Discussion

The potential of video feedback interventions to improve parent-child interaction skills in parents with intellectual disability

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ABSTRACT

Parents with intellectual disability (ID) comprise a vulnerable population commonly in need of parenting support. Many parents with ID may struggle to engage in sensitive and responsive parent-child interactions due to cognitive, social, and economic challenges. Despite a large body of literature discussing parenting by people with ID, there is a concerning lack of evidence-based training programs targeting parent-child interaction skills in this population. As a growing number of parents with ID are referred for social and protective services, innovation is needed to support this group of parents. Video feedback (VF) interventions, in which parents view themselves engaging in positive, naturally-occurring interactions with their children under the guidance of a therapeutic coach, may fill this need. Here, we review challenges posed to many parents with ID, particularly those related to social information processing. We then describe key characteristics of VF interventions, explain how these characteristics accentuate the strengths and accommodate the challenges of parents with ID, and discuss population-specific adaptations of existing VF programs.

1. Introduction

Research underscores the importance of sensitive and responsive parent-child interactions for children's healthy cognitive and socio-emotional development (Dunst & Kassow, 2008; Lunkenheimer, Kemp, & Albrecht, 2013; National Scientific Council on the Developing Child, 2012). However, facilitating developmentally-supportive parent-child interactions may be challenging for many parents. Parents' own cognitive abilities and biases influence the nature and likelihood of their responses to children's actions, words, and bids for connection (Azar, Reitz, & Goslin, 2008; Teti & Cole, 2011). The role of cognition in parent-child interaction is especially pertinent for parents with intellectual disability (ID), whose children are at higher risk for neglect (Ethier, Couture, & Lacharité, 2004; McConnell & Llewellyn, 2002; McGaw, Shaw, & Beckley, 2007, Slack, Holl, McDaniel, Yoo, & Bolger, 2004). Many parents with ID struggle to initiate and maintain positive interactions with their children, likely due to a multitude of cognitive, social, and economic challenges (Collings & Llewellyn, 2012; Feldman, 2002; Llewellyn & Hindmarsh, 2015; Schuengel, Kef, Hodes, & Meppelder, 2017). Compared to those without the disability, parents with ID are more likely to be low income, unemployed, socially isolated, and victim to abuse or violence (Emerson & Brigham, 2014).

Despite the challenges faced by many parents with ID, a recent review reveals a concerning lack of evidence-based parenting supports for this population (Coren, Ramsbotham, & Gschwandtner, 2018). As the number of parents with ID referred for social and protective services appears to be increasing (IASSID, 2008; McConnell & Llewellyn, 2002), innovative evidence-based interventions targeting improved parent-child interaction quality are needed. One such innovation is video feedback (VF), in which parents view videos of themselves engaging in positive, naturally-occurring interactions with their children under the guidance of a therapeutic coach (Balldin, Fisher, & Wirtberg, 2016; Fukkink, 2008). VF promotes positive parent-child interactions by showing parents what they already do to support their children's development and encouraging attunement to child cues (Fukkink, 2008). Utilized with a variety of high-risk parent populations such as teenage and depressed mothers (Balldin et al., 2016), recent VF adaptations targeting parent-child interaction quality in parents with ID reveal promising effects (Hodes, Meppelder, de Moor, Kef, & Schuengel, 2017b).

In the present review, we encourage further examination into the capacity of VF to improve parent-child interaction skills in parents with ID. Because most VF programs target parents of infants and young children (with an average child age of approximately two years; Fukkink, 2008), we focus our review on parenting of this age group. We first address parenting by people with ID; specifically, cognitive

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processes and accompanying socioeconomic challenges posed to the population. We then outline prominent VF programs and discuss the method's utility in accommodating vulnerabilities and accentuating strengths of parents with ID.

2. Parenting by people with ID

Estimates suggest that parents with ID comprise approximately 1% of the parenting population (Booth & Booth, 2004; Emerson & Brigham, 2014). Diagnosed in response to deficits in intellectual and adaptive functioning within the developmental period (typically before age 18; AAIDD, 2010; APA, 2013; Maulik, Mascarenhas, Mathers, Dua, & Saxena, 2011), ID's impacts on parenting vary markedly (Heinz & Grant, 2003; Llewellyn, 1990). Although some parents with ID provide what professionals deem "good enough parenting" or better, many struggle to facilitate positive and responsive daily interactions with their children (Feldman, 1998; Heinz & Grant, 2003; Willems, de Vries, Isarin, & Reinders, 2007). Parents with ID may be less likely to provide contingent praise (i.e., respond positively to children's good behavior), imitate child vocalizations, maintain eye contact, or express affection with their children (Feldman, 2002; Keltner, Finn, & Shearer, 1995; McGaw & Sturmey, 1994). Especially when engaging in structured interactions (e.g., a clean-up task or problem-solving activity), parents with ID may be less effective in recognizing and responding appropriately to child cues (Lindberg, Fransson, Forslund, Springer, & Granqvist, 2017).

The under-stimulating aspects of these early interactions may impact child development. Adjusting for socioeconomic position, social support, and other between-group adversities, children of parents with ID are roughly 3.57 times more likely than their peers to demonstrate developmental delay and 2.76 times more likely to have speech or language problems (Emerson & Brigham, 2014). Wickström, Höglund, Larsson, and Lundgren (2017) estimate that children of parents with ID are four times more likely to receive an ID diagnosis than their peers and two times more likely to develop mental health problems. In McGaw et al.' (2007) sample of 58 children of parents with ID, 41% had a low attention span, 40% displayed symptoms of conduct disorder, and 40% displayed symptoms of multiple psychopathological disorders.

Still, more factors than parenting contribute to children's development, and the relevance of children's own biological predispositions must not be overlooked. Despite the genetic heterogeneity of individuals with ID, for example, there is growing evidence that genetic anomalies are at least partially responsible for the disability (Vissers, Gilissen, & Veltman, 2016). Mothers with ID are also more likely to experience serious birth complications that could have lasting consequences for children's development. McConnell and colleagues found that 28% of mothers with ID in their study gave birth prematurely, and 22% of babies had low birth weight (McConnell, Llewellyn, Mayes, Russo, & Honey, 2003). Such biological factors likely contribute to the prevalence of developmental delay in children of parents with ID and should be considered alongside the influences of parenting.

Children of parents with ID are also at higher risk of being maltreated (McGaw et al., 2007). Parent inattentiveness and lack of age-appropriate supervision contribute to risk for child neglect in parents with ID and are often cited as causes for removal of children from the home (Azar, Stevenson, & Johnson, 2012; Cleaver & Nicholson, 2007). For example, children of parents with ID are approximately 48% more likely to endure negligence-based injuries such as poisoning (Wickström et al., 2017). Although neglect is the most common form of maltreatment in this parenting population (McConnell, Feldman, Aunos, & Prasad, 2011), Wickström et al. (2017) suggest that children of parents with ID are also more than three times more likely to be victim to violence or child abuse than their peers. Fifty-five percent of children of parents with ID in McGaw et al.' (2007) sample had either past or present involvement in child protective services. An estimated 33–78% of parents with ID are subject to child protective services investigations

(Azar & Read, 2009). Similarly, Collings and Llewellyn (2012) report that between 40 and 60% of children of parents with ID are removed from the home either temporarily or permanently at some point in childhood. In a small study of 12 mothers with ID referred for assessment at the Children's Court Clinic in Australia, eight were involved for allegations of neglect (Glaun & Brown, 1999). Three of the remaining four cases of both neglect and abuse involved failure of the mother to prevent abuse from another party, and one referral cited first-hand abuse. In conjunction with these incidence data, it should be noted that the parenting potential of those with ID is commonly subject to scrutiny. Professionals' prejudices may bias reports of child maltreatment incidence in the population and contribute to elevated risk estimates (Höglund, Lindgren, & Larsson, 2013; Llewellyn & Hindmarsh, 2015).

3. Sociocognitive mechanisms linking ID and parenting risk

Sociocognitive models of parenting risk suggest mechanisms by which ID may relate to under-stimulating parent-child interactions or child neglect in some parents. Social information processing (SIP) theory is one such approach. SIP theory describes how parenting schemata or knowledge structures, executive functions, and attributions for childrearing outcomes help to explain parents' interpretations of and responses to child stimuli (Azar et al., 2008). Azar et al. (2012) demonstrate the relevance of this three-part model for neglectful parents with low IQ and suggest that SIP deficits may help explain a link between ID and neglectful parenting. The model thus proposes possible targets of change for interventions that promote interaction skills in this parenting population.

3.1. Schemata

Schemata are knowledge structures underlying expectations about social actors and events. These knowledge structures are shaped and refined by societal, cultural, and familial forces (Azar, Nix, & Makin-Byrd, 2005). Parenting-relevant schemata may include implicit and explicit beliefs about parents in general, oneself as a parent, children in general, and one's own child. Risk is associated with schemata that are too rigid (e.g., fail to consider contextual information), misinformed (e.g., lack accurate child developmental information), or strongly negatively valanced (Azar et al., 2008). A parent who believes they are not integral to the process of verbal development, for example, may spend less time talking to their infant. Indeed, neglectful parenting is linked to limited child development knowledge and perceptions of oneself as having low control over parenting outcomes (Azar et al., 2005; Bugental & Happaney, 2004).

Parenting schemata may be distorted in parents with ID for multiple reasons (Azar et al., 2012). First, those with ID may internalize examples of negative caregiving observed in their own childhoods. Estimates suggest nearly 80% of parents with ID were victim to abuse or neglect during childhood, while roughly 55% of females and 32% of males report histories of severe maltreatment (McGaw et al., 2007). These traumas may distort schemata about how adults typically behave with children. An adult who was frequently left unsupervised as a child, for example, may be more likely to think of this as an acceptable parenting practice. Similarly, parents with ID may also have limited access to parenting and child development knowledge from family members. Roughly 66% of mothers in Glaun and Brown's (1999) sample reported non-existent social networks resulting from estranged or geographically distant families. Aunos and Feldman (2002) reported that 75% of parents of children with ID judged their children ill-equipped for parenthood. Parents with ID may therefore find themselves with few familial resources to access when they encounter parenting challenges.

Family service professionals often echo these negative attitudes about the parenting potential of people with ID. Willems et al. (2007) found that those working with parents with ID in the Netherlands deemed 51% of the 789 parents in their collective care "not good

enough" parents. Höglund et al.' (2013) study surveying 600 Swedish midwives found that 70% thought mothers with ID were unsatisfactory parents, while 36% felt that people with ID should not become parents. It should be noted here that professionals' judgments of what constitutes "good enough" parenting are likely subject to class-, race-, and culture-constrained biases about parenting (Booth & Booth, 1996). An accumulation of experiences in which their parenting is unsupported and assumed inadequate may lead parents with ID to develop negatively-biased schemata about how interactions with their children can, should, and will unfold. Histories of belittling power dynamics may lead parents with ID to believe that they are powerless in the relationship with their child (Azar et al., 2012).

3.2. Executive functions

The mental processes of set shifting (or mental flexibility), inhibitory control, and working memory are considered low-level executive functions and are thought to underlie top-down aspects of cognitive self-regulation (Friedman et al., 2008; Nigg, 2017). Set shifting refers to an individual's capacity to switch back and forth between tasks. A parent with deficits in set shifting may have trouble alternating their attention between the television and a child in need of supervision nearby. Inhibitory control refers to the ability to thwart a dominant response. Deficits in inhibitory control may lead a parent to act on prepotent, emotion-driven responses to challenging child behavior, for example, yelling or becoming physical in response to a child's tantrum rather than taking a deep breath and instituting a time-out. Working memory allows individuals to monitor, maintain, and manipulate incoming information towards the pursuit of a goal. Maternal working memory moderates the link between difficult child behavior and harsh parenting, such that behavior problems and harsh parenting are related only in mothers with poorer executive functions (Deater-Deckard, Wang, Chen, & Bell, 2012a). This finding supports the notion that executive functions support self-regulation efforts towards more adaptive parenting in the face of challenge. Finally, planning and problem solving are high-level complex skills that likely implicate all three low-level executive functions (Azar et al., 2008; Miyake & Friedman, 2012; Zelazo, Carter, Reznick, & Frye, 1997).

Executive functions and their associated high-level skills are thought to be notably important when existing schemata are challenged, for example, when developmental change inspires novel child behavior (Azar et al., 2012). Risk emerges when parents struggle to brainstorm positive responses and solutions in the face of novel behaviors or problems. Indeed, maltreating mothers exhibit poorer problem-solving skills than comparison mothers, and as a result, generate poorer and/or fewer solutions to parenting problems (Azar, Robinson, Hekimian, & Twentyman, 1984). A parent who struggles with planning, for example, might fail to schedule a babysitter ahead of an important event. In the same example, deficits in problem solving may result in a child being left in unsafe conditions when no alternatives can be brainstormed.

The adult ID literature describes specific cognitive challenges that could interfere with the initiation or maintenance of supportive parent-child interactions. First, people with ID often struggle to shift attention between tasks (Danielsson, Henry, Rönnberg, & Nilsson, 2010). Such a deficit in set shifting may limit instances in which parents redirect their attention to tend to child cues. These types of child-led interactions are important contexts for child learning and development (Mistry, Benner, Biesanz, Clark, & Howes, 2010). ID is also related to difficulty with working memory (Carretti, Belacchi, & Cornoldi, 2010). It is suspected that at least half of the variance in fluid intelligence in young adults is accounted for by working memory capacity (Kane, Hambrick, & Conway, 2005; Oberauer, Schulze, Wilhelm, & Sub, 2005). As seen above, limited working memory skills may interfere with parents' abilities to redirect or regulate frustration. Due to possible deficits in low-level executive functioning, individuals with ID may experience

problems with monitoring, trial and error learning, risk management, perspective taking, and frustration tolerance (Azar & Read, 2009; Carretti et al., 2010; Danielsson et al., 2010).

Executive functions in parents with ID may also be influenced by other risk correlates of ID such as low socioeconomic status (Hackman, Gallop, Evans, & Farah, 2015; Schuengel et al., 2017). Families with a child with ID are roughly 42% more likely to live below the poverty line and 70% more likely to live without financial savings (Emerson & Hatton, 2007). It is thus not surprising that most parents with ID raise children in poverty as well (Emerson, 2007). In lower-income contexts, household chaos also appears to predict mothers' executive function skills (Deater-Deckard, Wang, Chen, & Bell, 2012b); this may be especially relevant for highly-stressed parents with ID struggling to maintain household management (Aunos, Feldman, & Goupil, 2008).

3.3. Attributions

Cognitive attributions are explanations for social actions or outcomes and are considered a product of schemata and executive function processes (Azar et al., 2012). Parents' attributions for child behavior are notably relevant when assessing risk for child neglect. A hostile attributional bias refers to a tendency to attribute malintent to social actors (e.g., assuming a child is crying to annoy their parent rather than to signal hunger). Hostile attributional biases are associated with more abusive and neglectful parenting as well as maladaptive beliefs about child injury prevention (Azar, Miller, Stevenson, & Johnson, 2016; Dore & Lee, 1999). Child developmental knowledge also plays an important role in parents' attributions for child behavior (Azar et al., 2008). For instance, a parent lacking understanding of their toddler's self-regulatory limits may attribute a tantrum to the child's malintent rather than his or her limited communication skills. Accordingly, negative attributions for child behavior may decrease the likelihood of supportive parenting. The role of attributions in the SIP model is supported by research suggesting that negative attributional biases mediate the relation between working memory and aggression in adolescents with ID (Van Rest et al., 2019).

Depression or depressive symptoms may also increase the likelihood that parents with ID demonstrate negative attributional biases (Hartley & MacLean, 2009). McGaw et al. (2007) suggest that approximately 45% of parents with ID report symptoms of at least one type of psychopathology, with depressive symptoms being most common. Parents with ID also report high levels of stress related to parenting (Aunos et al., 2008). The mental health status of parents with ID appears to play an important role in parental warmth, such that higher symptoms relate to lower warmth with children (Wade, Llewellyn, & Matthews, 2015). It is possible that low warmth both influences and results from negatively-biased attributions in parents with ID.

Maladaptive schemata and executive function challenges endured by many individuals with ID may also help explain the population's tendency towards negative attributional biases (Azar et al., 2012; Van Nieuwenhuijzen, Vriens, Scheepmaker, Smit, & Porton, 2011). For instance, parents' histories of enduring stigmatization, ridicule, and abuse may lend to an assumption that others' intentions are usually mean-spirited (Jahoda, Pert, Squire, & Trower, 1998; McGaw et al., 2007). Internalization of such experiences might present in both maladaptive schemata (e.g., "People generally do not have my best interest in mind") and negative attributions (e.g., "They're saying that to make fun of me"). Limited executive function skills may restrict the number and quality of alternative interpretations of social stimuli. The SIP model and supporting research highlight the importance of addressing difficult sociocognitive histories of many parents with ID via methods that accommodate the population's cognitive processing difficulties, for example, challenging maladaptive schemata surrounding parenting (Azar et al., 2012). Azar et al.' (2012) work suggests that targeting these vulnerabilities in parents with ID may increase the likelihood of positive parent-child interactions and decrease risk for child neglect.

4. Supports for parents with ID

Improving parenting skills via parent training is one way in which risk for child maltreatment is addressed (Barth, 2009; Mercy & Saul, 2009). Parents with ID appear to benefit from such training (Keltner et al., 1995), and findings from nearly four decades of research propose characteristics of support for parents with ID on topics such as meal planning, child safety, and stress management (Knowles, Machalicek, & Van Norman, 2015; McConnell, Feldman, & Aunos, 2017). Most parent training programs follow recommendations from Feldman's (1994) meta-analysis, namely that support for parents with ID (1) should use modeling, practice, feedback, and praise, (2) provide training where skills will be used, and (3) teach specific and concrete skills (Wade, Llewellyn, & Matthews, 2008).

Still, thorough evaluation of such programs is scarce at best (Coren et al., 2018; Wade et al., 2008; Wilson, McKenzie, Quayle, & Murray, 2013). A randomized clinical trial (RCT) of Supports to Access Rural Services was the first to systematically evaluate intervention effects on parent-child interaction quality in parents with ID (Keltner et al., 1995). Rural mothers with ID participated in weekly meetings providing psychoeducation on topics such as how to engage in play with children. Findings suggested that the intervention improved the overall quality of mother-child interaction. However, Coren et al.' (2018) review reported low confidence in Keltner et al.' (1995) effect estimates, suggesting that larger sample sizes and longer follow-up periods are needed. Another review of parent training programs for adults with ID revealed that, 20 years later, Supports to Access Rural Services remained the only RCT comparing parent-child interaction quality pre- and post-intervention in this population. Few other studies have been conducted (Knowles et al., 2015). One study used behavioral teaching strategies to target parent-child interactions in parents with ID and results suggested increases in parents' sense of competence and decreases in daily hassles (Mildon, Wade, & Matthews, 2008). Another presented a case study of one mother with ID, suggesting that depicting parents engaging in positive interactions with their children via digital picture frames may increase their use of positive interaction skills (Gaskin, Lutzker, Crimmins, & Robinson, 2012). However, despite these promising results, considerably more empirical evidence is needed to understand the effects of parent-child interaction skills training on parents with ID.

5. VF interventions

Since Knowles et al.' (2015) review, a growing body of evidence suggests that video feedback (VF) interventions may enhance parent-child interaction skills in parents with ID (Hodes et al., 2017b). VF as a means of improving parenting has received increasing attention in recent years and appears to meet the needs of high-risk populations (e.g., parents reported for child maltreatment, mothers with eating disorders, insecure attached mothers) with practical and economic feasibility (Balldin et al., 2016; Guttentag, 2014; Schindler, Fisher, & Shonkoff, 2017). VF is grounded in social learning and attachment theories, both of which underscore the importance of one's relationship with a primary caregiver for healthy social, emotional, and cognitive development (Fukkink, 2008; Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2017). VF typically unfolds as follows (Fukkink, 2008). First, naturally-occurring in-home parent-child interactions are captured on video. Next, the footage is reviewed to identify instances of supportive parenting. These selections are then edited to form vignettes that break down successful qualities of positive interaction sequences. Finally, the target parent views the vignette under the guidance of a therapeutic coach, who facilitates discussion surrounding the content of the vignette, often highlighting intervention-specific concepts.

VF programs target interaction quality via mechanisms such as parental executive function, mentalizing, and/or attachment status (Fisher, Frenkel, Noll, Berry, & Yockelson, 2016; Juffer, Bakermans-Kranenburg, Van Ijzendoorn, & Juffer, 2003). Typically outlining

concrete targets of change, VF interventions span an average of six sessions and are usually conducted in families' homes (Balldin et al., 2016). Depending on specific targets and methods, VF may decrease parents' stress and intrusiveness and increase self-confidence, self-evaluation, sensitivity, and reflective functioning (Fukkink, 2008; Giuliani, Beauchamp, Noll, & Fisher, 2019; Høivik et al., 2015). A close relative of mentalizing, reflective functioning represents an individual's capacity to hold in mind the thoughts, feelings, and intentions of the self and others (Katznelson, 2014; Slade, Grienenberger, Bernbach, Levy, & Locker, 2005).

Two prominent VF programs serve as templates for adaptations for parents with ID. The first is Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD; Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2008). Over the course of six in-home sessions, coaches highlight sensitivity and disciplinary themes in naturalistic demonstrations of positive parenting. Each theme is demonstrated in reference to videos of the parent and child collected during the dyad's normal activities such as playtime or mealtime. Initial visits support parents' capacities to recognize and understand their children's cues (as demonstrated in the theme, "speaking for the child"), whereas later visits focus on parenting (e.g., "sharing emotions"). A review of VIPP-SD implementations with high-risk parenting populations suggests an overall effect size of $d = 0.54$, indicating a moderate to strong effect of this program (Juffer, Bakermans-Kranenburg, & Van IJzendoorn, in press).

The second program is Filming Interactions to Nurture Development (FIND), adapted from the internationally-implemented Marte Meo program (Aarts, 2000) and based on research in microsocial interactions and the neurobiology of early adversity (Fisher et al., 2016). Conducted over ten weekly sessions typically alternating between in-home filming and coaching, FIND helps parents identify daily opportunities for positive and responsive child-led interactions. These interactions are promoted via the metaphor "serve and return," which suggests that children naturally "serve" with gaze, vocalization, or behavior, and that parents "return" children's serves when they respond in developmentally-supportive ways (Center on the Developing Child, 2007). FIND coaches review naturalistic videos to highlight five specific skills that expand parents' serve and return toolboxes. These skills include following the child's interests or cues ("sharing the child's focus"), helping the child meet their needs and providing positive feedback ("supporting and encouraging"), assigning labels to what children are experiencing or interacting with ("naming"), sustaining ongoing serve-and-return interactions ("back and forth"), and responding appropriately to children's signals for transitions between these interactions ("endings and beginnings"). Recent research suggests that mothers who receive FIND demonstrate improvements in inhibitory control and parenting self-evaluation (Giuliani et al., 2019). The efficacy of VIPP-SD, FIND, and other VF programs continues to be evaluated (e.g., Juffer et al., 2019; Nese, Anderson, Ruppert, & Fisher, 2016).

6. VF interventions for parents with ID

Similarities between VF program characteristics and Feldman's (1994) recommendations for training with parents with ID are striking (Hodes, Meppelder, Schuengel, & Kef, 2014; Pethica & Bigham, 2018). Echoing Feldman, VF is conducted in families' homes, is based on concrete skills, and uses behavioral teaching strategies. Below, we expand on VF's proposed relevance for parents with ID by describing nine ways in which the method's key characteristics may accommodate the aforementioned challenges often endured by this parent population. Specifically, we argue that VF (1) highlights parents' strengths, (2) features low cognitive demand, (3) is "short but powerful," (4) facilitates teaching of concrete skills, (5) promotes executive function, (6) suggests adaptive attributions for child behavior, (7) facilitates generalization of new skills, (8) facilitates a positive view of parenting supports, and (9) accommodates heterogeneity in parents' strengths and

challenges. We then introduce two recent adaptations of VF interventions for parents with ID and encourage further empirical examination of VF's effectiveness with this high-risk parenting population.

6.1. VF highlights parents' strengths

Tucker and Johnson (1989) first noted the importance of *competence-enhancing* interventions for parents with ID, recommending that supports identify and build upon parents' existing strengths. For those whose parenting may be subject to unrelenting skepticism, normative corrective feedback may feel defeating rather than supportive and may affirm maladaptive self-schemata. A feature of VF highly relevant for parents with ID is therefore its *strengths-based* quality (Fisher et al., 2016). Many programs capitalize on the method's ability to take a 'non-directive' approach to parent training by showing parents what they already do well (e.g., Fisher et al., 2016; Pethica & Bigham, 2018). This is often achieved by separating filming and coaching sessions, thus allowing time to identify instances of positive parenting in interactions that, at first glance, may have few positive elements (Phaneuf & McIntyre, 2007).

In strengths-based VF, positive parenting may take many forms in order to ensure parents have the opportunity to view their parenting in a positive light (Steele et al., 2014). VF makes it possible for coaches to refer to microsocial aspects of parent-child interactions not otherwise observable in real time (Fukkink, 2008; Juffer & Steele, 2014). For example, although a parent may not converse with their child, they may share a short but thoughtful glance towards their child's toy that conveys interest. When approaching parenting from this microsocial perspective, positive elements are plentiful. Even in high-risk dyads, positive behaviors tend to outweigh negative behaviors when observed in laboratory settings (Dishion, Duncan, Eddy, Fagot, & Fetrow, 1994). Nese et al. (2016) found demonstrations of all core FIND skills in the interactions of mothers and children during welfare visitation sessions. Moss et al. (2014) identified positive examples of parenting (e.g., sensitive responding or reciprocity) in all initial VF sessions with their sample of maltreating parents and noted that exemplars increased in number across sessions. Repeated viewing of their own successful parenting accompanied by the praise of a professional may boost parents' sense of competency and encourage further engagement in positive parenting (Fisher et al., 2016; Juffer & Steele, 2014). In this sense, VF's strengths-based quality may return a lost sense of authority and influence to parents with ID.

A strengths-based approach might be especially important for the many parents with ID whose children are themselves developmentally delayed or disabled (Emerson & Brigham, 2014; Wickström et al., 2017). These parents may have the added challenge of caring for a child with a developmental delay or disability. However, the ability of parents with ID to empathize with their child's experience could be emphasized as a strength across VF sessions.

6.2. VF lessons feature low cognitive demand

As discussed in Section 3.2, adults with ID may experience executive function deficits that can affect social cognition and parenting. However, it is also crucial to consider how these cognitive challenges might also affect learning in an intervention context. For multiple reasons, VF may meet the cognitive needs of many parents with ID. First, individual VF sessions are typically short, narrow in scope, and repetitive, thus minimizing demands on working memory (Carretti et al., 2010; Hodes et al., 2014). Coaches can deliver therapeutic content in 45 min to an hour per session (Nese et al., 2016; Pethica & Bigham, 2018), and filming naturalistic parent-child interactions can take as little as 10 min (Hodes et al., 2014). Vignettes may be as short as 10–15 s in length (Papousek et al., 2011), facilitating ample visual and verbal repetition under the guidance of a coach.

Feldman and Case (1999) suggest that parent training for those with

ID should integrate simple visual and verbal techniques. FIND's frame-by-frame analysis of parenting behaviors provides an excellent example of how VF can accomplish this (Fisher et al., 2016). Here, parents view themselves engaging in each positive interaction sequence three total times. During the second viewing (i.e., flanked by two continuous sequences), the coach breaks down critical components of the interaction with freeze frames and describes its positive qualities in simple language. This visual and verbal simplification allows parents to note salient moments that may go unnoticed in real time (e.g., a child's quick gaze to check in with their parent). It also increases the likelihood that parents fully engage with each demonstration of their parenting.

Repeated viewing and discussion surrounding the same interaction sequence may also support learning in parents with ID who may struggle with receptive language and accessing lexical items (Abbeduto & Hesketh, 1997; Danielsson et al., 2010). ID is associated with difficulty interpreting questions and requests, thus highlighting the relevance of VF's tendency to film naturally-occurring in-home interactions rather than potentially confusing structured interaction tasks (Hodes et al., 2014). Finally, as parents with ID may struggle with the executive function skill of switching between tasks or rule sets, focusing solely on positive skills may decrease the cognitive load required to shift consideration between "desired" and "undesired" parenting behaviors (Danielsson et al., 2010). In the same vein, many VF programs limit training to one new skill or concept per individual coaching session (e.g., Fisher et al., 2016; Hodes et al., 2014).

6.3. VF is "short but powerful"

One obstacle in providing supports for parents with ID is inconsistent attendance and attrition (e.g., Llewellyn, McConnell, Honey, Mayes, & Russo, 2003; Ray, Rubenstein, & Russo, 1994). This suggests that shorter programs may be most effective for this population. These short program lengths are supported by evidence: Bakermans-Kranenburg et al.'s (2003) 'less is more' hypothesis suggests that fewer training sessions generally beget more positive parenting outcomes. Fukkink's (2008) meta-analysis suggests a 'short but powerful' hypothesis for VF programs: interventions with shorter program duration (i.e., the amount of time over which sessions span) may be most effective in improving parenting regardless of session count.

Both hypotheses suggest that VF can positively impact parenting with efficiency. FIND is accomplished in ten total sessions over the course of approximately ten weeks, while VIPP-SD is typically conducted in six coaching visits (Fisher et al., 2016; Juffer et al., 2017). Pethica and Bigham's (2018) case study suggests that effects can be seen within just four one-hour coaching sessions. Knowles et al. (2015) note that, although many short-spanning interventions exist for teaching parents with ID concrete childcare skills such as diaper changing, programs targeting parent-child interactions tend to span longer periods of time (e.g., years). These findings suggest the need for short-duration programs targeting parent-child interaction skills in parents with ID. VF may serve this purpose.

6.4. VF facilitates teaching of concrete skills

Feldman (1994) suggests that parent training for parents with ID teach concrete skills as opposed to abstract concepts. This recommendation is supported by feedback from parents with ID, underscoring their satisfaction with parent training that provides practical skills to employ with children (Heinz & Grant, 2003). Many VF interventions teach concrete skills to support an overarching target in behavior change (Balldin et al., 2016; Steele et al., 2014). For example, FIND's serve and return metaphor is actualized by five concrete skills each promoted within their own coaching session (e.g., naming, in which parents learn to provide verbal labels for objects and experiences). These concrete skills provide specific ways in which parents can respond to children's bids for interaction.

In FIND and other VF programs, many promoted skills are those that parents already demonstrate, even if underdeveloped or in small quantities. For example, Moss et al. (2014) suggest that parents who struggle to maintain positive interactions with their children may benefit from a concrete skill surrounding relational turn-taking. Similarly, FIND's concrete skill "back and forth" encourages parents to implement learned skills towards the goal of extended serve-and-return reciprocity. For example, consider an interaction that begins with a child's gaze towards a ball. A parent might share the child's focus by asking a question about the ball. If the child responds, the parent could initiate back and forth by naming, "That's a *ball*!" The parent in this example uses prior learned skills within the concrete structure of back and forth: Child, Parent, Child, Parent. Research suggests that child maltreatment may occur in part due to lack of ability to generate positive alternatives to maladaptive parenting (Milner, 1993; Walker, Bonner, & Kaufman, 1988). Concrete and memorable tools strengthen parents' repertoires and may decrease reliance on maladaptive responses (or non-responses) to child cues. The ability to respond positively to normative child stimuli also appears to decrease the risk of more negative parenting behaviors over time (Lunkenheimer, Ram, Skowron, & Yin, 2017).

6.5. VF promotes parents' cognitive capacities

Cognitive challenges posed to individuals with ID are outlined in Section 3.2 (Azar & Read, 2009; Carretti et al., 2010; Danielsson et al., 2010). In addition to accommodating these challenges in intervention delivery, VF may strengthen parents' cognitive capacities by prompting reflection on their caregiving behaviors from a novel third-person perspective. Fisher et al. (2016) suggest that this new vantage point may help highlight intervention themes to promote parents' attentional control, inhibitory control, and self-monitoring skills. For example, attentional control may be directly encouraged by themes such as "speaking for the child" (VIPP-SD) and "serve and return" (FIND). These themes prompt parents to shift attention towards the interpretation of and positive responding to child cues, respectively (Fisher et al., 2016; Juffer et al., 2008). Increased attention shifting towards child stimuli may benefit parents with ID who often struggle to maintain eye contact with their children or replicate their children's vocalizations (Feldman, 2002). These moments of attunement not only underlie optimal child development (National Scientific Council on the Developing Child, 2012), but they also allow parents to notice and prevent potential hazards. Parents are better equipped to prevent a burn injury, for instance, if they can swiftly shift attention from their phone to their child's interest in a hot stove. Some VF programs may also build upon parents' inhibitory control capacities. In contrast to encouraging parent-led interactions, FIND praises parents for waiting for children's "serves," reminding parents that developmentally-supportive interactions occur when they react to or engage with children's cues in positive ways (Fisher et al., 2016). Indeed, recent neuroimaging research suggests that FIND participation is related to improvements in inhibitory control (Giuliani et al., 2019). The authors suggest that with repeated experiences in which use of executive function skills results in more rewarding parent-child interactions, parents' skill use will increase over time and beget more positive interactions. Giuliani et al.' (2019) work emphasizes the potential of VF to train certain executive functions in parents. Still, executive functions have previously proven difficult to train (e.g., Thorell, Lindqvist, Nutley, Bohlin, & Klingberg, 2008), and are largely influenced by genetic factors (Friedman et al., 2008; Miyake & Friedman, 2012). More research is needed to determine the potential of VF to improve executive functions in parents with ID.

6.6. VF suggests adaptive attributions for child behavior

Research suggests that VF may reduce negativity in high-risk parents' attributional biases in as little as one coaching session (Schechter

et al., 2006). One possible mechanism is VF's proposed capacity to prompt parental reflective functioning (Fisher et al., 2016). Reflective functioning is a powerful correlate of parental sensitivity and secure attachment, and may explain some aspects of the intergenerational transmission of attachment (Slade et al., 2005; Stacks et al., 2014). This skill is thought to be restricted in parents with executive function difficulties, thus emphasizing the construct's relevance for parents with ID (Rutherford et al., 2018).

The third-party spectator view facilitated by VF may implicitly or explicitly promote parents' reflective functioning. Steele et al. (2014) propose that considering the emotions underlying their parenting behaviors with the guidance of a coach may stimulate reflective functioning in parents. In some cases, coaches preemptively annotate parent-child interaction vignettes with subtitles to describe what the child might be thinking or feeling (Juffer et al., 2008). Coaches are able to replay or revisit the annotated example multiple times in order to break down the success of the interaction and explain possible intentions behind child cues. Such experiences may promote parents' abilities to recognize and appropriately interpret such cues. In this role, the coach has the power to offer positive attributions for child behavior (e.g., "Here, your child is showing you she wants to play with you by tugging on your shirt"). VIPP-SD explicitly focuses on attributions for child behavior via the theme skill of "speaking for the child," in which parents are encouraged to consider the thoughts or feelings that might be influencing children's behaviors (Juffer et al., 2008).

6.7. VF facilitates generalization of new skills

Feldman (1994) recommended that parent training for those with ID should take place in the family home where learned skills are most commonly put to use. The importance of this quality is underscored by more recent research suggesting there are problems with the generalization of new skills in parents with ID (Wade et al., 2008). VF aligns with this recommendation for parents with ID given that filming and coaching sessions are largely administered in families' homes (Knowles et al., 2015). Although some protocols designate specific filming activities (e.g., playtime or mealtime; VIPP-SD; Juffer et al., 2008), others record activities the family is naturally engaging in at the time of the filming session (e.g., FIND; Fisher et al., 2016). Learning via positive self-modeling during a variety of everyday experiences at home may aide in the generalization of learned skills. For example, FIND teaches new skills by depicting parents in three separate interactions per session over the course of five sessions. Each interaction is further broken down into three repetitions of each sequence. In adapting VF for parents with ID, coaches could intentionally vary the naturally-occurring context (i.e., kitchen versus living room) or activity (i.e., unstructured play versus getting dressed) depicted in the clips in order to maximize the possibility of generalization.

6.8. VF facilitates a positive view of parenting supports

VF is typically delivered within a professional one-on-one relationship between parent and coach (Barth, 2009; Fukkink, 2008). Tymchuk (1999) notes that parents with ID interact with many professionals throughout their lifetimes. However, as noted in Section 3.1, these interactions are not always positive (Höglund et al., 2013; Willems et al., 2007). Still, parents with ID are more likely to report social workers and community educators as being their closest acquaintances following family members, thus emphasizing the importance of these relationships for parents' mental health and well-being (Aunos et al., 2008). Although individual differences exist, the strengths-based quality of many VF programs promotes the likelihood that the parent-coach relationship will be positive in nature. For example, in work on VF with maltreating parents, Moss et al. (2014) report that by their fourth session, maltreating parents showed markedly increased willingness to confide in and seek support from their coaches.

The experience of being commended by a professional who is closely examining one's parenting may improve parents' self-schemata and sense of efficacy. It may also increase the likelihood that parents feel comfortable seeking further parenting support post-intervention.

Edgerton, Bollinger, and Herr (1984) introduced a phenomenon called the "cloak of competence," suggesting that struggling and stigmatized parents with ID may refrain from accessing parenting supports in order to maintain a façade of competency. Positive parent-professional relationships and resulting positive self-schemata may contribute to the gradual release of the cloak of confidence. Llewellyn, McConnell, Russo, Mayes, and Honey (2002) further suggest that parents with ID may require help meeting basic needs before they are able to absorb the content of a parenting program. VF coaches are often paraprofessionals trained by professionals knowledgeable about community resources (e.g., Hodes, Meppelder, de Moor, Kef, & Schuengel, 2017a). A positive one-on-one relationship with a provider may therefore increase the likelihood that parents receive further parenting support and resources.

6.9. VF accommodates heterogeneity in parenting strengths and challenges

Finally, the International Association for the Scientific Study of Intellectual Disabilities (IASSID; 2008) states that no two parents with ID should be considered alike, and that "professionals must regard each parent as an individual rather than as a member of the category" (p. 298). Indeed, parents with ID comprise a markedly heterogeneous group in that parenting challenges and strengths are not consistent across individuals and depend on a multitude of factors (Heinz & Grant, 2003; Llewellyn, 1990; Wade et al., 2008). VF is tailored to accommodate such individual differences between parents. The nature of VF assumes that each parent receives material based on their actual performance. Therefore, discussion around exemplars is inherently fit to parents' unique experiences and family dynamics. The one-on-one parent-coach relationship allows that, unlike parent training in a group setting, operationalization of intervention themes and skills is tailored to the specific strengths and needs of an individual. VF is therefore a respectful and dignified way to support the individuality of parents with ID.

7. Adapting VF for parents with ID

Recent efforts to employ VF with parents with ID appear fruitful, though further exploration is needed to determine what works for whom and why. One example is VIPP for parents with learning disabilities (VIPP-LD), a population-specific adaption of VIPP-SD (Hodes et al., 2014). VIPP-LD adaptations include minimizing cognitive and attentional strain by shortening filming sessions from 15 to 30 min to 10 min in length. Including discussion surrounding "speaking for the child" in all visits ensures parents' comfort with the theme concept of sensitively interpreting child cues. Repetition is also maximized when appropriate. Every coaching session begins with reiteration of the previous visit's lesson before introducing new information. Although VIPP-SD allows corrective feedback after the third intervention session, VIPP-LD restricts corrective feedback to the fourth content session. Corrective feedback is thereafter permitted only in the context of interpreting children's thoughts, feelings, and intentions, and is coupled with praise of surrounding positive behaviors. Parents' successes are also memorialized in scrapbooks of video stills in which demonstrations of intervention themes are captioned in simple language. Finally, coaches maintain communication with trained professionals throughout the intervention in case additional resources are required. Hodes et al. (2014) evaluated VIPP-LD with (N = 36) parents with ID who reported high stress, had children in protective custody, and/or were receiving residential family support. Over the course of seven coaching sessions, family support providers (N = 17) reported the extent to which parents were easy to work with, influenceable by intervention, cooperative, and open. Results revealed that all dimensions other than cooperativeness

changed in significantly positive directions over the course of the intervention.

Hodes et al. (2017a) conducted the first RCT assessing VIPP-LD's effects on parenting stress in parents with ID. Recruited on the same qualifications outlined above, families were randomly assigned to receive either VIPP-LD (N = 43) or care-as-usual (N = 42). Care-as-usual was continued support from the care organizations from which parents were recruited. Support was typically provided related to running the household, finances, self-care, and general parenting matters. VIPP-LD was administered over the course of 15 home visits (seven for filming, seven for coaching, and one for closure) spanning roughly three months. Results revealed that VIPP-LD reduced parents' overall stress over the course of the intervention as well as child-related parenting stress specifically. However, there was no effect on parent-related parenting stress. Hodes et al. (2017a) suggest VIPP-LD may reduce child-related parenting stress of parents with ID by providing positive ways to engage with children, therefore reducing difficult (i.e., stressful) child behaviors. Indeed, Meppelder and colleagues suggest that child- but not parent-related parenting stress of parents with ID is positively associated with child behavior problems (Meppelder, Hodes, Kef, & Schuengel, 2014).

Next, Hodes et al. (2017b) examined VIPP-LD's effects on harmonious parent-child interaction quality and sensitive discipline pre- and post-intervention with the same sample and RCT design. Parents' adaptive functioning and intelligence scores were also considered. Although intelligence appeared to play no significant role in intervention effects, results suggested that parents with the lowest adaptive functioning skills benefitted the most from VIPP-LD across time. This finding is consistent with Juffer et al.' (in press) finding that VIPP-SD benefits are not constrained by high-risk status. Still, intervention effects of VIPP-LD were not significant for all parents with ID. The authors suggest that this may be attributed to the large number of parents in their sample who interacted "reasonably well" with their children at pretest, thus creating a ceiling effect. Hodes et al. (2017b) posit that marginalized parents with ID under intense scrutiny may intentionally present their best parenting for experimenters, which could contribute to this result. This could be the case even if parents struggle for positive interactions on typical days. The authors urged further research into VF with parents with ID.

Other adaptations of VF have also been considered for parents with ID. Pethica and Bigham's (2018) case study suggests that an adaptation of another attachment-based VF program, Video Interaction Guidance (VIG), benefitted one mother with ID. VIG aims to improve attachment quality by targeting parental sensitivity and reflective functioning skills (Kennedy, Landor, & Todd, 2011). The present adaptation occurred over the course of eight sessions alternating between filming and coaching, followed by two review sessions. The adaptation allowed periods of silence throughout coaching sessions to minimize pressure on the target mother to contribute her thoughts, and prompting questions were avoided due to the apparent anxiety they caused. This adjustment allowed the target mother to reflect on the content of the vignette before sharing verbally. By the fourth coaching session, the target mother displayed more attunement to her child through guiding and scaffolding.

8. Potential limitations

There are potential limitations that must be considered in conjunction with enthusiasm for VF, namely related to feasibility, skill maintenance, and contextual effects. First, the practical and financial feasibility of one-on-one coaching will differ between care organizations. Although some suggest VF may be a notably cost-effective approach to parent training (e.g., Guttentag, 2014), there is little published data on program costs and practical details of recording, editing, and providing feedback (Balldin et al., 2016). Fukkink (2008) highlights this sort of documentation as an important next step in scaling VF

interventions. Still, because VF interventions may have positive impacts on parenting in a relatively small number of sessions (Bakermans-Kranenburg et al., 2003; Fukkink, 2008), it is possible that any added costs might be accounted for by shorter program lengths. In instances where one-on-one VF is not feasible for a care organization, group-based VF may be considered (e.g., Marvin, Cooper, Hoffman, & Powell, 2002). However, research is needed to examine whether group-based VF could improve parent-child interaction skills in parents with ID. Another unknown characteristic of VF for parents with ID is skill maintenance. Most if not all studies investigating VF for parent-child interaction in parents with ID have not included a long-term follow up (e.g.,Hodes et al., 2017b; Pethica & Bigham, 2018). More research is needed to understand how parents with ID continue to demonstrate VF-supported parent-child interaction skills over time. Finally, potential contextual influences on intervention effectiveness should be considered. For example, parents with ID who are low-income, unemployed, and socially isolated may need assistance securing food for their families prior to benefitting from VF. Empirical exploration of factors explaining variance in responsiveness to VF in parents with ID will provide additional information about potential contextual effects (Balldin et al., 2016).

9. Future directions

Recent adaptations of VF interventions for parents with ID suggest that VF may improve professionals' perceptions of parents, decrease parents' stress about children, increase the likelihood of harmonious parent-child interactions, and improve parents' attunement to their children's needs and interests (Hodes et al., 2014; Hodes et al., 2017a; Hodes et al., 2017b; Pethica & Bigham, 2018). Indeed, the resemblance of hallmark VF characteristics to Feldman's (1994) influential recommendations for supports for parents with ID affirms that VF is a promising platform for innovation (Hodes et al., 2014; Pethica & Bigham, 2018). Still, additional RCTs of VF adaptations are necessary to ensure that parent-child interaction skills in parents with ID are supported by evidence-based programs. Schuengel et al. (2017) suggest that such evaluations of parenting by people with ID should minimize verbal and written data collection methods that may mask meaningful improvements in parenting by those with ID. Given promising results in the above studies, VF RCTs with larger participant groups, longer follow-up periods, and inclusive evaluation methodology will provide critical information about how best to support parents with ID moving forward.

Another way this progress might be made is by identifying existing VF programs that best align with or accommodate the cognitive, social, and economic challenges outlined in this manuscript and elsewhere (e.g., Llewellyn & Hindmarsh, 2015). For example, although VIPP-LD limits corrective feedback in coaching sessions, Fisher et al.' (2016) FIND protocol is entirely strengths-based. It is not yet clear whether an entirely strengths-based protocol is most effective for parents with ID, but this may be a meaningful difference for those who have limited experiences of commendation related to their parenting skills. Similarly, the Play and Learning Strategies (PALS) VF program explicitly promotes parents' sense of power and influence over their children's development (Guttentag, 2014). Given that executive functions play a prominent role in parents' social information processing (Azar et al., 2008; Azar et al., 2012), it is likely necessary for VF interventions to accommodate and bolster these cognitive capacities in parents with ID. Certain interventions are explicitly dedicated to these specific mechanisms of change (e.g., FIND; Fisher et al., 2016).

10. Summary

Parents with ID often need help engaging in contingent and responsive interactions with their children (Collings & Llewellyn, 2012; Feldman, 2002). Their children are also at higher risk for being neglected (McGaw et al., 2007). Despite this risk and suspected growth in the number of parents with ID referred for social and protective services, a concerning lack of evidence-based supports exist for this population (Collings & Llewellyn, 2012; Coren et al., 2018; Wade et al., 2008). Even more worrisome is the lack of parent-child interaction skills training for this vulnerable group of parents. To our knowledge, only two RCTs have examined the influence of parent training on parent-child interaction quality pre and post intervention in parents with ID (i.e., Hodes et al., 2017b; Keltner et al., 1995). Researchers have argued for innovation and program evaluation to meet the needs of parents with ID, suggesting that current knowledge is insufficient (Coren et al., 2018; McConnell et al., 2017). Indeed, improving parenting by those with ID may contribute to decreased stigmatization for this population (McConnell et al., 2017) and improved outcomes for their children (Chengappa, McNeil, Norman, Quetsch, & Travers, 2017; Juffer et al., 2017).

VF interventions are becoming increasingly popular, feasible, and economical, and may be a promising tool to encourage positive parent-child interaction skills in parents with ID (Hodes et al., 2017b; Pethica & Bigham, 2018). Among other qualities, VF may challenge maladaptive social information processing, facilitate skill learning with low cognitive demandingness, and promote change in few sessions, limiting burden on parent support agencies. VF also appears to be a natural translation of existing recommendations for parenting supports with the population (Feldman, 1994). Due to the method's ability to accommodate many of the challenges endured by parents with ID, we recommend that future research explore VF as a tool with which to support the wellbeing of parents with ID and their children.

Declarations of interest

None.

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