.

### 4. Discussion

The results show that direct support staff as a whole report the biomedical model as the most plausible explanation for challenging behaviour in children and adults with PIMD. The mean score on this particular model is above zero, suggesting that staff think the biomedical model is likely to apply to challenging behaviour displayed by this group. The mean scores on the other models are below zero, suggesting that staff consider these particular models as unlikely to apply to the behaviour. The score on the physical environment model is lowest. This model can therefore be considered the least relevant explanation for challenging behaviour according to staff. These findings are in line with Tynan and Allen (2002), who found that staff working with people with severe intellectual disability attributed aggressive behaviour significantly more to a biomedical model than other models. They suggest as a possible explanation that people with severe intellectual disabilities are not seen as having control over their own behaviour in general, and are thus unable to control any challenging behaviour that might occur. Given the severity of the disabilities among people with PIMD, direct support staff may think it even less likely that people with PIMD can influence their own behaviour. This could mean that staff view challenging behaviour as 'belonging' to the person and are therefore less inclined to take into account other factors that might influence that behaviour. Ascribing challenging behaviour to biomedical factors could also explain why frequently occurring challenging behaviours are not described in individual comprehensive service plans (Poppes et al., 2014). If the behaviour is considered non-changeable, there may appear to be no point including it in the plans. Bailey, Hare Hatton, and Limb (2006) suggest that staff may feel they need to take especially good care of people with intellectual disability, but mainly in a practical sense. This could apply even more to people with PIMD as direct support staff are engaged for much of the day in taking care of their physical and medical needs – feeding, washing, moving, changing diapers and giving medication.

However, in the present study the mean scores on all models are low compared to other research on staff perceptions of challenging behaviour (e.g. Hastings, 1997; Hastings et al., 1995; Tierney et al., 2007). The frequency distribution on all scales of the CHABA also shows that few direct support staff score in the extremes on the items per scale. Per scale, only 18.9–24.5% of the direct support staff gave a lower mean score than  $-1$ , or a higher score than  $+1$ . This, and the low mean scores on all scales, might indicate that a large number of staff found none of the models particularly useful as possible explanations for challenging behaviour in people with PIMD. This could mean that staff have trouble stating the cause of challenging behaviour in this group. A possible explanation could be that there is little scientific knowledge about the causing and maintaining factors of challenging behaviour in people with PIMD. It could also mean that staff have additional explanations for challenging behaviour in this target group that are not mentioned in the CHABA items. Future research should address these issues.

**Table 2**  
Mean scores and frequency distribution on the challenging behavior attribution scale (CHABA).

Scale	Descriptives				Frequency distribution (%)				
	N	Range	Mean	SD	-2 to -1.01	Range	0	0.01-0.99	1-2
Biomedical	180	-2 to 2	0.08	0.85	8.9	29.4	6.1	40.0	15.6
Emotional	180	-2 to 2	-0.12	0.75	11.1	38.9	8.9	33.3	7.8
Learned behavior	180	-2 to 1.8	-0.20	0.84	15.0	36.7	9.4	30.6	8.3
Stimulation	180	-2 to 1.7	-0.33	0.81	18.3	40.6	11.7	24.4	5.0
Physical environment	180	-2 to 1	-0.39	0.68	17.8	47.8	7.2	26.1	1.1

Table 3

Differences between the five attribution scales, calculated using a paired samples *t*-test.

	Scales											
	Physical environment			Emotional			Learned behavior			Stimulation		
	<i>t</i>	MD	CI	<i>t</i>	MD	CI	<i>t</i>	MD	CI	<i>t</i>	MD	CI
Biomedical	9.95**	.48	.38 to .57	3.65**	.20	.09 to .31	4.57**	.29	.16 to .41	6.82**	.41	.29 to .53
Physical environment	–	–	–	–6.94**	–.27	–.35 to –.20	–3.48*	–.19	–.29 to –.08	–1.34	–.06	ns
Emotional	–	–	–	–	–	–	1.81	.09	ns	4.07**	.21	.11 to .32
Learned behavior	–	–	–	–	–	–	–	–	–	2.34	.13	ns
Stimulation	–	–	–	–	–	–	–	–	–	–	–	–

df = 179, MD = mean difference, CI = 95% confidence interval, ns = not significant.

\*  $\alpha < .005$ .\*\*  $\alpha < .001$ .

The current study found no differences in causal explanations for challenging behaviour between more and less experienced staff. This is not consistent with the findings of [Hastings et al. \(1995\)](#), who found that more experienced staff were more likely to give behavioural and biological explanations for challenging behaviour. However, their study included students with less than three months' working experience, most of whom had never worked with people with intellectual disabilities. The present study did not include inexperienced staff members such as students, and participants had at least one year's experience. This might explain why we found no significant differences between (relatively) inexperienced and experienced staff.

Our results should be interpreted with some caution because direct support staff filled out the Behaviour Problem Inventory for the person with PIMD they supported and were subsequently asked to fill out the CHABA for the behaviours they scored on the Behaviour Problem Inventory. It is theoretically possible that withdrawn or stereotypical behaviour for example, such as rocking back and forth, was only observed once a month. It is doubtful whether such behaviour can be characterized as a problem. However, in this study, all stereotypical and withdrawn behaviours occurred more frequently than once a month. It is also important to bear in mind that staff completed the CHABA without linking it directly to one particular type of challenging behaviour. It was therefore not possible to relate certain causal models of explanation to a specific type of challenging behaviour. Future research should clarify the relationship between challenging behaviour topography and attributions made by staff working with people with PIMD.

In the present study the CHABA was used as a tool to identify attributions on challenging behaviour in children and adults with PIMD. Although the reliability of this instrument has been examined and approved, its validity has not yet been established. This could also explain our results. Future research could focus on the validity of the instrument for staff supporting children and adults with PIMD by using the CHABA as a tool to monitor changes in staff attributions as they go through training in understanding and treating challenging behaviour, as [Hastings \(1997\)](#) suggested. Furthermore, even though direct support staff prioritize medical issues as a possible explanation for challenging behaviour when filling out the CHABA, they may take into account additional possible reasons for challenging behaviour in people with PIMD. Future research should include interviews with direct support staff on explanations for challenging behaviour combined with observations of challenging behaviour displayed by the child or adult with PIMD.

Weiner's model of helping behaviour (1985) could also be used in future research to understand the relationship between attributions and actual interventions carried out by direct support staff. Weiner identifies three types of attributions: internal and external attributions; stable (permanent) or unstable (temporary) attributions; and attributions referring to controllability (person is in control of his or her behaviour) or uncontrollability (person is not in control of his or her behaviour). According to [Weiner's model \(1985\)](#), stability attributions have been assumed to influence staff optimism and controllability attributions have been assumed to influence reactions of sympathy and anger. This could further deepen the understanding of how direct support staff perceive challenging behaviour in children and adults with PIMD.

In addition, this study did not examine the relationship between frequency of challenging behaviour and attributions. However, challenging behaviour was mainly attributed to a biomedical model. Nonetheless, it would be interesting to examine in future research the extent to which high-frequency challenging behaviours are attributed differently than challenging behaviours with a lower frequency. Future research should also focus on investigating other possible influences on staff attributions. Factors that may be of interest are the policies adopted by organizations, the culture within an organization and possible peer pressure amongst staff regarding accepted ideas about the explanation for challenging behaviour in people with PIMD.

Beliefs about the causes of challenging behaviour may influence direct support staff's beliefs about effective or desirable interventions ([Hastings, 1997](#)). It seems important to systematically reflect on the possible causes and consequences of challenging behaviour in children and adults with PIMD in practice. [Williams, Dagnan, Rodgers, and McDowell \(2012\)](#) reviewed the evidence of changes in the attributions offered by staff for the behaviour of people with intellectual disabilities

following training in challenging and complex behaviour. They found that training (regardless of its specific content or duration) had a clear effect on the attributions reported by direct support staff. They suggested that the process of obtaining information which enables the reformulation of the challenging behaviour of a particular person or in general is a key element to changing attributions. Therefore, it would be interesting to determine to what extent such an information exchange on and reformulation of challenging behaviour could lead to changes in staff attributions and whether such changes lead to different interventions to reduce or prevent challenging behaviour and ultimately to changes in the frequency and perceived severity of challenging behaviour in children and adults with PIMD in practice. Raising awareness in direct support staff of challenging behaviour in people with PIMD is of great importance, as direct support staff play a key role in both identifying and treating challenging behaviour.

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