

Motivation, well-being, and living with a mild intellectual disability

A Self-Determination
Theory perspective

Noud Frielink

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Chapter 1

General introduction

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD; United Nations, 2006) aims to increase equity between persons with and without disabilities. As part of this, it emphasizes that persons with disabilities should have more opportunities to make their own decisions and to take control of their own lives. In order to achieve this, the UNCRPD calls for measures to promote the independence, well-being and quality of life of persons with disabilities. These measures are in areas as health, rehabilitation, work and employment, education, and inclusion in the community. This is supposed to apply to all persons with disabilities, including persons with an intellectual disability (ID).

Self-determination is essential for subjective well-being and quality of life (Lachapelle et al., 2005; Schalock & Verdugo, 2002), and can be described as acting according to intrinsic motives. Moreover, self-determination in itself is also an important outcome because it indicates the attainment of other desirable ends, such as employment and community participation. It has a broad effect on consolidating and expanding access to these desirable ends too (Shogren, Wehmeyer, Palmer, Rifenshark, & Little, 2015)b. Self-determination is inherently subjective. To the extent that empirical research may be helpful in promoting self-determination among people with ID, such research should develop and use measures that incorporate the perspectives and reflections that people have regarding the way they direct their lives. People with ID should therefore be directly involved in the development and validation of self-determination constructs. Ideally, such research would test instruments to assess self-determination along the full range of mild to profound ID. However, for people with moderate to profound ID, response formats or proxy reporting are often required. In order to be able to test validity, we focused on people with mild ID (defined as an IQ between 50 and 70) and with borderline intellectual functioning (an IQ between 70 and 85), hereafter designated as people with mild to borderline ID, who are able to report by themselves, to establish a basis for further developing and testing instruments for people with more severe intellectual disabilities.

This introductory chapter starts with a brief exploration of existing theoretical concepts of self-determination. This is followed by a description of the main theoretical framework for this thesis (i.e., the Self-Determination Theory - SDT; Deci & Ryan, 2000) and an explanation of the reasons why this theory may be useful for people with ID. An example of a clinical approach supported by SDT, Motivational Interviewing (MI), will also be discussed briefly because this approach may be useful for facilitating high quality forms of motivation. The chapter ends with the aims and an outline of the different studies presented in this thesis.

Self-determination

Paul, a 26-year-old man, has a mild intellectual disability and an autism spectrum disorder. Together with 10 other individuals, he lives in a 24-hour residential facility. During childhood Paul was bullied at school. After three years of bullying he found that when he was accommodating and permissive the bullying stopped. As a result, Paul taught himself not to express his wishes, needs or desires to others but, rather, to adjust to what other people say. Although Paul knows exactly what he wants (i.e., he wants to learn to cook, so he can live independently in an apartment in the community in the near future), his support staff think that Paul has no opinion and therefore, with good intentions, make all decisions for him. In particular, they have found Paul a place in a smaller 24-hour residential facility. He will move to this new facility next week. Paul has not been protesting about the move to this smaller accommodation.

How self-determined is Paul in his life? Self-determination refers to "the attitudes and abilities required to act as the primary causal agent in one's life and to make choices regarding one's actions free from undue external influence or interference" (Wehmeyer, 1992, p. 305). Hence, people who are self-determined know what they want and how they can acquire it. They choose and set goals and then work to achieve them. In the case of Paul, one could argue that he knows exactly what he wants. He would like to learn to cook in order to become more independent so that he might be able to live on his own in the near future. However, as this case clearly illustrates, Paul has a permissive attitude as a result of the bullying during childhood. His current support staff are not aware of this and might interpret Paul's behavior as indifferent. Therefore, his support staff make the decisions for him.

According to Wehmeyer and colleagues (e.g., Shogren, Wehmeyer, Palmer, Forber-Pratt, Little, & Lopez, 2015a; Wehmeyer, Shogren, Palmer, Williams-Diehm, Little, & Boulton, 2012), it is important that professionals (e.g., support staff) support their clients' self-determination. Algozzine, Browder, Karvonen, Test, and Wood (2001) reported that when a professional supports the self-determination of an individual with a disability by teaching skills and creating an environment in which that individual can express self-determination, self-determination increases. This then makes other positive outcomes for people with (intellectual) disabilities more likely to ensue as well, including employment and community participation ((Shogren et al., 2015b), improved academic performance (Fowler, Konrad, Walker, Test, & Wood, 2007), and increased quality of life (Lachapelle et al., 2005). For example, in their study of 94 students with ID, Wehmeyer and Palmer (2003) found that students who were more self-determined performed better in major life areas, including financial independence, living independently, and employment.

Recently, Shogren and colleagues (2015a) proposed a revision of Wehmeyer's definition of self-determination (1992). This revised definition incorporates insights taken from research that followed on from the original proposition. It also incorporates changes in the sociocultural context in which people with ID find themselves (Shogren et al., 2015a). In the revised model, the Causal Agency Theory (CAT), self-determination is described as a "dispositional characteristic manifested as acting as the causal agent in one's life" (p. 258). Causal agents (i.e., self-determined people) act in service to freely chosen goals. Self-determination develops across life span and is supported by the development of various interconnected skills (also referred to as component elements of self-determined actions), including solving problems, obtaining self-knowledge and self-awareness, setting and acquiring goals, expressing preferences, making choices, and self-managing and self-regulating actions (Shogren, Wehmeyer, & Lane, 2016). To develop these skills three essential characteristics are required (Shogren et al., 2015a): volitional action (i.e., making conscious, intentional choices based on personal preferences), agentic action (i.e., being self-regulated and self-directed in the service of a goal), and action-control beliefs (i.e., having a sense of personal empowerment).

These essential characteristics are affected by the basic psychological needs for autonomy, relatedness, and competence as defined in Deci and Ryan's Self-Determination Theory (SDT; 2000) (Shogren et al., 2015a). According to CAT, when the social environment provides support and opportunities to engage in self-determined action, an individual becomes a causal agent whose acts may lead to satisfaction of SDT's needs for autonomy, relatedness, and competence. CAT therefore aligns with SDT in viewing autonomy, relatedness, and competence as basic psychological needs that need to be met in order to develop self-determination. Satisfaction of these basic psychological needs fosters subjective well-being and also shapes the required conditions for volitional action, agentic action, and action-control beliefs (Shogren et al., 2015a).

Although the basic psychological needs identified by SDT are theorized to be an essential part of CAT, and hence important for developing self-determination (Shogren et al., 2016), little attention has been paid to the satisfaction, deprivation, and frustration of these needs among people with ID. Likewise, the meaning for people with ID of the broader set of propositions within SDT has received very little attention until now. For example, according to SDT, an autonomy supportive environment is essential for the satisfaction of the needs for autonomy, relatedness, and competence. Studying these propositions is relevant because SDT claims to be universally applicable (Deci & Ryan, 2000). It is therefore in accordance with the UNCRPD's claim that people, regardless of level of intellectual functioning, are equal. Testing a more universal design of self-determination among people with ID fits this UNCRPD-perspective well.

Self-Determination Theory

Self-Determination Theory (SDT; Deci & Ryan, 2000) embodies a comprehensive framework for the study of human motivation and personality. Central to SDT is the tenet that social environments supporting the three basic psychological needs for autonomy, relatedness, and competence are important. The satisfaction of these needs fosters, among other things, self-determination, autonomous motivation for activities, and positive psychological outcomes, such as enhanced subjective well-being (Ryan & Deci, 2000). In a similar way SDT proposes that unsupported or thwarted basic psychological needs contribute to negative psychological outcomes. These can include depression and maladaptive functioning as well as extrinsic forms of motivation or losing motivation altogether. The conceptual model of the current thesis is presented in Figure 1.

In the following sections the three building blocks of SDT are briefly discussed: autonomy support, need satisfaction, and autonomous motivation.

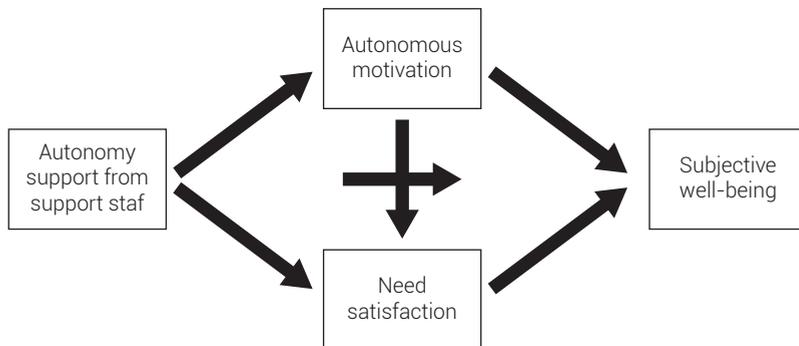


Figure 1. *The main premises of Self-Determination Theory.*

Autonomy support

Autonomy supportive environments create opportunities for becoming a self-determined individual (Ryan & Deci, 2000). The study of self-determination is therefore incomplete unless the amount of autonomy support provided by the social environment is considered. Autonomy support refers to minimizing control and pressure while taking the views of the person into account, providing choices, supporting self-initiatives, and offering pertinent information (Williams et al., 2006). Within non-intellectually disabled populations, autonomy support is strongly related to need satisfaction within a wide range of contexts, including education, parent-child relationships, and sports (Adie, Duda, & Ntoumanis, 2012; Deci & Ryan, 2000; Ratelle, Larose, Guay, & Sénécal, 2005). In addition, perceived autonomy support from professionals within a therapeutic setting fosters numerous positive treatment outcomes for clients, including weight loss (Williams, Grow, Freedman, Ryan, & Deci, 1996), stopping tobacco use (Williams et al., 2006), and reduced drop-out rates in people with eating disorders (Vandereycken

& Vansteenkiste, 2009). Furthermore, autonomy support is strongly connected to autonomous motivation (Black & Deci, 2000; Deci & Ryan, 2008). Hence, there is substantial evidence that autonomy support is conducive to health and subjective well-being in non-intellectually disabled populations.

Although autonomy support is argued to be universally important (Deci, 2004; Ryan & Deci, 2000), there is a dearth of research on its importance to people with ID. In their study of students with learning disabilities, Deci, Hodges, Pierson, and Tomassone (1992) found that students functioned better when they felt that their teacher supported their autonomy. It should be mentioned, however, that the vast majority of the students had a below average IQ but not an ID. Studying perceived autonomy support in people with ID is necessary as it may provide insight into how to support people with ID to attain optimal health and subjective well-being. Because there is a lack of sound instruments to assess perceived autonomy support among people with ID, developing such an instrument and examining its psychometric properties are important first steps in order to test the SDT-tenet that perceived autonomy support is related to, among other things, subjective well-being in people with ID too.

Need satisfaction

Within motivational psychology, the concept of basic needs has a long history (Deci & Ryan, 2000). Maslow (1943), for example, postulated a pyramid of innate human needs based on two categories. Deficiency needs include basic physiological needs required for human survival, such as food and water, and safety. Growth needs include concepts such as self-actualization. A person is able to act upon its growth needs only if the deficiency needs have been met. Within SDT, the focus is on basic psychological needs, which are viewed as essential nutrients for growth, integrity, health, and subjective well-being of people (Deci & Ryan, 2008). Satisfaction of these needs is vital for people to flourish, to experience subjective well-being and self-determination, and to be protected from maladaptive functioning (Ryan & Deci, 2000). Three universal basic psychological needs are postulated within SDT: autonomy, competence, and relatedness.

Autonomy

The need for autonomy refers to the desire to self-organize experience and to feel that you are exercising your own will (DeCharms, 1986; Deci & Ryan, 2000). People can feel autonomous not only by having the opportunity to make personal choices. The feeling can also come from responding to an external request when they have been provided with a meaningful rationale for fulfilling that request. It should be mentioned in this context that SDT's concept of autonomy is often misinterpreted as the opposite of dependence (Deci & Ryan, 2002). However, according to SDT, the opposite of autonomy is not dependency, but heteronomy, in which one's actions are perceived as controlled by forces that are alien to the self (Chirkov, Ryan, Kim, & Kaplan, 2003). SDT describes

dependency as reliance on other people for support, guidance, or supplies (Ryan & Lynch, 1989). Hence, people can be autonomously dependent on others if they willingly trust their support.

Competence

The need for competence refers to the desire to be capable of mastering the environment and to generate desired outcomes (White, 1959). The need for competence is, to some extent, linked to the construct of self-efficacy (Bandura, 1977), but there is an important difference. Self-efficacy is defined by the individuals' belief in their capacity to successfully execute specific behaviors that are needed to complete tasks and reach goals (Bandura, 1977). According to Deci and Ryan (2000), satisfaction of the need for competence flows from a more general rather than specific experience of being effective. In other words, self-efficacy promotes activities that fall within a person's perceived capacities, whereas satisfaction of the need for competence stimulates a person's overall functioning and subjective well-being.

Relatedness

The need for relatedness refers to feel connected to and cared for by other people (Baumeister & Leary, 1995). People experience relatedness when they feel a sense of closeness to others and develop intimate relationships (Deci & Ryan, 2000). The SDT-tenet that people benefit from the innate tendency of wanting to feel connected to and cared for by others is also highlighted in other theories, such as the Attachment Theory (Bowlby, 1969; Verhage et al., 2016), and ethical approaches such as professional loving care (Embregts, 2011; van Heijst, 2011).

In a similar way to the concept of autonomy support, it has been argued that the basic psychological needs are universally important for people, both with and without an ID (Deci, 2004; Deci & Ryan, 2000). However, here again, there is a dearth of research and a lack of psychometrically adequate instruments for people with ID. Studying these basic psychological needs in people with ID is important from SDTs perspective because it may provide additional support for the universality claim of SDT (i.e., the theory is applicable to all people, regardless of intellectual functioning). Moreover, studying these needs is critical for the ID-field because the results may provide insight into how to support people with ID to achieve optimal subjective well-being. Therefore, valid and reliable instruments for assessment of autonomy, relatedness, and competence are urgently needed for people with ID.

Autonomous motivation

Most motivational theories treat motivation as varying along a single dimension, focusing on the overall amount of motivation that people have for a particular behavior or activity (Deci & Ryan, 2002). However, according to SDT, motivation should be

distinguished into qualitatively different types, ranging from the absence of motivation (i.e., amotivation) to engagement in an activity because the activity in itself is enjoyable or interesting (i.e., intrinsic motivation). In between amotivation and intrinsic motivation, SDT distinguishes four subtypes of extrinsic motivation: external motivation, introjected motivation, identified motivation, and integrated motivation. These four subtypes of motivation differ in the extent to which their regulation is self-determined and are postulated to be universal across behaviors and populations (Ryan & Deci, 2000).

The least autonomous subtype of extrinsic motivation, external motivation, occurs when people take action in order to avoid a punishment, to obey an external request, or to obtain a reward. The second subtype of extrinsic motivation is called introjected motivation and drives action to manage feelings of pride and worth, and to evade shame and guilt. External motivation and introjected motivation are, together, considered as 'controlled motivation'. Third, a more self-determined subtype of extrinsic motivation is called identified motivation, which refers to actions that are valued by the person. Lastly, the most self-determined subtype of extrinsic motivation is labeled as integrated motivation, driving actions that are fully endorsed by other behaviors and values of the person. Identified and integrated motivation, along with intrinsic motivation, are considered as 'autonomous motivation'.

There is a crucial difference between autonomous motivation and controlled motivation because they are linked to different outcomes in non-intellectually disabled people. Autonomous motivation is associated with positive behaviors and outcomes such as better life satisfaction and subjective well-being (Ryan & Deci, 2000), greater adherence to medications among people with chronic illnesses (Williams, Rodin, Ryan, Grolnick, & Deci, 1998), greater levels of physical activity (Levesque et al., 2007), and greater involvement and better psychotherapy outcomes (Zuroff et al., 2007). In contrast, controlled motivation is associated with negative outcomes such as depression (Levesque et al., 2007) and ill-being (Deci & Ryan, 2008).

Again, although autonomous motivation is argued to be universally important (Deci, 2004; Ryan & Deci, 2000), the vast majority of studies have focused on non-ID populations. However, some studies (e.g., Deci et al., 1992) have replicated the theorized distinction between external motivation, introjected motivation, identified motivation, and intrinsic motivation in students with learning disabilities (integrated motivation was not included in this study). As noted earlier, the vast majority of the students in this study did not have an ID. More recently, Reid, Vallerand, Poulin, and Crocker (2009) reported on the Pictorial Motivation Scale, a scale designed for people with ID to measure motivation for participation in sport and physical activity. The scale consists of four subscales: amotivation, non-self-determined extrinsic motivation, self-determined extrinsic motivation, and intrinsic motivation. This dichotomy of broad subtypes of extrinsic motivation (i.e., self-determined and non-self-determined motivation) instead of four subtypes of extrinsic motivation was based primarily on theoretical assumptions and practical considerations rather than driven by data.

Hence, psychometrically sound instruments to test whether the four subtypes of extrinsic motivation proposed by SDT can be distinguished on the basis of responses from people with mild to borderline ID are required.

In addition to the need for psychometrically sound instruments to measure the different types of motivation in people with ID, it is also important to explore methods and clinical approaches that can help to promote autonomous motivation in people with ID. Motivational Interviewing (MI), a clinical approach with many links to SDT (Markland, Ryan, Tobin, & Rollnick, 2005; Miller & Rollnick, 2012a; Vansteenkiste & Sheldon, 2006), might be useful in this respect. Both MI and SDT support a stance that values service users and stress that service users are responsible for their own choices. The inner experiences and motives of the service user are hence part of both approaches (Deci & Ryan, 2012). MI is therefore an important clinical approach to put some of the tenets of SDT to the test.

Motivational Interviewing

Motivational Interviewing (MI) is a collaborative, person-centered form of guiding used to elicit and strengthen autonomous motivation for change (Miller & Rollnick, 2009). With its emphasis on permissiveness, acceptance, and empathy, MI resembles other psychotherapies such as the humanistic approach of Rogers (1951). Moreover, evocation, collaboration, and autonomy are important aspects of MI (Miller & Rollnick, 2012b). Within MI, it is the service user who makes decisions, because only they are responsible for their behavior and any changes to this behavior. MI is best viewed as an interpersonal style with a subtle balance of person-centered and directive components based on a guiding philosophy and a comprehension of what generates change. If the use of MI becomes a manipulative technique or a trick, its spirit is lost (Miller, 1994). The counsellor interacts according to the following principles: express empathy (i.e., listen respectfully to the service user, with a desire to understand the service user's perspective and show acceptance), roll with resistance (i.e., invite the service user to consider new information and perspectives rather than arguing for change), develop discrepancy (i.e., create a distinction between current behavior and desired behavior), and support self-efficacy (i.e., promote the service user's belief in the ability to succeed). Five MI-techniques can be distinguished that can help counselors to adhere to these principles. Three of them are rather common within psychotherapies: open-ended questioning, affirming, and summarizing. The other two techniques are more specific to MI: reflective listening (i.e., repetition, rephrasing, paraphrasing, and naming of emotions) and eliciting change-talk (i.e., promotion of self-motivating statements).

Within non-ID populations, the evidence base for the efficacy of MI is strong in the fields of addictive behaviors and problem behaviors (Burke, Arkowitz, & Menchola, 2003; Hettema, Steele, & Miller, 2005; Lundahl et al., 2013; VanBuskirk & Wetherell, 2014; Yakovenko, Quigley, Hemmelgarn, Hodgins, & Ronskley, 2015). In case studies,

MI has been shown to be promising for the treatment of people with ID and alcohol-related problems (Mendel & Hipkins, 2002). However, more research is needed to show how to employ MI within this population and what the effects of MI are in people with ID (McLaughlin, Taggart, Quinn, & Milligan, 2007).

In the context of the current thesis, it is imperative to emphasize that MI is used as an exemplary case of a broader class of methods to increase autonomous motivation. That is, effects of MI will be examined in relation to its consistency with the mechanisms proposed by SDT and may provide a stimulus to further examine other methods that are also thought to increase autonomous motivation.

Aims and outline of the present thesis

Aims

The overall aim of the present thesis was to contribute to a better understanding of self-determination through the lens of SDT, to better gauge its relevance for people with mild to borderline ID, and to improve the support for people with mild to borderline ID in order to attain optimal health and subjective well-being. In order to do so, four main goals were defined. The first goal was to adapt and validate self-report questionnaires to measure essential SDT-concepts (i.e., autonomy support, need satisfaction, and autonomous motivation) in people with mild to borderline ID. Based on questionnaires with known psychometric characteristics for this population, the second goal of the present thesis was to test whether the tenets of SDT also apply to people with mild to borderline ID. The third goal was to test whether an SDT-based intervention could facilitate the internalization of autonomous motivation in people with mild to borderline ID. In the general population multiple intervention studies have shown that an autonomy-supportive environment within a therapy or intervention setting promotes autonomous motivation (e.g., Williams et al., 2006). The intervention in this thesis is a motivational pretreatment intervention based on the rationale and principles of SDT and the closely related approach MI. The intervention aimed to facilitate autonomous motivation in people with mild to borderline ID for engaging with a subsequent addiction treatment. Finally, because the motivational intervention was based on the rather cognitively based method of MI, the fourth goal of the current thesis was to identify how professionals can adapt MI techniques for use with people with mild to borderline ID.

Thesis outline

The present thesis consists of 8 chapters, of which this general introduction is the first. Chapter 2 reports on the construct validity and reliability of the Health Care Climate Questionnaire – Intellectual Disability (HCCQ-ID), an instrument aimed at autonomy support by support staff as perceived by people with mild to borderline ID ($N = 185$). In

Chapter 3, the psychometric properties of the Basic Psychological Need Satisfaction and Frustration Scale – Intellectual Disability (BPNSFS-ID) are examined in a group of 186 people with mild to borderline ID. The questionnaire operationalizes satisfaction and frustration with the three basic psychological needs according to SDT: autonomy, relatedness, and competence. Chapter 4 addresses the distinction between the four subtypes of extrinsic motivation (i.e., external motivation, introjected motivation, identified motivation, and integrated motivation) in people with mild to borderline ID ($N = 186$). The subtypes of extrinsic motivation were measured using two adapted versions of the Self-Regulation Questionnaire (SRQ), one regarding exercise and one regarding support. Using the HCCQ-ID, the BPNSFS-ID, and the SRQ support, the theoretical tenets of SDT were tested in people with mild to borderline ID in Chapter 5 ($N = 186$). For example, the extent to which a model based on SDT would provide a parsimonious account of the linkages between autonomy support, need satisfaction, autonomous motivation, and subjective well-being in people with mild to borderline ID is examined. Chapter 6 reports on a standard content analysis on the basis of a general inductive approach of semi-structured qualitative interviews and focus groups consisting of 26 people with mild to borderline ID, parents of people with mild to borderline ID, and professionals. The aim was to identify required modifications to accommodate MI for use with people with mild to borderline ID. In Chapter 7, the intervention Beat the kick (Kroon, Frielink, & Embregts, 2013) is evaluated in people with mild to borderline ID on the basis of a multiple case experimental design ($N = 6$). Beat the kick is a motivational pretreatment intervention based on the rationale and principles of SDT and MI. It is aimed to facilitate autonomous motivation (i.e., wanting to change substance abuse behavior because of a sense of free choice and volition) to engage in a subsequent addiction treatment. Finally, the general discussion in Chapter 8 summarizes the results and the strengths and limitations of the present thesis. Implications for future research, policy, and practice are also discussed.

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Chapter 2

Autonomy support in people with mild to borderline intellectual disability: Testing the Health Care Climate Questionnaire – Intellectual Disability

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Abstract

Background

Autonomy support in people with intellectual disability (ID) is an important yet understudied topic. Psychometrically sound instruments are lacking. This study tested the factor structure and reliability of an instrument for assessing the extent people with ID perceive their support staff as autonomy supportive.

Method

In a single wave, 185 adults with mild to borderline ID filled in an adapted version of the Health Care Climate Questionnaire (i.e., HCCQ-ID). Forty of them participated in a second wave in order to determine test-retest reliability. The HCCQ-ID consists of 15 items on a 5-point Likert scale.

Results

The expected one-factor structure was found. Internal consistency ($\alpha = .93$) and test-retest reliability ($r = .85$) were good. The score distribution was skewed towards high satisfaction.

Conclusion

The factor structure and reliability of the HCCQ-ID were supported for people with mild to borderline ID. Given the homogeneous factor structure and the high reliability, the number of items may be further optimized.

Self-determination is an essential dimension of quality of life (Schalock & Verdugo, 2002), and has been linked to other positive outcomes for people with intellectual disability (ID) over the past decades (e.g., Wehmeyer, 2007; Wehmeyer et al., 2003). The Self-Determination theory (SDT) highlights the imperative role of autonomy supportive environments to provide more opportunities for people to develop self-determination (Ryan & Deci, 2000). Autonomy support involves minimizing control and pressure while supporting self-initiatives, taking the other's perspective, providing choices, and offering pertinent information (Williams et al., 2006).

Within care settings for non-intellectually disabled people, autonomy support is a widely studied topic, frequently measured with the Health Care Climate Questionnaire (HCCQ; Williams et al., 1996). Multiple versions of the HCCQ have been used and customized for studies on, among other domains, weight loss (Williams et al., 1996), diabetes care (Williams et al., 2007), physical activity (Fortier et al., 2007) and medication adherence (Williams et al., 1998). These studies showed that autonomy support in general is associated with improved health and well-being outcomes. Although it has been argued that autonomy support is universally important (Deci, 2004; Ryan & Deci, 2000), there is a scarcity of research with people with ID. Recently, Emond Pelletier and Joussemet (2016) conducted a study to examine whether autonomy support can foster a sense of autonomy of people with a mild ID. In order to do so, they compared situations with and without autonomy support during a learning activity. People within a situation in which persons provided autonomy support experienced increased autonomy satisfaction when compared to people without autonomy support. Moreover, people within the autonomy supportive situation attached more value to the activity, implying that the advantages of autonomy support within the general population can be extended to people with mild ID. However, Emond Pelletier and Joussemet (2016) did not measure to what extent the participants actually experienced autonomy support. According to SDT, this subjective experience of autonomy support is however fundamental and should be included in future research. Due to a lack of psychometrically adequate instruments for measuring perceived autonomy support in people with ID, the current study focused on the factor structure and reliability of the HCCQ-Intellectual Disability (HCCQ-ID).

Methods

Participants

A total of 185 people with mild to borderline ID participated. The participants were between 18 and 84 years of age, with a mean age of 40.3 years; 110 were male. The level of intellectual functioning was ascertained through access to their files: 109 participants had a mild ID (IQ 50-70) and 76 participants had a borderline level of intellectual functioning (IQ 71-85).

Measure

The Health Care Climate Questionnaire (HCCQ) was originally developed by Williams and colleagues (1996). The goal was to measure to what extent participants perceive their medical health-care provider as autonomy supportive. For the current study, the questionnaire was translated into Dutch by two researchers knowledgeable on both ID and SDT. While preserving the item content according to SDT, researchers adapted the items to be comprehensible for people with mild to borderline ID. Next, together with an experienced professional working with people with mild to borderline ID, a consensus version was developed based on the adaptations. For example, the original item "My physician handles people's emotions very well" was modified into (translated from Dutch) "My support staff takes me and my feelings serious". In addition, the original item "I am able to be open with my physician at our meetings" was adapted into (translated from Dutch) "I can discuss anything during conversations with my support staff". As can be seen from the examples, the modified items did not focus on medical health-care providers but on support staff of people with ID, because these professionals have an important role in the lives of people with ID (van Asselt-Goverts et al., 2013). This consensus version was discussed with all authors of this study, resulting into minor adjustments. Finally, five persons with mild to borderline ID completed this adapted HCCQ-ID and indicated that the items were easy to interpret and to response to. A few minor adaptations to the grammar were made to improve clarity (i.e., the word order was changed for some items).

The HCCQ-ID consists of 15 items on a 5-point Likert scale (1 = completely untrue, 5 = completely true). Questions included (in Dutch) "My support staff answers my questions fully and carefully" and "I feel understood by my support staff". A scale score was calculated by averaging the item scores after reversing the reverse-scored item (i.e., item 13). Higher average scores indicated higher levels of autonomy support. Previous studies using the original HCCQ revealed a one-factor solution and an excellent internal consistency (Cronbach's alpha) of .95 (Williams et al., 1996).

Procedure

Following ethical approval by the Ethics Committee of Tilburg University, 368 individuals who met the inclusion criteria (i.e., mild to borderline ID, aged ≥ 18 years, and at least weekly contact for a minimum of three months with support staff) were randomly selected from four ID services in the southern part of the Netherlands. 203 participants expressed interest in the study by accepting the invitation and providing informed consent. As the data presented in the current study were part of a larger research study, multiple questionnaires were administered, including the HCCQ-ID. After participation, 18 participants were excluded: 17 because they did not meet the inclusion criteria and 1 because she did not fill in the HCCQ-ID, leaving a total of 185.

Results

Preliminary analysis

Although the skewness and kurtosis of all observed variables were below 2 and 7, respectively, the score distribution within the current sample was skewed towards high satisfaction. The mean value of the overall HCCQ-ID score was 4.01 ($SD = 0.56$, range = 1.93 – 5.00). At item level, the mean scores varied between 3.60 ($SD = 0.80$, range = 1.00 – 5.00) for item 14 and 4.41 ($SD = 0.67$, range = 2.00 – 5.00) for item 12.

Factor structure

To investigate the factor structure, a confirmatory factor analysis (CFA) was conducted using AMOS (version 22). Although a new measure had been created with the HCCQ-ID, CFA was preferred over an exploratory factor analysis because of the robust evidence within the literature of a one-factor structure of the HCCQ. As Little's MCAR test [$\chi^2(119, N = 185) = 138.03, p = .112$] was not significant (i.e. missing values are completely random), the Expectation Maximization (EM) estimation in SPSS was used to impute the missing values (1.12% of all values were missing). Following the recommendations of Schweizer (2010), the model fit was evaluated by four fit indices: a) normed chi-square < 2 is considered a good model fit and a value < 3 an acceptable model fit; b) Root Mean Square Error of Approximation (RMSEA) values < .05 are considered as good whereas values between .05 and .08 are considered as acceptable; c) Bentler's Comparative Fit Index (CFI) signifies a good model fit for values > .95, whereas values between .90 and .95 indicate an acceptable fit; and d) Standardized Root Mean Square residual (SRMR) values < .10 are considered acceptable. In addition, to detect misspecifications within the model, 'the detection of misspecification' procedure (Saris et al., 2009) was also employed. This procedure uses the Modification Index (MI), the Expected Parameter Change (EPC), and the power of the MI test; the minimum size of a misspecification to be detected by the MI test with a high likelihood (power > .75) was set at .10 (Saris et al., 2009).

The results of the CFA showed an adequate model fit: normed chi-square = $190.94 / 90 = 2.12$, RMSEA = .078 [90% confidence interval .063 - .093], CFI = .931, SRMR = .048. However, the 'detection of misspecification'-output (Saris et al., 2009) indicated that there were three misspecifications within the model: between items 3 and 15, between items 4 and 6, and between items 7 and 14 (supplementary details on misspecification analyses can be obtained through <<https://drive.google.com/file/d/0B83IWMpfH-GAbjBWV0NYXJuVXc/view?pref=2&pli=1>>). The MI between items 4 and 6 (MI = 19.6) influenced the model fit the most, and therefore a parameter was added between those items. As a result, the model fit increased (normed chi-square = 1.92, RMSEA = .071, CFI = .945, SRMR = .047); however, examination of modification indexes showed two relevant misspecifications: between items 3 and 15, and between items 7 and 14. As the MI between items 3 and 15 (MI = 15.2) influenced the model fit

the most, a parameter was added between those items. Consequently, the model fit improved (normed chi-square = 1.76, RMSEA = .064, CFI = .955, SRMR = .045). This model had one more misspecification, between items 7 and 14. Adding a parameter between these items resulted into a good model fit without misspecifications (see Figure 1 for a visual representation of the adopted model): normed chi-square = 142.88 / 87 = 1.64, RMSEA = .059 [90% confidence interval .041 - .076], CFI = .962, SRMR = .042.

Local fit inspection showed that all factor loadings were significant at a $p < .001$ level and of the expected sign, varying between .46 and .78.

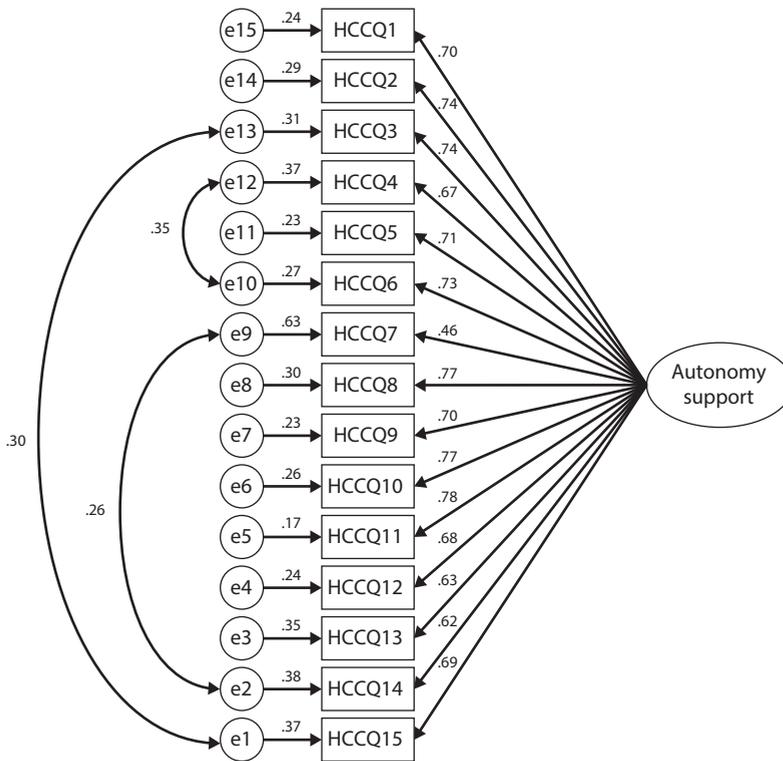


Figure 1. Visual representation of the Health Care Climate Questionnaire – Intellectual Disability (HCCQ-ID) among 185 people with mild to borderline ID.

Note. Numbers to the left of the rectangles represent residuals (expressed as covariance). Numbers between the single-arrow-lines connecting the construct Autonomy support and the items indicate a hypothesized direct effect (expressed as standardized regression coefficients). The numbers between the bidirectional arrows connecting the errors terms are expressed as correlations.

Reliability

The reliability of the HCCQ-ID was determined by computing Cronbach's alpha and was found to be .93. In addition, the 2-week test-retest reliability was determined by re-interviewing 40 participants (21.6%) and was assessed by computing a Pearson correlation between the two measurements. The 2-week test-retest reliability ($M = 14.6$ days, $SD = 2.0$, range = 11.0 – 21.0) of the HCCQ-ID was $r = .85, p < .001$.

Discussion

Findings support the factor structure and reliability of the Health Care Climate Questionnaire – Intellectual Disability (HCCQ-ID) for people with mild to borderline ID. Similar to the results of the original HCCQ (Williams et al., 1996), the findings supported a one-factor structure of the HCCQ-ID. Moreover, the current study found good internal consistency and test-retest reliability.

Like in most other studies, this study revealed high HCCQ-ID mean scores, yielding a distribution skewed to the right. The first validation study of the HCCQ showed a mean score of 4.43 (Williams et al., 1996), Jochems and colleagues (2014) reported a mean score of 4.22 in a sample of 348 Dutch adult outpatients, and Schmidt and colleagues (2012) found a mean score 3.93 in 351 German general practice patients. Although the current study did not indicate a ceiling effect based on the percentages of participants reporting the highest possible scores (the average percentage participants rated maximum on an item was 26.0%, range = 8.6% - 49.2%), high average scores indicate that most participants were satisfied to very satisfied regarding the support that their support staff provides for their autonomy. Participants in the present study might be truly satisfied with the experienced autonomy support, though the results might also be explained by the reluctance of people with mild to borderline ID to criticize their support staff because of their dependent, and sometimes long-standing, relationship. Despite this, by creating a trustworthy and pleasant environment and by avoiding judgmental statements, the authors tried to limit the expression of social desirability of the participants.

The results should be interpreted in light of the limitations of the study. Firstly, no demographics are available of the 165 individuals who declined the invitation to participate in this study. In addition, the cross-sectional design of the study and the small number of participants for the test-retest reliability are limitations. Stronger tests of convergent validity are required using observational material. Moreover, replicating the study of Emond Pelletier and Joussemet (2016) while adding the HCCQ-ID to measure the perceived autonomy support of people with ID would be important for future research.

Overall, the results of the present study provide initial support for the factor structure and the reliability of the HCCQ-ID in a population of people with mild to borderline ID. This is an important first step in assessing the crucial role of autonomy

supportive environments among people with ID. Given the homogeneous factor structure and the high internal consistency score ($\alpha = .93$), the number of items may be further optimized in future research. The Spearman – Brown prophecy formula revealed that reducing the total number of items from 15 to 5, would maintain an adequate internal consistency of .81.

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Chapter 3

Psychometric properties of the Basic Psychological Need Satisfaction and Frustration Scale – Intellectual Disability

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Abstract

Background

The Basic Psychological Needs Satisfaction and Frustration Scale – Intellectual Disability (BPNSFS-ID), an adapted version of the original BPNSFS (Chen, Vansteenkiste et al., 2015), operationalizes satisfaction and frustration with the three basic psychological needs according to Self-Determination theory (SDT): autonomy, relatedness, and competence.

Method

The current study examined the psychometric properties of the BPNSFS-ID in a group of 186 adults with mild to borderline intellectual disability (ID).

Results

The results indicated an adequate factorial structure of the BPNSFS-ID, comprising the satisfaction and frustration of each of the three needs. The associations between BPNSFS-ID subscales autonomy, relatedness, and competence and the self-determination subscale of the Personal Outcome Scale (POS), the De Jong Gierveld Loneliness Scale, and the General Self-Efficacy Scale – 12 (GSES-12), supported the construct validity. In addition, the BPNSFS-ID demonstrated high internal consistency ($\alpha = .92$) and 2-week test-retest reliability ($r = .81$ for the composite subscale autonomy, $r = .69$ for the composite subscale relatedness, and $r = .85$ for the composite subscale competence).

Conclusion

Overall, the BPNSFS-ID proved to be a valid and reliable measure of basic psychological need satisfaction and need frustration among people with mild to borderline ID.

Over the past three decades the importance of the quality of life concept of people with intellectual disability (ID) has been highlighted. According to Schalock and his colleagues (2002), subjective well-being is a key component of quality of life in this population. Subjective well-being can be described as a positive global perception of one's life, consisting of cognitive (e.g., life satisfaction) and affective (the presence of happiness and absence of negative feelings) components (Diener, 2000). Self-Determination Theory (SDT) posits that individuals have three innate, universal psychological needs, whose satisfaction is crucial for subjective well-being (Ryan & Deci, 2000). These are the needs for autonomy (i.e., perceiving that people can make their own decisions and choices), relatedness (i.e., feeling that one is connected to and cared for by other people), and competence (i.e., feeling effective in achieving valued outcomes). Consequently, if the needs for autonomy, relatedness, and competence are fulfilled, one should experience subjective well-being (Howell, Chenot, Hill, & Howell, 2011; Tay & Diener, 2011), regardless of level of intellectual functioning (Deci, 2004).

Although it has been argued that the basic psychological needs are universally important (Deci, 2004; Deci & Ryan, 2000), there is a dearth of research on these needs in people with ID. Studying these basic psychological needs in people with intellectual disability is important from SDT's perspective as it may provide additional support for the universality claim of SDT (i.e., the theory is applicable to all people, regardless of intellectual functioning). Moreover, studying these needs is critical for the ID-field as it may provide insight into how to support people with ID to achieve optimal subjective well-being. Based on their study among students with learning disabilities, Deci and his colleagues (1992) concluded that students function more positively when teachers support their autonomy rather than control and pressure them. In addition, Grolnick and Ryan (1990) found that many of the motivation and self-evaluative problems that children with learning disabilities have may be nonspecific; they may be apparent in other children who have difficulties in learning as well. It should be mentioned however, that the vast majority of the participants in both studies had a below average IQ (> 80) but not an ID. There are few large scale studies because of a lack of psychometrically adequate instruments to quantify the extent to which the three psychological needs are fulfilled among people with ID. Therefore, valid and reliable instruments for assessment of autonomy, relatedness, and competence are urgently needed for people with ID. The current study, which focuses on the psychometric properties of such an instrument, is therefore an essential first step.

SDT-researchers have developed several valid and reliable global and domain-specific scales for need satisfaction and need frustration for the non-intellectually disabled population, including (a) the Basic Psychological Need Satisfaction Scale (BPNS; Ilardi, Leone, Kasser, & Ryan, 1993), (b) the Balanced Measurement of Psychological Needs (BMPN; Sheldon & Hilpert, 2012), (c) the Relationship Need Satisfaction Scale (RNSS; La Guardia, Ryan, Couchman, & Deci, 2000), (d) the Basic Psychological Needs Satisfaction and Frustration Scale (BPNSFS; Chen, Vansteenkiste

et al., 2015), (e) the Psychological Need Thwarting Scale (PNTS; Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011), (f) the Work-related Basic Need Satisfaction scale (W-BNS; van den Broeck, Vansteenkiste, Witte, Soenens, & Lens (2010), and (g) the Psychological Need Satisfaction in Exercise (PNSE; Wilson, Rogers, Rodgers, & Wild, 2006). The BMPN and BPNSFS differ from the other instruments in that they measure both need frustration and need satisfaction. This distinction between need satisfaction and need frustration is consistent with recent theorizing (Vansteenkiste & Ryan, 2013) and empirical research (e.g., Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011), underlining the distinct role of need frustration in predicting ill-being. That is, a low score on need satisfaction ('dissatisfaction') is conceptually not equivalent to need frustration (e.g., "I do not feel related" vs. "I feel I am rejected"). People might already feel lonely because their need for relatedness with their colleagues gets deprived ('dissatisfaction') or because attempts to establish contact are thwarted resulting in a more intense frustration (i.e., need frustration). Such frustrations of basic needs may engender specific emotions, such as defeat and humiliation in the case of rejection by others, depending on context (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011). Differential emotional responses to need frustration and low need satisfaction may predict differential associations with adaptive and maladaptive developmental outcomes. That is, in a study among athletes, Bartholomew, Ntoumanis, Ryan, Bosch, and Thøgersen-Ntoumani (2011) found that need satisfaction was associated with positive outcomes regarding sport participation (i.e., positive affect and vitality), whereas need frustration was associated with maladaptive developmental outcomes such as negative affect, depression, and burnout. Moreover, need satisfaction was associated with athletes' perceptions of autonomy support, while need frustration was related to coach control.

Because Chen, Vansteenkiste, and colleagues (2015) provided evidence for the measurement equivalence of the BPNSFS, this questionnaire is preferred over the BMPN. Although recently developed, the BPNSFS has already been applied in several studies in a range of domains, including the examination of the role of psychological need satisfaction in sleep behavior of adults (Campbell et al., 2015) and the role of environmental and financial safety in need satisfaction (Chen, van Assche, Vansteenkiste, Soenens, & Beyers, 2015). As the BPNSFS looked more promising, this questionnaire was chosen for the current study. That is, in the current study, the psychometric properties of an adapted version of the BPNSFS, the Basic Psychological Needs Satisfaction and Frustration Scale – Intellectual Disability (BPNSFS-ID), were examined in people with mild intellectual disability (defined as IQ between 50 and 70) and with borderline intellectual functioning (IQ between 70 and 85), hereafter designated as people with mild to borderline intellectual disability (ID).

The first hypothesis was that, using confirmatory factor analyses (CFA), the structure of six correlated but distinct factors of BPNSFS-ID (i.e., the satisfaction and frustration of the needs for autonomy, relatedness, and competence) fit the data

from people with mild to borderline ID. This was important not only to test whether the basic psychological needs are adequately operationalized, but also to test whether the theoretical distinction between the needs is applicable to people with ID too. To investigate this, a series of CFA were conducted based on theory (Vansteenkiste & Ryan, 2013) and the results of Chen, Vansteenkiste, and colleagues (2015). That is, four models were tested: model 1 (the null model)) a six-factor model differentiating between need satisfaction and need frustration within each of the three needs; model 2) the same six-factor model using two higher-order constructs representing psychological need satisfaction and need frustration; model 3) the same six-factor model with three higher-order constructs representing the basic psychological needs for autonomy, relatedness, and competence; and model 4) a three-factor model consisting of the three needs for autonomy, relatedness, and competence. It was also hypothesized that the three basic needs of the BPNSFS-ID would be strongly associated with convergent operationalizations of these needs. That is, based on the nomological web of SDT, satisfaction and frustration of the need for autonomy would be associated with the subscale self-determination of the Personal Outcome Scale (POS; van Loon, van Hove, Schallock, & Claes, 2008a), the need for relatedness would be associated with the De Jong Gierveld Loneliness Scale (de Jong-Gierveld & Kamphuls, 1985), and the need for competence would be associated with the General Self-Efficacy Scale-12 (GSES-12; Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, & Rogers, 1982). In addition, the internal reliability and test-retest reliability of the BPNSFS-ID were tested. The internal reliability, measured with Cronbach's alpha, was used to gauge how well a priori defined items of the questionnaire measured the same construct, whereas the test-retest reliability indicates the stability of the measure in the absence of systematic attempts to induce change, which is a critical characteristic if the measure is to be used in effectiveness research in the future.

Materials and methods

Participants and procedures

After ethical approval by the Ethics Committee of Tilburg University, participants were selected at random from four healthcare organizations for people with ID in the southern part of the Netherlands. All four organizations support individuals with ID living in residential homes and 24-hour community residences, receiving ambulant support or attending day care centers. Inclusion criteria for participation were: aged above 18 years, mild to borderline ID (IQ-score between 50 and 85), and at least weekly contact for a minimum of three months with a professional caregiver. A total of 368 individuals were invited to participate in the study; 165 declined, resulting in 203 participants. After participation 17 participants were excluded because they did not meet the inclusion

criteria, leaving a total of 186. The mean age was 40.3 years (range = 18.1 to 84.8); 110 were male. The mean IQ on file was 67; 109 participants had a mild ID (range 50-70) and 77 had a borderline level of intellectual functioning (range 71-85).

During each measurement, all items of each questionnaire were read aloud to the participants, while they could also read along with all items. The participants verbally indicated the response by giving the answer (mostly from 1 to 5) which was then recorded and logged by the researchers. The vast majority of the participants understood all items; for those who needed help, a standardized explanation was given. In the case a participant did not understand the item after this standardized clarification, the item was left blank and became a missing value.

Measures

Need satisfaction and frustration

The Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS), originally developed by Chen, Vansteenkiste, and colleagues (2015), is here adapted as the BPNSFS-ID to improve comprehension by people with mild to borderline ID. The BPNSFS-ID assesses both satisfaction and frustration of the three basic psychological needs defined in SDT: autonomy, relatedness, and competence. The BPNSFS-ID has 24 items (eight for each subscale; four for satisfaction and four for frustration). Examples are "In my life, I can do whatever I want when I want" (satisfaction of the need for autonomy), "In my life, I feel excluded by the people who I would like to belong to" (frustration of the need for relatedness), and "In my life, I think that I can do things well" (satisfaction of the need for competence). All items were rated on a 5-point Likert scale (1 = completely untrue and 5 = completely true). Chen, Vansteenkiste, and colleagues (2015) employed a CFA to validate the factor structure of the original BPNSFS, and found a 6-factor model that differentiated between need satisfaction and need frustration within the three needs yielded the best fit (SBS- $\chi^2(231) = 372.71$, CFI = .97, RMSEA = .03, SRMR = .04). The internal consistency ranged from .64 to .89 for the six factors across four countries in university students (Belgium, China, USA, and Peru).

To adapt the questionnaire to people with mild to borderline ID, two researchers familiar with both SDT and people with mild to borderline ID reworded each of the 24 BPNSFS-items independently, ensuring that the items were comprehensible for people with mild to borderline ID while safeguarding the meaning according to SDT. The two researchers and an experienced professional working with people with mild to borderline ID developed a consensus version based on these two adaptations. This consensus version was discussed with all authors of the present study, resulting in small adaptations. For example, the original item "I feel that people who are important to me are cold and distant towards me" was replaced by "Important people in my life keep me at a distance". In addition, the original item "I feel competent to achieve my goals" was modified into "In my life, I have the feeling that I can reach my goals". Finally,

five persons with mild to borderline ID were invited to complete this adapted BPNSFS-ID. They found the BPNSFS-ID easy to comprehend and a few minor adaptations to the phrasing and grammar were made to improve clarity, based on their recommendations.

Self-determination

The subscale self-determination of the POS (van Loon et al., 2008a) was used to assess whether participants felt free to make their own choices and decisions. This subscale consists of 6 items, rated on a 3-point Likert scale (1 = always, 2 = sometimes, and 3 = seldom or never). The subscale has a good internal consistency (Cronbach's alpha = .75) and measuring convergent validity of another instrument with a similar domain (GENCAT; Verdugo, Arias, Gomez, & Schalock, 2008) showed a correlation of .79 (van Loon et al., 2008b). The current study had an internal consistency of .66 (Cronbach's alpha).

Loneliness

The De Jong Gierveld Loneliness Scale (de Jong-Gierveld & Kamphuls, 1985) was used to measure loneliness. The scale consists of five positively formulated items (e.g., "There are many people I can trust completely") and six negatively formulated items (e.g., "I miss having people around me"), which were rated on a 5-point Likert scale (1 = completely untrue and 5 = completely true). This scale has been applied in several studies in a range of populations, including a study in people with psychiatric and intellectually disabilities (Broer, Nieboer, Strating, Michon, & Bal, 2011), and showed sufficient reliability and validity (de Jong-Gierveld & van Tilburg, 1999). To ensure comprehension by people with mild to borderline ID, five persons with mild to borderline ID were invited to complete the De Jong Gierveld Loneliness Scale. Based on their recommendations on the phrasing and grammar to improve item clarity, six items were slightly rephrased for the current study. The current study had an internal consistency of .89 (Cronbach's alpha).

General Self-Efficacy

The General Self-Efficacy Scale-12 (GSES-12), originally developed by Sherer and colleagues (1982) and enhanced to 12 items by Woodruff and Cashman (1993), was used to measure self-efficacy. To ensure comprehension by people with mild to borderline ID, five persons with mild to borderline ID were invited to complete the GSES-12. Based on their recommendations on the phrasing and grammar to improve item clarity, three items were slightly rephrased for the current study. All items were rated on a 5-point Likert scale (1 = completely untrue and 5 = completely true). The original scale has been used previously with people who have ID (Forte, Jahoda, & Dagnan, 2011), revealing a good internal consistency (Cronbach's alpha = .69); the current study had an internal consistency of .84 (Cronbach's alpha).

Data analysis

The analysis, performed using IBM SPSS for Windows (version 22) and AMOS (version 22), comprised three stages: (1) confirmatory factor analyses, (2) convergent and discriminant validity, and (3) reliability.

Firstly, to investigate the factorial validity, a series of CFA were conducted based on theory (Vansteenkiste & Ryan, 2013) and the results of Chen, Vansteenkiste, and colleagues (2015). That is, four models were tested in CFA using AMOS: model 1 (the null model) a six-factor model differentiating between need satisfaction and need frustration within each of the three needs; model 2) a six-factor model using higher-order constructs in which both the three need satisfaction factors and the three need frustration factors are the six first-order factors, and the two higher-order constructs representing psychological need satisfaction and need frustration; model 3) a six-factor model with the same six first-order factors as models 1 and 2, in which three higher-order constructs represent the psychological needs for autonomy, relatedness, and competence; and model 4) a three-factor model consisting of the three needs for autonomy, relatedness, and competence. Because AMOS requires all variables of interest to have complete data, the Expectation Maximization (EM) estimation in SPSS was used to impute the missing values (0.72% of all values were missing). This could be done because data were found to be missing completely at random (MCAR) as indicated by Little's MCAR test [$\chi^2(141, N = 186) = 136.40, p = .59$]. The four models were evaluated using a normed chi-square, the Root Mean Square Error of Approximation (RMSEA), the Bentler Comparative Fit Index (CFI), and the Standardized Root Mean Square Residual (SRMR) (Kline, 2005; Schweizer, 2010). A normed chi-square < 2 is considered a good model fit and a value < 3 an acceptable model fit (Bollen, 1989). Consistent with Browne and Cudeck (1993), RMSEA values < .05 are considered as good whereas values between .05 and .08 are considered as acceptable. CFI signifies a good model fit for values > .95, whereas values between .90 and .95 indicate an acceptable fit (Hu & Bentler, 1999). Finally, SRMR values < .10 are considered acceptable (Kline, 2005). However, although these traditional fit indices with fixed critical values are useful to evaluate models, they have important drawbacks as they cannot control for type I and type II errors, resulting in the rejection of correct models and the acceptance of incorrect models (Marsh, Hau, & Wen, 2004). Therefore, Saris, Satorra, and van der Veld (2009) suggested 'the detection of misspecification' procedure, by using the Modification Index (MI), the Expected Parameter Change (EPC), and the power of the MI test. To interpret the MI test for each of the restricted parameters of the model, the minimum size of the misspecification that one would like to detect by the MI test with a high likelihood (power) was chosen to be .10 and the power was ranked high when it was > .75 (Saris et al., 2009). Because this 'detection of misspecification' procedure is relatively new, in the current study, both approaches (i.e., the traditional fit indices and the detection of misspecifications) will be reported. Next, in addition to the traditionally chi-square difference test, which may reject reasonable

models (Marsh et al., 2004), for choosing the best model the Bayesian Information Criterion (BIC) and CFI indices were used. Models with the lowest BIC are preferred, and a non-significance chi-square difference test suggests that the reduced model is the better fitting model. In addition, to evaluate invariance constraints, the CFI indices were compared; Cheung and Rensvold (2002) suggested that decreases in fit $> .01$ support the more restricted model.

Secondly, to evaluate the convergent validity, the BPNSFS-ID subscales autonomy, relatedness, and competence were correlated with the self-determination subscale of the POS, the De Jong Gierveld Loneliness Scale, and the GSES-12, respectively. The discriminant validity was measured by correlating the autonomy subscale of the BPNSFS-ID with the convergent operationalizations of the other two needs: GSES-12 and the De Jong Gierveld Loneliness Scale. In a similar vein, the relatedness subscale of the BPNSFS-ID was correlated with the GSES-12 and the self-determination subscale of the POS, and the competence subscale of the BPNSFS-ID was correlated with the self-determination subscale of the POS and the De Jong Gierveld Loneliness Scale. Regarding the discriminant validity, dependent correlations derived from the cross-construct and the within-construct were compared using Steiger's Z-test (Steiger, 1980). Correlations $< .29$ were considered weak, between $.30$ and $.49$ moderate, and $> .49$ strong (Cohen, 1988).

Finally, the reliability of the BPNSFS-ID was determined by computing Cronbach's alpha. Also, the 2-week test-retest reliability was determined by re-interviewing 20 percent of the participants ($N = 40$) According to Nunnally, Bernstein, and Berge (1967), a value $> .60$ is sufficient for early stages research, but values $> .80$ should be pursued. The test-retest reliability was gauged by computing Pearson correlations between the first and second measurement.

Results

Confirmatory Factor Analyses

The global fit measures of the four models are presented in Table 1. Based on these fit measures, all four models yield an acceptable to good fit. Although models 1 and 3 yield a statistically significant better fit than the other two models, model 2 is theoretically important given the importance of the distinction between need satisfaction and need frustration. As model 2 has an acceptable fit, this model appears to be the best fitting model based on theory and the traditional fit indices. The 'detection of misspecification' output as measured with Modification Index (MI), the Expected Parameter Change (EPC), and the power of the MI test, indicated that there were no serious misspecifications for model 2 (see Electronic Supplementary Material through <http://econtent.hogrefe.com/doi/suppl/10.1027/1015-5759/a000366>), therefore, the model is acceptable.

Table 1. Comparison of the four tested models (N = 186).

Model	χ^2	df	χ^2 / df	RMSEA (90% CI)	CFI	SRMR	BIC	$\chi^2 \Delta$ (df)#
1. Six factors	319.30*	237	1.34	.043 (.030; .055)	.96	.055	648.53	-
2. Six factors with need satisfaction and need frustration as higher-order constructs	481.29*	245	1.96	.072 (.063; .082)	.90	.099	768.70	161.99 (8)*
3. Six factors with autonomy, relatedness, and competence as higher-order constructs	330.42*	243	1.36	.044 (.031; .056)	.96	.059	628.28	11.12 (6)
4. Three factors	457.45*	249	1.84	.067 (.058; .077)	.91	.076	723.97	127.03 (12)*

Note. df = degrees of freedom; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; SRMR = Standardized Root Mean Square Residual; BIC = Bayes Information Criterion; # $\chi^2 \Delta$ (df) = Chi square difference test comparing the fit of models 2, 3 and 4 with model 1, df is the difference in degrees of freedom between the two compared models; * $p < .05$

For model 2 (six factors with higher-order constructs representing psychological need satisfaction and need frustration, see Figure 1), all factor loadings were significant at a $p < .001$ level. The standardized factor loadings varied as follows: between .45 - .87 for the latent variable autonomy satisfaction and .72 - .80 for autonomy frustration, between .84 - .88 for relatedness satisfaction and .59 - .77 for relatedness frustration, and between .60 - .77 for competence satisfaction and .61 - .79 for competence frustration.

Convergent and discriminant validity

The autonomy satisfaction and frustration subscales showed strong convergence with the self-determination scale, $r = -.65, p < .001$ and $r = .60, p < .001$, respectively. The correlations between the competence satisfaction and frustration subscales were assessed by associating these subscales with the self-efficacy scale, and were $r = .66, p < .001$ and $r = -.62, p < .001$, respectively. The convergent validity of the relatedness satisfaction and frustration subscales were measured by correlating the subscales with the loneliness scale; the correlations were $r = .65, p < .001$ and $r = -.71, p < .001$.

Discriminant validity of the BPNSFS-ID was measured by assessing the correlation between the six subscales and the convergent operationalizations of the two other basic needs (i.e., two of the following three questionnaires: the self-determination scale, the self-efficacy scale, and the loneliness scale). The correlations for each subscale are reported in Table 2; they range between $-.32$ and $.55$. A Steiger's Z-test was conducted to compare the dependent correlations derived from the cross-construct and the within-construct. Results indicated that all within-construct associations were significantly stronger than the cross-construct associations at a $p < .001$ level, except the comparison between the correlation of the competence satisfaction subscale and the self-efficacy scale ($r = .65$) and the competence satisfaction subscale and the loneliness scale ($r = .55$); this resulted in $Z_{\mu} = 2.13, p = .033$.

Reliability

The internal consistency of the BPNSFS-ID was found to be Cronbach's alpha .92. The internal consistency for each scale is reported in Table 3; they range between .78 and .92. The 2-week test-retest reliabilities ($M = 14.6$ days, $SD = 2.0$, range = 11.0 – 21.0) of the BPNSFS-ID factors range between .68 and .85 (see Table 3).

Discussion

This study provides evidence for the reliability and validity of the Basic Psychological Need Satisfaction and Frustration Scale – Intellectual Disability (BPNSFS-ID). Similar to the results of the original BPNSFS (Chen, Vansteenkiste et al., 2015), the BPNSFS-ID shows good to excellent internal consistency and test-retest reliability, for both the total scale and the divided subscales.

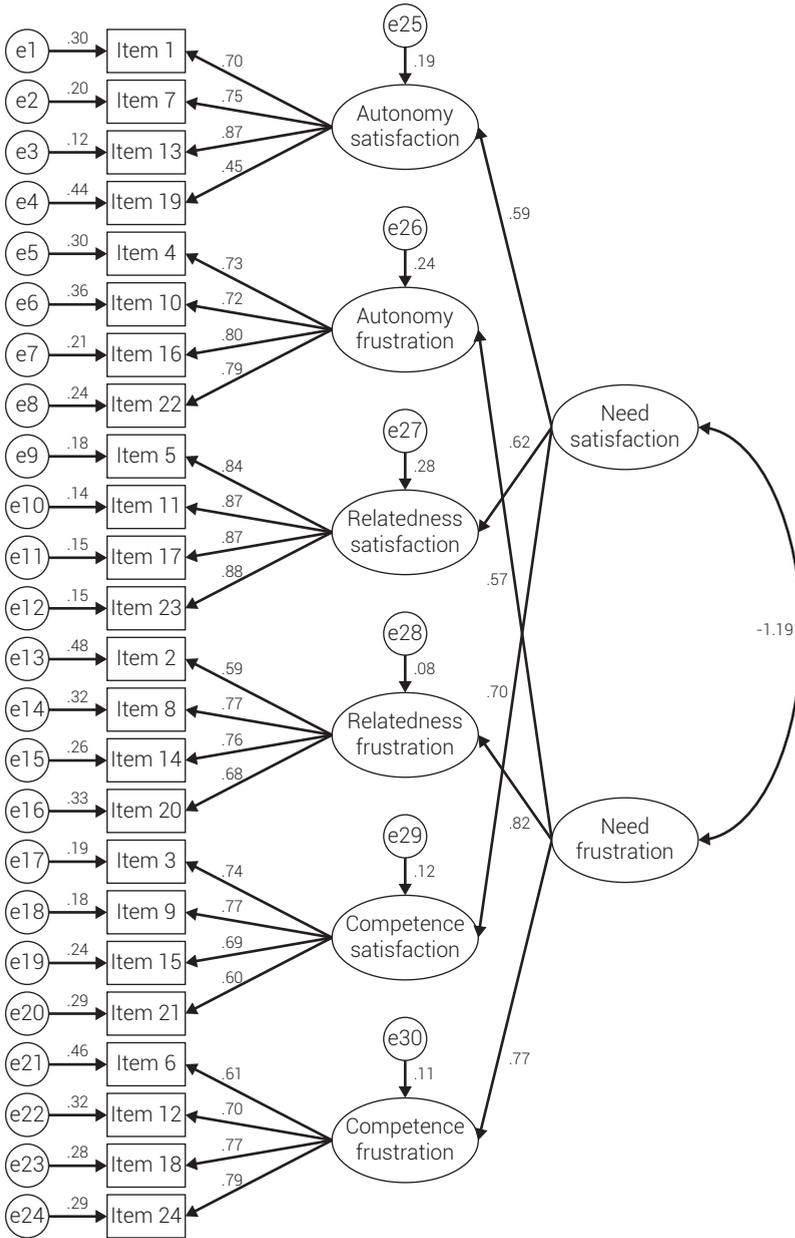


Figure 1. Visual representation of model 2 with six factors and higher-order factors representing psychological need satisfaction and need frustration (N=186).

Note. The ellipses represent both the factors and the higher-order constructs and the rectangles represent items. Numbers to the left of the rectangles represent residuals (expressed as covariance). Numbers between the single-arrow-lines connecting constructs and items indicate a hypothesized direct effect (expressed as standardized regression coefficients). The number between the bidirectional arrow connecting the higher-order constructs imply a relationship between factors (expressed as covariance).

Table 2. Correlations^a among study variables (N = 186).

Measure	1	2	3	4	5	6	7	8	9
<i>Need satisfaction</i>									
1. Autonomy									
2. Relatedness	.25**								
3. Competence	.40**	.38**							
<i>Need frustration</i>									
4. Autonomy	-.64**	-.17**	-.35**						
5. Relatedness	-.31**	-.76**	-.47**	.33**					
6. Competence	-.46**	-.33**	-.65**	.44**	.52**				
7. Self-determination scale	-.65**	-.32**	-.37**	.60**	.41**	.50**			
8. Loneliness scale	.35**	.65**	.55**	-.38**	-.71**	-.52**	-.49**		
9. Self-efficacy scale	.35**	.33**	.66**	-.39**	-.45**	-.62**	-.40**	.62**	

* $p \leq .05$; ** $p \leq .01$

a As the needs for autonomy, relatedness, and competence are separate but related factors, additional partial correlation analyses were used to control for the covariance with the other two needs. Similar to the Pearson correlations, all partial convergent correlations were strong (between .49 and .57) and significant at a $p < .001$ level, except the correlation between competence frustration and the self-efficacy scale; this partial correlation was moderate ($r = .45, p < .001$).

Table 3. Internal consistencies and test retest correlations of the composite need scores, need satisfaction, and need frustration (N = 186).

Factor	Internal consistencies ^a			Test retest reliabilities ^b		
	Composite scores	Satisfaction	Frustration	Composite scores	Satisfaction	Frustration
Autonomy	.87	.78	.85	.81	.72	.79
Relatedness	.91	.92	.79	.69	.76	.83
Competence	.86	.79	.81	.85	.68	.71

* Internal consistencies are measured as Cronbach's alpha; ** Test retest reliabilities are measured as Pearson correlations.

Confirmatory factor analyses confirmed a six-factor structure of the BPNSFS-ID, comprising the satisfaction and frustration of the needs for relatedness, autonomy, and competence. In addition, similar to the original BPNSFS (Chen, Vansteenkiste et al., 2015), supplementary higher-order analysis did support the distinction between need satisfaction and need frustration. That is, based on the current data, need satisfaction and need frustration appears to be two dimensions. This finding is consistent with recent studies (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011) and theory (Vansteenkiste & Ryan, 2013), suggesting that need satisfaction and need frustration are best viewed as independent concepts with separate precedents and predicting distinct results. For example, Chen, Vansteenkiste, and colleagues (2015) found that need satisfaction was related positively to life satisfaction but unrelated to depressive symptoms. On the contrary, need frustration was related positively to depressive symptoms and negatively to life satisfaction. Future research is needed to address these associations among people with mild to borderline ID.

In addition to the factorial validity, the study showed strong correlations between the three basic needs of the BPNSFS-ID (i.e., the need for autonomy, relatedness, and competence) and convergent operationalization of these needs (i.e., self-determination, loneliness, and self-efficacy, respectively). In addition, discriminant validity of the BPNSFS-ID appeared to be adequate. An exception applies to the divergent correlation between the competence satisfaction and frustration subscales of the BPNSFS-ID and the De Jong Gierveld Loneliness Scale and between the competence frustration subscale of the BPNSFS-ID and the POS. That is, these correlations were, in contrast with the expectation, found to be strong. However, all within-construct associations were significantly higher than the cross-constructs.

The present results should be interpreted in light of the limitations of the study. Firstly, of the 368 individuals who were invited to participate in the study, 165 declined. The potential non-response bias could not be calculated by comparing participants with non-participants because there were no demographics available for the non-participants. The non-participants (45%) mainly said that they declined to participate due to the time investment of 1.5 hours or because professional caregivers argued it would be too stressful for them. In addition, only a small number participated in the test-retest reliability and results need to be replicated with larger sample sizes. Lastly, as no measures for both adaptive and maladaptive psychosocial functioning were included in the current study, it was not possible to actual test the notion that need satisfaction and need frustration have differential outcomes among people with mild to borderline ID.

Overall, the results of the present study provide support for the psychometric properties of the BPNSFS-ID in a group of people with mild to borderline ID in the Netherlands. This is an important first step in testing the universality of the theoretical premises across populations of people with and without ID, because a reliable and valid measurement is urgently needed for fulfillment of autonomy, relatedness, and

competence. Future research might focus on the evaluation of the predictive validity to further confirm the validity of the BPNSFS-ID. That is, the link between need satisfaction and need frustration and subjective well-being and ill-being among people with mild to borderline ID should be examined in a longitudinal design. This is not only theoretically interesting, but also, from the practical point of view, useful as it may provide valuable insights to enhance subjective well-being and thus quality of life of people with mild to borderline ID.

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Chapter 4

Distinguishing subtypes of extrinsic motivation among people with mild to borderline intellectual disabilities

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Abstract

Background

According to Self-Determination Theory (SDT), motivation is ordered in types, including amotivation, extrinsic motivation, and intrinsic motivation. SDT defines four subtypes of extrinsic motivation: external motivation, introjected motivation, identified motivation, and integrated motivation. Although it has been argued theoretically that the different types of motivation are universally applicable, Reid and colleagues (2009) proposed a dichotomy of broad subtypes of extrinsic motivation for people with intellectual disability (ID) due to their cognitive limitations. The current study challenges this proposal by testing whether the four subtypes of extrinsic motivation can be differentiated among people with ID as well.

Method

The subtypes of extrinsic motivation were measured using two adapted versions of the Self-Regulation Questionnaire (SRQ), one regarding exercise and one regarding support. In total, 186 adults with mild to borderline ID participated in the study.

Results

Results supported the distinction between the four subtypes of extrinsic motivation regarding both exercise and support. In addition, the correlation coefficients supported a quasi-simplex pattern of correlations among the subtypes, indicating that adjacent subtypes were more closely related than non-adjacent subtypes. Moreover, the study showed sufficient Cronbach's alphas and test-retest reliabilities for early stage research.

Conclusions

Overall, the results of the current study provide initial evidence for the universality of the four subtypes of extrinsic motivation across populations with and without ID.

Key words

motivation types, extrinsic motivation, self-determination theory, intellectual disability

Introduction

Motivation drives actions and personal growth (Ryan & Deci, 2000a). That is, motivation is fundamental in providing individuals reason for a particular behavior and plays an essential role in decision making and guiding behavior. A classic distinction in motivation is one between extrinsic motivation and intrinsic motivation (Ryan & Deci, 2000b). According to the Self-Determination Theory (SDT), even more types of motivation need to be distinguished (Deci & Ryan, 2000), rank ordered from total lack of motivation (amotivation) to engagement in an activity because the activity is in itself enjoyable or interesting (intrinsic motivation). This study focused on assessing distinctions between subtypes of extrinsic motivation with people with mild to borderline intellectual disability (ID).

Bridging amotivation and intrinsic motivation, the SDT distinguishes four subtypes of extrinsic motivation: external motivation, introjected motivation, identified motivation, and integrated motivation. These subtypes of motivation are hypothesized to be universal across populations and behaviors and vary in the extent to which their regulation is self-determined (Ryan & Deci, 2000a), which can be described as performing a behavior out of personal interest or values. The first and least self-determined form of extrinsic motivation is labeled as external motivation, and occurs when an individual takes action to obtain rewards, to obey to external requests, or to avoid punishments. Second, introjected motivation drives action to avoid guilt and shame and to attain feelings of worth and pride (i.e., ego involvement). External motivation and introjected motivation are, together, considered as 'controlled motivation'. The third type of extrinsic motivation, a more self-determined form, is labeled identified motivation, and refers to actions that are valued by the individual. Finally, the most self-determined form of extrinsic motivation is integrated motivation, driving actions that are fully integrated with other values and behaviors of the person. The last two types of extrinsic motivation (identified and integrated motivation), together with intrinsic motivation, are considered as 'autonomous motivation'.

According to Ryan and Deci (2000a), people may transform less self-determined forms of extrinsic motivation into more self-determined (or autonomous) forms of extrinsic motivation. The SDT proposes that social contexts that satisfy the three basic psychological needs for autonomy, competence, and relatedness will foster more autonomous forms of extrinsic motivation. Autonomous forms of motivation have been found associated with positive behaviors and outcomes such as greater adherence to medications among people with chronic illnesses (Williams, Rodin, Ryan, Grolnick, & Deci, 1998), greater involvement and better psychotherapy outcomes (Zuroff, Koestner, Moskowitz, McBride, Marshall, & Bagby, 2007), greater levels of physical activity (Levesque et al., 2007), and greater life satisfaction and well-being (Ryan & Deci, 2000a). In contrast, controlled types of motivation were associated with negative outcomes such as depression (Levesque et al., 2007) and psychological and physical ill-being (Deci & Ryan, 2002).

To assess the different types of motivation, various questionnaires have been developed for people with average or above IQ (e.g., Ryan & Connell, 1989; Vallerand et al., 1992). One of these scales, the Self-Regulation Questionnaire (SRQ), developed by Ryan and Connell (1989), is nowadays widely used to measure whether one's motivation for health behaviors is controlled or autonomous. The SRQ asks, for example, why people engage in healthy behaviors or enter treatment for a medical condition. Levesque and colleagues (2007) conducted a series of confirmatory factor analyses (CFA) to validate the factor structure of the Treatment SRQ (TSRQ) across four different universities and three different health behaviors (i.e., tobacco use, diet, and exercise). They confirmed the hypothesized four-factor structure representing amotivation, external motivation, introjected motivation, and autonomous motivation - not differentiating between identified motivation and integrated motivation - and found an acceptable internal consistency.

Although it has been argued that the different types of motivation are universally applicable (Deci & Ryan, 2000), the vast majority of the studies focused on non-intellectually disabled people. Little attention has been paid to individuals with cognitive limitations, such as people with ID. Indeed, the domain of motivation has not been studied extensively within this field, but people with ID are often perceived as being less motivated and more passive (Emond Pelletier & Joussemet, 2016). It should be noted however that the original SRQ scales were developed and used among children in grades 3-6 (Ryan & Connell, 1989). Hence, children in the age range of 9-12 have shown ability to discriminate on the SRQ scales. Most adults with mild ID are capable within this reading and conceptual range. In addition, Deci, Hodges, Pierson, and Tomassone (1992) adapted the SRQ-Academic for students with learning disabilities on elementary school and high school, with a mean IQ of 88 (range = 58-142) and 83 (range = 55-121), respectively. They replicated the theorised structure of the original SRQ-Academic, suggesting that the distinction between external motivation, introjected motivation, identified motivation, and intrinsic motivation can be made among students with learning disabilities (integrated motivation was not included in this SRQ-version). Moreover, Grolnick and Ryan (1990) also used an adapted SRQ-Academic in students with learning disabilities. However, although the students had learning disabilities in both studies, the vast majority did not have an ID (IQ < 70). Recently, Frielink, Schuengel, Kroon, and Embregts (2015) used a version of the SRQ in a multiple-case experimental design ($N = 6$) to measure day-to-day motivation to change substance abuse among individuals with mild ID. They found that participants were able to discriminate easily between external motivation, introjected motivation, and autonomous motivation.

Although using a different scale than the SRQ, Reid, Vallerand, Poulin, and Crocker (2009) decreased the number of extrinsic motivational types in their scale (i.e., pictorial motivation scale) because the subtle distinctions between the four types would elude the cognitive means of people with mild to moderate ID. That is, Reid and colleagues were "concerned with the ability of our target population to distinguish

among the four and wanted to keep the questionnaire as short as possible" (Reid et al., 2009, p.162). Therefore, they proposed a dichotomy of broad subtypes of extrinsic motivation (i.e., self-determined and non-self-determined motivation) instead of four subtypes of extrinsic motivation according to SDT. This amalgam was based primarily on theoretical assumptions and practical considerations rather than driven by data. Although this dichotomy is nowadays widely used in the general population, to the best of our knowledge no studies have been conducted exploring the four subtypes of extrinsic motivation in people with ID. Developing more awareness of, and measurement tools that can tap, the varied motivational states experienced by people with ID may help towards more effective support of and respect for self-determination. Therefore, the current study challenges the proposal of Reid and colleagues (2009) by testing whether the four subtypes of extrinsic motivation proposed by SDT can be distinguished on the basis of responses from people with mild ID (defined as IQ between 50 and 70) and with borderline intellectual functioning (IQ between 70 and 85), hereafter designated as people with mild to borderline ID. As people with borderline intellectual functioning often have comparable characteristics and support needs to people with mild ID, people with borderline intellectual functioning in the Netherlands are eligible to the same specialised mental health care organizations as people with an ID (IQ < 70). Hence, this target group is commonly included in research, practice, and policy in the Netherlands.

We investigated the four subtypes of extrinsic motivation among people with mild to borderline ID by using the SRQ regarding two different domains. The first domain focused on support. Although people with ID nowadays have increasing freedom of choice, they remain, more than people without ID, partly dependent of support provided by support staff to enhance health and well-being. Moreover, studying people's motivation in relation to support has distinct theoretical interest, as SDT has argued that dependence and autonomy are not each other opposites (Deci & Ryan, 2002). That is, the opposite of autonomy is heteronomy, in which one's actions are perceived as controlled by forces that are alien to the self (Chirkov, Ryan, Kim, & Kaplan, 2003). SDT describes dependency as reliance on other people for support, guidance, or supplies (Ryan & Lynch, 1989). Hence, people can be autonomously dependent on others if they willingly trust their support. As support provided by support staff has no parallel in the previously studied populations of people without ID, exercise was included as a second, universally important domain.

The aim was to test whether theoretically a priori defined items representing the different subtypes of extrinsic motivation among non-intellectually disabled people had the same structure for people with mild to borderline ID. Therefore, it was hypothesized that, using CFA, the structure of the four subtypes of extrinsic motivation according to SDT fit the data from people with mild to borderline ID for both versions of the SRQ (i.e., SRQ exercise and SRQ support). To investigate this, three models were tested with respect to the SRQ exercise: model 1 (the null model): a four-factor model as

proposed by SDT by differentiating between external motivation, introjected motivation, identified motivation, and integrated motivation; model 2) a three-factor model based on Levesque and colleagues (2007) differentiating between external motivation, introjected motivation, and autonomous motivation (Levesque and colleagues also included the subscale amotivation, but in the current study this subscale was removed from the analyses as this subscale was not included in the SRQ support); and model 3) a two-factor model as proposed by Reid and colleagues (2009) differentiating between non-self-determined extrinsic motivation (i.e., the amalgamation of external motivation and introjected motivation) and self-determined extrinsic motivation (i.e., the amalgamation of identified motivation and integrated motivation). As the factor structure between both versions of the SRQ was hypothesized to be similar, the adopted model for the SRQ exercise was tested for the SRQ support as well. In addition, it was hypothesized that the correlation coefficients of the four subtypes of extrinsic motivation would support a quasi-simplex pattern of correlations among the subscales for both SRQ-versions, indicating that adjacent subscales were more closely related than non-adjacent subscales. Moreover, the internal reliability and test-retest reliability of the SRQ exercise as well as the SRQ support were tested.

Methods and materials

Participants and procedures

After ethical approval by the Ethics Committee of Tilburg University, eligible participants were randomly selected from four ID services in the Netherlands. Inclusion criteria for participation in the current cross-sectional study were: having a mild to borderline ID (IQ 50-85), aged ≥ 18 years, and at least weekly contact for a minimum of three months with support staff. In total, 368 individuals were invited to participate; 165 declined. After participation, 17 turned out not to meet the inclusion criteria (e.g., IQ data were not available) and were therefore afterwards excluded, resulting in 186 participants. Of those 186 participants, two did not fill in the SRQ exercise and one did not fill in the SRQ support. The participants had a mean age of 40.3 years (range = 18.1 to 84.8); 76 were female (41.3%). The mean IQ on file was 67; 77 participants had a borderline level of intellectual functioning (IQ-range 71-85) and 109 had a mild ID (IQ-range 50-70). Although the used IQ tests differed, most of the participants were tested with the WAIS III / WAIS IV.

Appointments took place at participants' home, but if participants wished so, other locations were possible as well. During each measurement, the researcher read aloud all items of each administered questionnaire, while the participant could read along with the items. Next, the participants were invited to answer each item verbally by indicating the answer on a 1 to 5 Likert type scale, which was then recorded and logged by the researcher. Most participants responded using the numbers (e.g., 1), but

some participants preferred responding using the qualifiers (e.g., completely untrue). Demonstrated by examples and narrative information provided by the participants during the data collection, the vast majority of the participants understood all items. For those who needed help, the researcher provided a standardised clarification. In the case a participant did not understand the item after this standardised clarification, the item was left blank and became a missing value.

In order to gauge the 2-week test-retest reliability, 20 percent of the participants ($N = 40$) were visited a second time. These 40 participants were randomly selected from the 203 individuals who initially participated in the current study; all agreed to participate. None of them belonged to the 17 individuals who were excluded from the study afterwards for not meeting the inclusion criteria.

Measures

Ryan and Connell (1989) developed a general approach to measure various types of motivation. Nowadays, as the SRQ has been widely used in studying behaviors change in health care settings, there are various versions of the SRQ (Williams *et al.* n.d.). In order to be appropriate for the particular behaviors being studied, the wording of the various SRQ-versions varies somewhat. Nevertheless, the different reasons that are used in each SRQ cover the various types of motivation as distinguished by SDT and thus are theoretically comparable (Williams, Ryan, & Deci, n.d.). Hence, although the wording of the SRQ exercise and the SRQ support differ, the motivation subtypes can be compared.

On the original SRQ questionnaires, the items are rated on a 7-point Likert scale. For the purpose of this study, the responses were given using five response choices (Hartley & MacLean, 2006): 1 (completely untrue), 2 (untrue), 3 (neutral), 4 (true), and 5 (completely true). Moreover, in order to improve comprehension, in the current study all items began with the stem (e.g., "I would exercise because...") rather than referring to the stem at the beginning of the questionnaire for each item. Prior to the data collection, five persons with mild to borderline ID were invited to complete both versions of the SRQ. They found both scales easy to comprehend and only a few minor adaptations to the phrasing and grammar were made to improve clarity, based on their recommendations. Based on the response pattern of these five individuals, the provided examples and narrative information, people with mild to borderline ID seemed able to recognize their own motivation states, and hence were able to distinguish between different types of extrinsic motivation. The full questionnaires can be obtained from the first author.

SRQ exercise

The SRQ exercise was developed on the basis of the TSRQ-ID towards changing substance abuse related behaviors, which was adapted by Frielink and colleagues (2015) from Williams and colleagues (n.d.). That is, the items remained equal, but the

stem of the items changed from "I would change my behaviors because..." to "I would exercise because...". The SRQ exercise consisted of 15 items divided into the following subscales: amotivation (e.g., "I have no idea why I would want to exercise"), external motivation (e.g., "I would exercise because I then get respect from other people"), introjected motivation (e.g., "I would exercise because I would feel guilty or ashamed of myself if I did not exercise regularly"), identified motivation (e.g., "I would exercise because I think that is best for my health"), and integrated motivation (e.g., "I would exercise because it fits with what I consider important in my life"). A mean score for each subscale was computed by summing the scores of the associated items and dividing the total score by the number of items.

SRQ support

The SRQ support was adapted from Williams, Grow, Freedman, Ryan, and Deci (1996), who focused on reasons for continuing to participate in a weight-loss program. The authors of the current study translated the items to Dutch and simultaneously simplified these items to improve comprehension by people with mild to borderline ID without losing the essence of the items. This translation process is described in more detail in Frielink and colleagues (2015). For the purpose of the current study, we changed the original stems "I am staying in the weight-loss program because..." and "I have been following the guidelines of the program because..." into "I want to receive support because..." and "I stick to my support appointments because...". The SRQ support consisted of 12 items instead of the original 13; the item "I am staying in the weight-loss program because I have invested so much money in this program" was removed as this item was not relevant for the present study as participants do not directly pay for the support. The SRQ support consisted of four subscales: external motivation (e.g., "I want to receive support because other people may otherwise think that I am a weak person."), introjected motivation (e.g., "I stick to my support appointments because I will otherwise feel guilty"), identified motivation (e.g., "I want to receive support because I think it is the best way to help myself."), and integrated motivation (e.g., "I stick to my guidance agreements because I think that they help me reach my goals"). A mean score for each subscale was computed by summing the scores of the associated items and dividing the total score by the number of items.

Data analysis

To investigate the hypothesized distinction of the four subtypes of extrinsic motivation among people with mild to borderline ID, a series of CFAs were conducted based on previous research among the non-intellectually disabled population. That is, regarding the SRQ exercise, three models were tested in CFA using Mplus 7.31 (Muthén & Muthén 1998-2015): model 1: a four-factor model as proposed by SDT by differentiating between external motivation, introjected motivation, identified motivation, and integrated motivation; model 2) a three-factor model based on Levesque and colleagues (2007)

differentiating between external motivation, introjected motivation, and autonomous motivation; and model 3) a two-factor model as proposed by Reid and colleagues (2009) differentiating between non-self-determined extrinsic motivation and self-determined extrinsic motivation. It should be noted that although the SRQ exercise encompassed an amotivation subscale, this subscale was not included in the SRQ support, and therefore excluded from the analyses. As the factor structure between both versions of the SRQ was hypothesized to be similar, the adopted model for the SRQ exercise was tested for the SRQ support as well.

The robust maximum likelihood MLR estimator for clustered continuous data was used. Although data were collected on an ordinal scale (5-point Likert scale), the data were treated as continuous because continuous MLR is a good estimation choice for ordinal data with five or more categories (Rhemtulla, Brosseau-Liard, & Savalei, 2012). To evaluate the goodness of model fit, the normed chi-square, the Root Mean Square Error of Approximation (RMSEA), the Bentler Comparative Fit Index (CFI), and the Standardised Root Mean Square Residual (SRMR) were used (Kline, 2011; Schweizer, 2010; see Table 1 for the used guidelines for what constitutes a good fit). In addition, the 'detection of misspecification'-procedure (Saris, Satorra, & van der Veld, 2009) was used, as the traditional fit indices have important drawbacks (i.e., no control for type I and type II errors) (Marsh, Hau, & Wen, 2004). To interpret the Modification Indices (MI) test for each of the restricted parameters of the model based on this procedure, Saris and colleagues (2009) suggest to set the minimum size of the misspecification detected by the MI test with a high likelihood (power > .75) at .10. The chi-square difference test was used to choose the best model; if the increase in chi-square was not significant, the reduced model was chosen. However, because the chi-square difference test is sensitive to sample size and hence may lead to rejection of reasonable models (Marsh et al., 2004), the Bayesian Information Criterion (BIC) and CFI indices were also assessed. Models with the lowest BIC are preferred, and decreases in CFI fit > .01 support the reduced model (Cheung & Rensvold, 2002).

Table 1. Guidelines to evaluate the goodness of model fit.

	Acceptable model fit	Good model fit
Normed chi-square (Bollen, 1989)	< 3.00	< 2.00
RMSEA (Browne & Cudeck, 1993)	< .08	< .05
CFI (Hu & Bentler, 1999)	> .90	> .95
SRMR (Kline, 2011)	< .10	

In addition, the internal consistency of both the SRQ exercise and the SRQ support was determined by computing Cronbach's alpha. Furthermore, the 2-week test-retest reliability was gauged by computing Pearson correlations between the first and second measurement and determined by interviewing 20 percent of the participants ($N = 40$) a second time. Values between .50 and .60 are sufficient for early stages research, but values above .80 should be pursued (Nunnally, Bernstein, & Berge, 1967).

Results

The means, standard deviations and range of the data of the hypothesized subscales of both the SRQ exercise and the SRQ support are presented in Table 2.

Table 2. Means, standard deviations and the range of the data of the subscales in this study.

Factor	SRQ exercise			SRQ support		
	Mean	SD	Min-Max	Mean	SD	Min-Max
External motivation	1.98	0.63	1.0-4.5	2.21	0.64	1.0-4.3
Introjected motivation	2.28	0.88	1.0-5.0	2.28	0.74	1.0-5.0
Identified motivation	3.84	0.83	1.0-5.0	4.02	0.62	2.0-5.0
Integrated regulation	3.44	0.95	1.0-5.0	3.69	0.61	1.5-5.0

Confirmatory Factor Analyses (CFA)

A series of CFA using Mplus 7.31 (Muthén & Muthén, 1998-2015) were conducted to test the hypothesized factorial structure of the SRQ regarding both exercise and support.

SRQ exercise

The global fit measures of the three tested models are presented in Table 3. Based on these fit measures, model 1 yielded a substantially better fit than the other two models. Although the chi-square test for the four-factor model was significant and only the SRMR met the recommended cut-off value, the model showed potential and provided the starting point for further investigation.

Based on the detection of misspecification-procedure (Saris et al., 2009), examination of modification indices resulted into six relevant misspecifications. The modification index between items 12 and 14 (both items belonged to the same latent variable) influenced the model fit the most, and therefore a parameter between those

Table 3. Comparison of the three tested models regarding SRQ exercise ($N = 184$).

Model	χ^2	df	χ^2 / df	RMSEA (90% CI)	CFI	SRMR	BIC	$\chi^2\Delta$ (df) [#]
1. Four factor model	152.03*	48	3.17	.109 (.089; .128)	.88	.083	4976.79	-
2. Three factor model	216.84*	51	4.25	.133 (.115; .151)	.81	.090	5069.28	64.81 (3)*
3. Two factor model	252.93*	53	4.77	.143 (.126; .161)	.77	.106	5105.44	100.09 (5)*

Note. *df* = degrees of freedom; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; SRMR = Standardized Root Mean Square Residual; BIC = Bayes Information Criterion; [#] $\chi^2\Delta$ (*df*) = Chi square difference test comparing the fit of models 2 and 3 with model 1, *df* is the difference in degrees of freedom between the two compared models; * $p < .05$

items was added. As a result the model fit increased (normed chi-square = 2.69, RMSEA = .096, CFI = .91, SRMR = .087); however, the RMSEA criterion was still not met. Moreover, examination of modification indexes showed two relevant misspecifications. Adding a parameter between the most influencing modification index between items 1 and 8 (both items belong to the same latent variable) resulted in an almost acceptable model (normed chi-square = 2.26, RMSEA = .083, CFI = .93, SRMR = .086); the RMSEA-criterion of $< .080$ was not met. Additionally, this model yielded one misspecification, between items 3 and 8. As both items appertained to the same latent variable, a parameter was added, resulting in an acceptable model (normed chi-square = 2.16, RMSEA = .079, CFI = .94, SRMR = .088). However, this four-factor model with three additional parameters contained one misspecification, between items 8 and 13. Whereas adding a parameter between these two items resulted in a model without misspecifications, it did not change the fit indices substantially. As this misspecification had no influence on the model, it is acceptable to maintain this misspecification into the model. So, by adding three parameters to the four-factor structure, the model fit is acceptable. However, as two of these misspecifications were related to item 8, another possibility was to remove item 8 from the model. The removal of item 8, in addition to the extra parameter between items 12 and 14, resulted in a similar acceptable model fit: normed chi-square = 2.12, RMSEA = .078, CFI = .94, SRMR = .080. Although this model contained one misspecification between items 6 and 7, it did not change the fit indices substantially, which therefore can be ignored. Because both acceptable models were similar, the model without item 8 was adopted, because it was simpler to interpret.

For this model (four factors with item 8 removed and one additional parameter between items 12 and 14, see Figure 1), all factor loadings were significant at a $p < .001$ level. The standardized factor loadings varied between .46 and .93 (see Figure 1). The correlation coefficients supported a quasi-simplex pattern of correlations among the subscales; adjacent subscales were more closely related than non-adjacent subscales

(see Figure 1 for the correlations between the subscales). That is, for example, external motivation and introjected motivation were substantially higher correlated ($r = .66$) than external motivation and integrated motivation ($r = .03$).

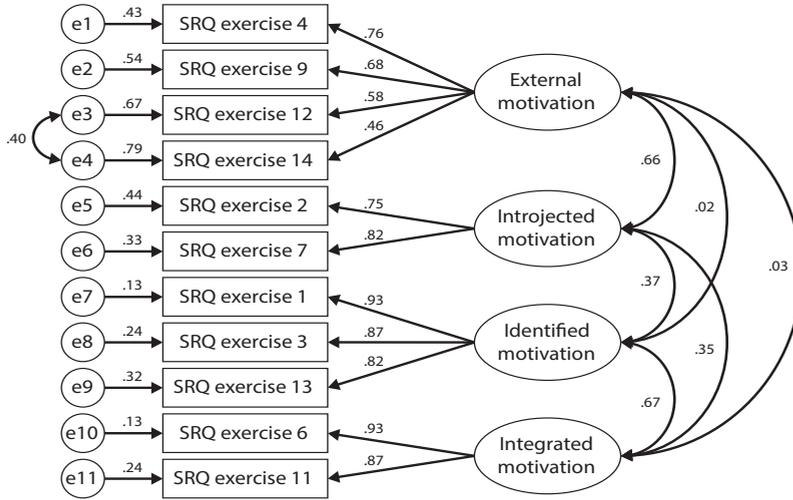


Figure 1. Visual representation of the four-factor model regarding the SRQ exercise ($N = 184$).

Note. The circles represent the latent variables and the rectangles represent items. Numbers to the left of the rectangles represent residuals (expressed as covariance). Numbers between the single-arrow-lines connecting latent variables and items indicate a hypothesized direct effect (expressed as standardized regression coefficients). Numbers between the bidirectional arrows connecting the latent variables imply a relationship between factors (expressed as correlations).

SRQ support

The CFA-results of the SRQ exercise were the starting point of the CFA regarding the SRQ support. Because of the removal of item 8 of the SRQ exercise, which is equivalent to item 6 of the SRQ support, item 6 was removed prior to the analyses. Next, in order to test whether a similar factor structure can be found between the SRQ exercise and the SRQ support, the global fit measures of a four-factor model were gauged: normed chi-square = 2.39, RMSEA = .087, CFI = .87, SRMR = .069. Although the chi-square test was significant and the RMSEA and CFI did not met the recommended cut-off values, the model showed potential and provided the starting point for further investigation. Examination of the modification indices on the basis of the detection of misspecification-

procedure (Sarlis et al., 2009) resulted into ten relevant misspecifications. The item that was most involved in several high modification indices was item 12. Consequently, this item was removed from the model for additional analyses.

A renewed CFA was conducted based on the remaining 10 items (i.e., item 6 was removed in advance and item 12 was removed based on the initial CFA), which resulted in a substantially improved model fit: normed chi-square = 2.13, RMSEA = .078, CFI = .91, SRMR = .064. Although the chi-square test for the four-factor model was significant, all fit indices met the recommended cut-off values. However, the model contained six misspecifications. As adding a parameter between items 3 and 5 (the modification index is the highest for those items) resulted in a substantially improved model fit, this misspecification cannot be ignored. Nevertheless, adding this parameter was not appropriate, because items 3 and 5 appertained to different latent variables. Therefore, removing one of the two items from the model was deemed to be the best solution. As item 3 appertained to a latent variable consisting of two items, this item could not be removed, and hence, item 5 was removed. This resulted in a similar model fit (normed chi-square = 2.13, RMSEA = .078, CFI = .93, SRMR = .062) containing three misspecifications (between items 1 and 7, items 7 and 10, and items 3 and 9). Although adding a parameter between any of these items substantially improved model fit, this was not appropriate as these items appertained to different latent variables. Therefore, removing one item from the model was deemed to be the best solution. As items 1 and 7 appertained to a latent variable consisting of two items, only item 10 could be removed. This resulted in a good model fit (normed chi-square = 1.38, RMSEA = .045, CFI = .98, SRMR = .049). Although this model contained one misspecification between items 1 and 7, it did not change the fit indices substantially, which therefore can be ignored. So, to summarize, the four-factor model without items 6, 12, 5 and 10 was adopted (see Figure 2).

All factor loadings were significant at a $p < .001$ level. The standardized factor loadings varied between .48 and .87 (see Figure 2). Similar to the SRQ exercise, the correlation coefficients supported a quasi-simplex pattern of correlations among the subscales, indicating that adjacent subscales were more closely related than non-adjacent subscales (see Figure 2 for the correlations between the subscales).

Reliability

The internal consistency of the SRQ exercise was found to be Cronbach's alpha .83, and for the SRQ support .59. The internal consistency for each latent variable is reported in Table 4; these ranged between .56 and .91. The 2-week test-retest reliabilities ($M = 14.6$ days, $SD = 2.0$, range = 11.0 – 21.0) of the SRQ factors ranged between .54 and .78 (see Table 4).

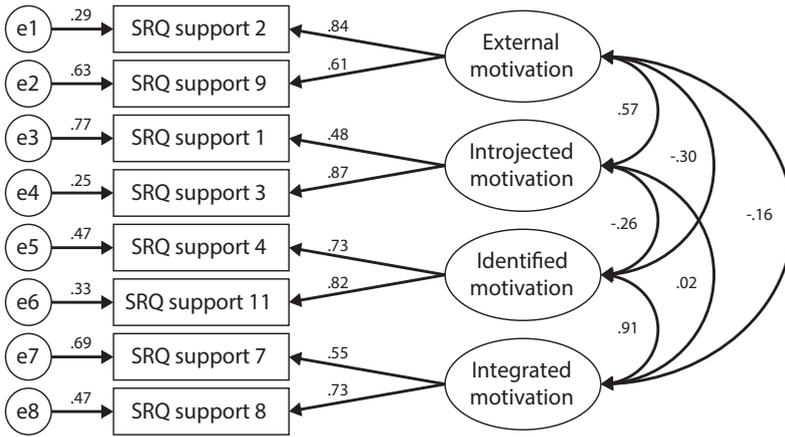


Figure 2. Visual representation of the four-factor model regarding the SRQ support ($N = 185$).

Note. The circles represent the latent variables and the rectangles represent items. Numbers to the left of the rectangles represent residuals (expressed as covariance). Numbers between the single-arrow-lines connecting latent variables and items indicate a hypothesized direct effect (expressed as standardized regression coefficients). Numbers between the bidirectional arrows connecting the latent variables imply a relationship between factors (expressed as correlations).

Table 4. Internal consistencies and test retest correlations of the four types of motivation according to the Self-Determination Theory.

Factor	Internal consistencies*		Test retest reliabilities**	
	SRQ exercise	SRQ support	SRQ exercise	SRQ support
External motivation	.74	.66	.78	.65
Introjected motivation	.76	.58	.57	.71
Identified motivation	.91	.75	.66	.62
Integrated regulation	.90	.56	.54	.77

* Internal consistencies are measured as Cronbach's alpha; ** Test retest reliabilities are measured as Pearson correlations.

Discussion

The results of this study supported the distinction between the four subtypes of extrinsic motivation as proposed by SDT – external motivation, introjected motivation, identified motivation, and integrated motivation – using the SRQ for exercise among people with mild to borderline ID in the Netherlands. With several modifications to the model, a similar four-factor structure of the SRQ support was found. In addition, the correlation coefficients supported a quasi-simplex pattern of correlations among the subscales of both SRQ versions, indicating that adjacent subscales were more closely related than non-adjacent subscales. That is, the high correlation coefficients between external motivation and introjected motivation (together controlled motivation) and between identified motivation and integrated motivation (together autonomous motivation) indicated the difference between controlled motivation and autonomous motivation. This finding is important, as it implies that the phenomenal classification of these types of motives falls along a continuum of autonomy. The fact that this dimensional pattern emerges reveals that motivation is nuanced in people with mild to borderline ID too.

The four-factor structure is consistent with SDT (Ryan & Deci, 2000). Although the correlation coefficients supported a quasi-simplex pattern of correlations, the results are not in line with the proposal of Reid and colleagues (2009) to distinguish two broad subtypes of extrinsic motivation instead of four subtypes of extrinsic motivation. While Reid and colleagues decreased the motivational types as an adaptation to the cognitive limitations of people with mild to borderline ID, the current study indicated that the responses to items by people with mild to borderline ID reveal a four-dimensional structure of extrinsic motivation.

Moreover, the findings of the current study undermine the assumption of Katz and Cohen (2014) that results of self-reported questionnaires are questionable because people with ID may experience difficulties with activities requiring symbolic, abstract, and conceptual thinking and with responding to cognitive complex sentences. Katz and Cohen (2014) therefore used a projective instrument as an alternative research approach to assess autonomous motivation in students with borderline ID. Although the current results indicated that people with mild to borderline ID are able to distinguish between different types of motivation based on relatively complex psychological constructs, it would be interesting to compare both approaches in one study to collate whether the different approaches result into the same assessment.

The domain of motivation has not been studied extensively within the ID-field, but people with ID are often perceived as being less motivated and more passive (Emond Pelletier & Joussemet, 2016). Although it was not the primary aim of the current study, our findings did not confirm this assumption. Indeed, the results of the study show that participants generally experienced autonomous motivation for both exercise and support rather than controlled motivation. When comparing the mean scores of the current study with the results described by Reid and colleagues (2009), the scores in the current study were higher. That is, were Reid and colleagues reported

mean scores of 2.12 and 1.70 for the subscales self-determined extrinsic motivation and non-self-determined extrinsic motivation, respectively, the current study found mean scores of 3.64 and 2.13 for these combined subscales. Future research is needed to explore whether the used method (i.e. self-report questionnaire vs pictorial scale) might have caused this difference.

Regarding the reliability of the SRQ among people with mild to borderline ID, the current study showed sufficient Cronbach's alphas and test-retest reliabilities for early stage research for both SRQ-versions. Regarding the test-retest reliabilities, the reliability scores differed fairly on three of the four scales, of which two were in favor of the SRQ support. That is, the scores on the SRQ support were more stable on two separate occasions than the scores on the SRQ exercise. A possible explanation for the higher test retest reliability of the SRQ support might be that people with mild to borderline ID are lifelong more or less dependent from support staff. Therefore, it might be hard for them to imagine a life without support staff, and hence, motives for receiving the support might not fluctuate much within a two-week period. In contrast, motivation for exercising might change more easily over time and can even be influenced by the course of everyday life. Cronbach's alphas differed fairly on three of the four scales too, in favor of the SRQ exercise. A possible explanation for the relatively low and fluctuating alphas is the formulation of some of the items, for example, "I stick to my support appointments because I want other people to see that I really do my best". Although this item appertained to the subtype external motivation, the word 'want' also implies a more autonomous character. Moreover, the items regarding introjected motivation consisted of an avoidant type aimed at avoiding low self-worth rather than an approach type aimed at attaining high self-worth (Assor, Vansteenkiste, & Kaplan, 2009). A mixture between both types might increase the reliability of the subscale. The limited number of items for each scale are deemed to be another clarification for the relatively low and fluctuating alphas. While the internal consistency and the test-retest reliabilities are relatively low for both versions of the SRQ, it should be noted that measuring motivation among people with mild to borderline ID is in the early stage of research. In this respect, Nunnally and colleagues (1967) recommended the acceptance of modest alpha reliabilities of .50 to .60. All Cronbach's alphas were higher than the minimum value of .50. The Spearman – Brown prophecy formula was used to compute the equivalent internal consistency values if two-item scales had been represented by more items. For example, a two-item scale with an alpha of .56 would have an alpha > .70 with a four-item scale, which is an acceptable reliability. Hence, adding items to each scale in future research would be highly desirable.

Limitations and implications for future research

Some limitations of this study should be mentioned. Firstly, 165 of the 368 individuals who were invited to participate in the study declined. As there were no demographics available for the non-participants, it was not possible to compute the potential non-response bias by comparing participants with non-participants. When asked for the reason not to participate, the non-participants mainly indicated that they declined because of the time investment (1.5 hours) or because support staff reasoned participation would be too stressful for them. Secondly, although the presented data in the current study point toward potential construct validity, more research is needed. Thirdly, only a small number participated in the test-retest reliability ($N = 40$) and results should be replicated with larger sample sizes. Fourthly, there was no cross-validation sample available in order to test the generalizability of the presented models.

Concluding remarks

Overall, the results of the current study provide initial evidence for the universality of the four subtypes of extrinsic motivation across populations with and without ID. This is important as the more differentiated our understanding of motivation in people with mild to borderline ID, the better we can design training and interventions programs that optimally motivate self-care and enhance flourishing.

The results should nevertheless be interpreted with caution, since more research is needed to further improve the reliability of the SRQ among people with mild to borderline ID. Adding items to the scales seem to be an important first step in this respect. Moreover, future research should focus on more extensive construct validity of the SRQ. Examination of the SRQ constructs for people with mild to borderline ID in both behavior change initiatives as well as in daily life activities (e.g., exercise, healthy diets) would be both descriptively and clinically helpful. In addition, future research might focus on the evaluation of the predictive validity to further confirm the validity of the SRQ. It is recommendable to examine the association between the different subtypes of extrinsic motivation and various outcomes (e.g., involvement in therapy, well-being, and maintenance of change over time) among people with mild to borderline ID.

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Chapter 5

Autonomy support, need satisfaction, and motivation for support among adults with intellectual disability: Testing a Self- Determination Theory model

This chapter has been resubmitted for publication as:

Frielink, N., Schuengel, C., & Embregts, P. J. C. M. (2016). *Autonomy support, need satisfaction, and motivation for support among adults with intellectual disability: Testing a Self-Determination Theory model.*

Abstract

The tenets of Self-Determination Theory as applied to support were tested with structural equation modelling for 186 people with mild to borderline intellectual disability. The results showed that: 1) perceived autonomy support was positively associated with autonomous motivation and with satisfaction of need for autonomy, relatedness, and competence; 2) autonomous motivation and need satisfaction were associated with higher psychological well-being; 3) autonomous motivation and need satisfaction statistically mediated the association between autonomy support and well-being; and 4) satisfaction of need for autonomy and relatedness was negatively associated with controlled motivation, while satisfaction of need for relatedness was positively associated with autonomous motivation. The Self-Determination Theory provides insights relevant for improving support for people with intellectual disability.

Key words

self-determination theory, autonomy support, autonomous motivation, need satisfaction

Working towards greater equity, the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD; United Nations, 2006) stresses that irrespective of the type of disability, persons with a disability should obtain better opportunities for taking control over their own lives and making their own decisions. According to the supports model of Thompson and colleagues (2009; 2015), people with intellectual disability (ID) more often than people without ID experience a mismatch between their personal competence and environmental demands, resulting in particular types and intensity of support needs. Regardless of this, the Self-Determination Theory (SDT; Deci & Ryan, 2000) highlights the imperative role of autonomy support in support (Ryan & Deci, 2000). Autonomy support involves an environment that minimizes control and pressure while supporting self-initiatives, offering pertinent information, providing choices, and taking the other's perspective (Williams et al., 2006), thus helping to realize the aims of the UNCRPD to foster taking control and making own decisions. Within non-intellectual disabled population, autonomy support is critical for, among other outcomes, subjective well-being (Deci & Ryan, 2000). For example, Chirkov and Ryan (2001) reported that adolescents from both the United States and Russia who perceived their teachers and parents as autonomy supportive experienced greater well-being. In addition, Ratelle, Simard, and Guay (2013) found that when university students perceived autonomy support from significant others in their lives (i.e., their romantic partner, parents, and friends) with respect to their academic choices and decisions, they reported higher levels of happiness and satisfaction.

According to SDT, the linkage between autonomy support and subjective well-being is mediated by two sets of cognitions: 1) basic psychological need satisfaction and need frustration, and 2) autonomous motivation (Deci & Ryan, 2000; Ryan & Deci, 2000). To the best of our knowledge, no studies have examined the association between autonomy support and subjective well-being among people with ID, and therefore such a study is poised to add a potential dynamic factor to well-known, more static factors in well-being, such as, income, education, occupation, and demographical characteristics like age and gender (e.g., Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006; Kahneman, Diener, & Schwarz, 2003; Keyes, Shmotkin, & Ryff, 2002).

Basic psychological need satisfaction and frustration

Deci and Ryan (2012) postulated that autonomy together with relatedness and competence are innate, universal psychological needs. The need for autonomy refers to having the feeling that one has a sense of choice and volition. The need for relatedness is about feeling connected to and taking care of and / or for by other people. The need for competence refers to feeling effective in achieving valued outcomes. Regardless of level of intellectual functioning, satisfaction of these needs is vital for people to flourish, to experience subjective well-being, and to prevent maladaptive functioning (Deci, 2004; Ryan & Deci, 2000). For example, on the basis of their cross-cultural study, Church and colleagues (2012) found that perceived need satisfaction predicted well-

being in college students in eight countries. Moreover, Ryan, Bernstein, and Brown (2010) showed that daily fluctuations in perceived need satisfaction co-varied with daily fluctuation in well-being.

An important distinction has to be made between need satisfaction and need frustration (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011; Vansteenkiste & Ryan, 2013). Whereas need satisfaction is strongly related to well-being, need frustration uniquely predicts ill-being. That is, a low score on need satisfaction (dissatisfaction) is conceptually different from need frustration (e.g., "I do not feel related" vs. "I feel rejected"). For example, individuals may feel lonely because their need for relatedness with their family gets deprived (dissatisfaction) or because attempts to establish contact are thwarted (i.e., need frustration). Such frustrations may cause specific emotions, such as humiliation and defeat in the case of rejection by others (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011). Differential emotional responses to low need satisfaction and need frustration may predict differential associations with adaptive and maladaptive developmental outcomes. For example, in their study among athletes, Bartholomew, Ntoumanis, Ryan, Bosch, and Thøgersen-Ntoumani (2011) found that need satisfaction was related to positive outcomes with respect to sport participation (i.e., positive affect and vitality), while need frustration was related to maladaptive developmental outcomes (i.e., negative affect, burnout, and depression). Furthermore, need satisfaction was related to athletes' perceptions of autonomy support, whereas need frustration was associated with coach control.

Autonomous motivation and controlled motivation

According to SDT, motivation is differentiated in types (Deci & Ryan 2000), rank ordered from a total lack of motivation (i.e., amotivation) to engagement in an activity because the activity in itself is enjoyable or interesting (i.e., intrinsic motivation). Bridging amotivation and intrinsic motivation, the SDT differentiates four subtypes of extrinsic motivation varying in the extent to which their regulation is autonomous (Ryan & Deci 2000): external motivation, introjected motivation, identified motivation, and integrated motivation. The least autonomous subtype of extrinsic motivation, external motivation, occurs when people take action in order to avoid punishment, to obey an external request, or to obtain a reward. The second subtype of extrinsic motivation is called introjected motivation and drives action to manage feelings of pride and worth, and to evade shame and guilt. External motivation and introjected motivation are, together, considered as 'controlled motivation'. Third, a more autonomous subtype of extrinsic motivation is called identified motivation, which refers to actions that are valued by the person. Lastly, the most autonomous subtype of extrinsic motivation is labeled as integrated motivation, driving actions that are fully endorsed by other behaviors and values of the person. Identified and integrated motivation, along with intrinsic motivation, are considered as 'autonomous motivation'.

Autonomous motivation and controlled motivation are differentially linked to outcomes in non-intellectually disabled people. Autonomous motivation is associated with positive behaviors and outcomes such as better life satisfaction and subjective well-being (Ryan & Deci, 2000), greater adherence to medications among people with chronic illnesses (Williams, Rodin, Ryan, Grolnick, & Deci, 1998), greater levels of physical activity (Levesque et al., 2007), and greater involvement and better psychotherapy outcomes (Zuroff et al., 2007). In contrast, controlled motivation is associated with negative outcomes such as depression (Levesque et al., 2007) and ill-being (Deci & Ryan, 2008). Therefore, given the focus of the current study on well-being and its potential association with autonomous motivation, the primary focus of the analyses in this study was on autonomous motivation rather than controlled motivation. However, the relationship between controlled motivation and ill-being was also taken into account.

The current study

As is apparent from the above, autonomy support, need satisfaction, and autonomous motivation are related, fundamental constructs within SDT and important for subjective well-being. In a similar vein, need frustration and controlled motivation are related constructs, highly associated with ill-being. Although it has been argued that autonomy support, need satisfaction, and autonomous motivation are universally important (Deci, 2004; Deci & Ryan, 2000), these ideas have been seldom tested with people with ID. Based on their study among students with a learning disability, Deci, Hodges, Pierson, and Tomassone (1992) concluded that students functioned better with an autonomy-supportive teacher rather than a controlling teacher. A qualitative report by Farrell, Crocker, McDonough, and Sedgwick (2004) suggested that motivational orientations of people with ID may be stimulated by autonomy-supportive environments. In addition, Katz and Cohen (2014) assessed autonomous motivation in students with borderline ID (IQ between 70 and 85) using a projective instrument developed by Katz, Assor, and Kanat-Maymon (2008). The results of their study provided support for the SDT-assumption that, also among people with ID, autonomous motivation is related to well-being.

To the best of our knowledge, however, no studies have been conducted to test the theoretical premises of SDT among people with ID within one statistical model. Therefore, the aim of the current study was to test whether a model linking psychological concepts according to the tenets of SDT would fit with data from people with mild ID (defined as IQ between 50 and 70) and borderline intellectual functioning (IQ between 70 and 85), hereafter designated as people with mild to borderline ID, who received at least weekly paid support. As people with borderline intellectual functioning often have comparable characteristics and support needs to people with mild ID, people with borderline intellectual functioning and problems in their adaptive functioning in the Netherlands are eligible to the same specialized mental health care organizations as

people with an ID (IQ < 70). Hence, this target group is commonly included in research, practice, and policy in the Netherlands. The defined SDT-model focused on the domain of support, because support is an important domain in the lives of people with mild to borderline ID, and therefore served as a first test domain. The conceptual model of the current study is presented in Figure 1.

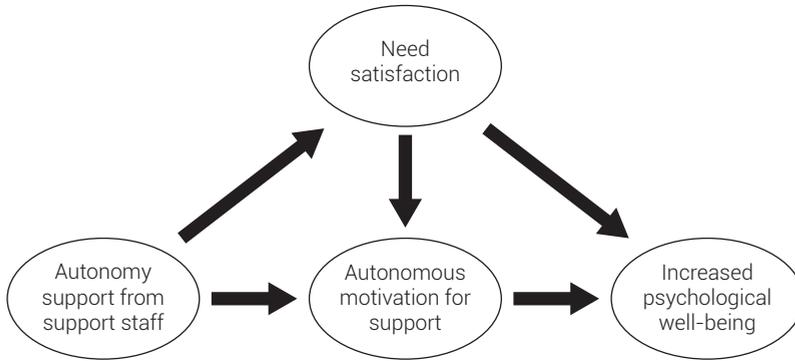


Figure 1. *The main premises of Self-Determination Theory to be tested within the domain of support among people with mild to borderline intellectual disability.*

In sum, the current study examined to what extent a model based on SDT would provide a parsimonious account of the linkages between autonomy support, need satisfaction, autonomous motivation, and subjective well-being in people with mild to borderline ID. In order to do so, we first assessed the global model fit of the presented model using Structural Equation Modelling. Next, the individual paths within the model were examined to provide support for the relationships between the SDT-constructs. That is, it was first hypothesized that autonomy support from support staff would relate positively to autonomous motivation for continuing support, well-being, and the satisfaction of the basic needs for autonomy, relatedness, and competence, whereas it would relate negatively to controlled motivation for continuing support and ill-being. Second, it was hypothesized that need satisfaction would relate positively to autonomous motivation for continuing support and negatively to controlled motivation for continuing support. Third, it was hypothesized that both autonomous motivation for continuing support and need satisfaction would associate positively with well-being (measured as subjective well-being and general life satisfaction) and negatively with ill-being (measured as depression), whereas controlled motivation for continuing support would link to greater ill-being. Last, the indirect effects within the model were examined. That is, it was hypothesized that both autonomous motivation for continuing support and need satisfaction would mediate the relationship between autonomy support and well-being. Moreover, it was hypothesized that need satisfaction would mediate the relationship between autonomous motivation for support and well-being.

Materials and methods

Participants

Participants ($N = 186$; 110 male) ranged in age from 18 to 84 years ($M = 40.3$ years, $SD = 14.9$). Inclusion criteria were: a) an age ≥ 18 years, b) mild to borderline ID (IQ-score between 50 and 85), and c) at least weekly contact for a minimum of three months with paid support staff. The support provided by support staff was delivered by four ID services in the Netherlands which offer residential homes, 24-hour community residences, ambulant support at clients' own homes, and day care, and focused primarily on improving skills such as household tasks, using money, and travelling independently. Mental health care was part of these ID services. The mean IQ on file was 67; 109 participants had a mild ID and 77 had a borderline level of intellectual functioning. Additional demographic characteristics of the participants are described in Table 1.

Measures

Basic Psychological Need Satisfaction and Frustration Scale – Intellectual Disability (BPNSFS-ID)

The BPNSFS was originally developed by Chen and his colleagues (2015) and adapted by Frielink, Schuengel, and Embregts (2016a) for use among people with mild to borderline ID. The BPNSFS-ID assesses both satisfaction and frustration of the three basic psychological needs for autonomy, relatedness, and competence. The BPNSFS-ID consists of 24 items (eight for each subscale; four for satisfaction and four for frustration) and includes items such as "In my life, I can do whatever I want when I want" (satisfaction of the need for autonomy), "In my life, I feel excluded by the people who I would like to belong to" (frustration of the need for relatedness), and "In my life, I have the feeling that I can reach my goals" (satisfaction of the need competence). All items were rated on a 5-point Likert scale (1 = completely untrue, 5 = completely true). Frielink and colleagues (2016a) confirmed an adequate factorial structure of the BPNSFS-ID, comprising the satisfaction and frustration of each of the three needs. Moreover, they found an internal consistency of the BPNSFS-ID of .92.

Self-Regulation Questionnaire – support (SRQ support)

The Treatment SRQ (TSRQ) was originally developed by Williams, Grow, Freedman, Ryan, and Deci (1996) and adapted into the SRQ support by Frielink, Schuengel, and Embregts (2016b) for use among people with mild to borderline ID. The SRQ support assesses the degree to which a person's motivation for continuing support is autonomous versus controlled. The SRQ support consists of 12 items, all measured on a 5-point Likert scale (1 = completely untrue, 5 = completely true). Participants are asked to evaluate how well each statement represents their reasons for continuing

Table 1. Demographic information with respect to the 186 participants of the current study.

	N	Percent (%)	Mean	SD
Gender				
Male	110	59		
Female	76	41		
Age in years			40.3	14.9
20-29	62	33		
30-39	32	17		
40-49	41	22		
50 and over	51	27		
Intellectual functioning			67.3	9.4
Mild intellectual disability	109	59		
Borderline intellectual functioning	77	41		
Living condition				
Living independently in community (with or without partner)	67	36		
Living with family	12	6		
Living in supported accomodation in the community	84	46		
Living in supported accomodation in residential facility	23	12		
Ethnicity				
Caucasian	178	96		
Other	8	4		
Length of contact with support staff in months			48.7	50.3
3-6 months	12	6		
7-12 months	26	14		
13-24 months	39	21		
24-60 months	66	35		
Over 60 months	38	20		
Unspecified, but > 3 months	5	3		

their support, differentiating between four subscales: external motivation (e.g., "I want to receive support because other people may otherwise think that I am a weak person."), introjected motivation (e.g., "I stick to my support appointments because I will otherwise feel guilty"), identified motivation (e.g., "I want to receive support because I think it is the best way to help myself."), and integrated motivation (e.g., "I stick to my guidance agreements because I think that they help me reach my goals"). Frielink and colleagues (2016b) confirmed the 4-factor structure of the SRQ support. Moreover, they found an internal consistency of the overall SRQ support scale of .59. The internal consistency for each latent variable ranged between .56 and .75, and the 2-week-test-retest reliabilities of the latent variables ranged between .62 and .77.

Health Care Climate Questionnaire – Intellectual Disability (HCCQ - ID)

The HCCQ was originally developed by Williams and colleagues (1996) and adapted into the HCCQ-ID by Frielink, Schuengel, and Embregts (2016c) for use among people with mild to borderline ID. The HCCQ-ID assesses participants' perceptions of the degree to which their support staff is autonomy-supportive during the support. The questionnaire consists of 15 items on a 5-point Likert scale (1 = completely untrue, 5 = completely true). The original scale was a 7-point Likert scale, but for the purpose of this study, the response format was reduced from seven to five response choices (Hartley & MacLean, 2006). Items included "My support staff answers my questions fully and carefully" and "I feel understood by my support staff". A global mean score for the HCCQ-ID was calculated by summing the scores of the corresponding items, after reversing the single reverse-scored item (i.e., item 13), and dividing the total score by the number of items; higher mean scores represent higher levels of perceived autonomy support. Frielink and colleagues (2016c) confirmed the 1-factor structure of the HCCQ-ID. In addition, they found an internal consistency of the HCCQ-ID .93 and a 2-week-test-retest reliability of .85.

Satisfaction with Life Scale (SWLS)

The SWLS (Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item self-report questionnaire that assesses global life satisfaction and includes items such as "In most ways, my life is ideal". The SWLS is available in numerous languages, including Dutch (Arrindell, Heesink, & Feij, 1999). In a pilot, five persons with mild to borderline ID completed this Dutch SWLS and found four of the five items easy to comprehend. Based on their recommendations, minor adaptations to the phrasing were made to one item (item 4) to improve clarity. On the original scale, the response format comprised a 7-point Likert scale. Again, for the purpose of this study, the response format was reduced to five response choices, whereas 1 = completely untrue and 5 = completely true. Item responses were averaged; higher scores indicated higher levels of life satisfaction. Recently, Lucas-Carrasco and Salvador-Carulla (2012) examined the psychometric properties of the SWLS in persons with ID. Consistent with previous studies (Diener

et al., 1985; Pavot & Diener, 2008), they found a one-factor structure to yield the best fit. In addition, a Cronbach's alpha of .79 was found and convergent validity showed moderate-to-high correlations with two general questions of the WHOQOL-BREF (WHOQOL-Group, 1998).

Cantril ladder

Subjective well-being was assessed by Cantril's Ladder of Life (Cantril, 1965). It is a single-item measure asking participants the following question (in Dutch): "Here is a picture of a ladder. Suppose the top of the ladder represents the best possible life (10) for you and the bottom of the ladder the worst possible life (0). Where on this ladder do you feel you personally stand at the present time?". A higher score indicates better well-being. The Cantril ladder has been used in numerous studies among various populations and in different settings, including studies in people with learning disability (e.g., Canha, Simões, Matos, & Owens, 2016; Pacoricona Alfaro, Ehlinger, Spilka, Ross, Sentenac, & Godeau, 2016) and a study in people with cerebral palsy and ID (Mesterman et al., 2010), and is considered to be a valid and reliable measure of subjective well-being (Atkinson, 1982; Jenkins et al., 2005; Kempen, Jelcic, & Ormel, 1997). Dagnan and Ruddick (1995) have demonstrated the effectiveness of the use of visual analogue scales with people with a learning disability.

Beck Depression Inventory – II – Dutch Version (BDI-II-NL)

The BDI-II-NL (Beck, Steer, & Brown, 1996; van der Does, 2002), a 21-item self-report scale, assesses severity of depression symptoms corresponding to the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV, American Psychiatric Association, 1994). Items of the BDI-II-NL involved different symptoms of depression such as hopelessness, guilt, sadness, self-blame, loss of appetite, and exhaustion. On each item, respondents are asked to select out of four statements the statement that best represents their current mood over the last two weeks. Answers were scored from 1 to 4 (higher score implies more severe depressive symptoms), resulting in a total score between 21 and 84. Lindsay and Skene (2007) performed factor analyses, confirming the same factor structure of the scale in people with ID compared to the typical population. McGillivray and Kershaw (2015) found a Cronbach's alpha for the BDI-II of .86 among people with ID.

Procedure

After ethical approval by the Ethics Committee of Tilburg University, data collection took place between June 2013 and September 2014 within four ID services in the Netherlands. Depending on the size of the ID service, the authors selected at random potential participants for each organization, whereupon study information was sent to all support staff of these potential participants by mail to explain the purpose of the study. Next, the first author contacted the potential participants individually by

telephone, explaining the purpose of the study and inviting them to participate. A total of 368 individuals were invited to participate in the study; 165 declined, resulting in 203 participants. The main reasons for not participating were the time investment (1.5 hours) or because support staff reasoned that participation would be too stressful for them. With those who accepted the invitation, an appointment was made, at least one week after the phone call, to provide enough time to reconsider their participation. After participation, 17 participants were excluded because they did not meet the inclusion criteria, leaving a total of 186.

The first author visited each participant two times for the duration of approximately 45 to 60 minutes per visit, unless the participant understood the questions rapidly; in those cases all questionnaires were filled in during one visit. After a brief initial conversation to put the participant at ease, the purpose of the study was explained once again and if the participant agreed to participate, an informed consent form was filled in. Because it was expected that not all participants were able to read the questions themselves, and in order to maintain the same procedure for all participants, during each measurement the researcher read each question aloud from the computer while the participant sat next to the researcher to read along. The participant verbally indicated the response by giving the number (in most cases 1 to 5) which was then recorded and logged by the researcher on the computer using the online survey software Qualtrics. In case no internet connection was available, the questionnaires were filled in on paper and entered in Qualtrics at a later moment. Fidelity of these data entries was checked in 20 percent of the surveys; no errors were found. The vast majority of the participants understood all items; for those who needed help, a standardized explanation was given. In the case a participant did not understand the item after this standardized clarification, the item response was recorded as missing. After approximately 45 to 60 minutes, depending on concentration, attention span, and stamina, the visit was stopped and, in consultation with the participant, continued the next week. After completing all questionnaires, the participants received a ten euro cash reward.

Data analysis

The analysis were carried out in four steps. First, data were screened for normality and multicollinearity. Second, preliminary analyses of means, standard deviations, range of the data, and the Cronbach's alpha's (α) of the latent variables that were included in the model were computed. Third, the proposed path model was tested using Mplus 7.31 (Muthén & Muthén, 1998-2015). Fourth, the standardized parameter estimates were computed to assess whether the direct and indirect relationships within the model were significant.

Given the complexity of the model and the sample size, we used item parceling (Kline, 2011). The parcels were constructed by assigning each item randomly and without replacement to a parcel. As recommended by Little, Rhemtulla, Gibson, and

Schoemann (2013), the items were averaged rather than summed to aid interpretation. With respect to the path model, the global model fit was assessed using the robust maximum likelihood MLR estimator for clustered continuous data was used. Although most data were collected on an ordinal scale (5-point Likert scale), the data were treated as continuous because continuous MLR is a good estimation choice for ordinal data with five or more categories (Rhemtulla, Brosseau-Liard, & Savalei, 2012). To evaluate the goodness of model fit, four statistics were used (Kline, 2011; Schweizer, 2010). First, the normed chi-square was evaluated for model fit; a value < 3.00 was considered an acceptable fit and a value < 2.00 a good fit (Bollen, 2014). Second, the Comparative Fit Index (CFI) was assessed, with values between .90 and .95 suggesting an acceptable model fit and values $> .95$ a good fit (Hu & Bentler, 1999). Third, Standardized Root Mean Square Residual (SRMR) values $< .10$ indicated an acceptable fit (Kline, 2011). Fourth, Root Mean Square Error of Approximation (RMSEA) values between .05 and .08 were considered as acceptable fit and values $< .05$ indicated a good fit (Browne & Cudeck, 1993).

Results

Preliminary analysis

Prior to the path analysis, the data were screened to investigate whether the assumption of normal distribution was satisfied. As the skewness and kurtosis of all observed variables were < 2 and < 7 , respectively, the data were normally distributed (West, Finch, & Curran, 1995). In order to test the multicollinearity, the Variance Inflation Factors (VIF) were calculated. Although there is no conventional rule of thumb, it is suggested that VIF-values above 10 signifies the presence of multicollinearity (Tabachnick & Fidell, 2007). As the data did not show VIF-values greater than 10 (i.e., the highest VIF-value was 5.2), multicollinearity was not assumed. The means, standard deviations, range of the data, and the Cronbach's alpha's (α) of the latent variables that were included in the model are presented in Table 2.

Path analysis

The results of the path analysis showed an adequate to good fit of the data with the SDT-model as described in Figure 1. That is, although the chi-square test was significant, suggesting that the model deviated significantly from the data, the model showed the following global fit measures: normed chi-square = $169.22/77 = 2.20$, RMSEA = .080 [90% confidence interval .064 - .097], CFI = .959, SRMR = .091. When controlling for the demographic characteristics of the participants as described in Table 1 (i.e., gender, age, IQ-score, living condition, and length of contact between participants and their support

Table 2. Means, standard deviations, and Cronbach's alpha coefficients for the latent variables used in the study.

Latent variable	Mean	SD	Min-Max	α
Autonomy support	4.01	.56	1.93 - 5.00	.94
Controlled motivation	2.17	.65	1.00 - 4.00	.69
Autonomous motivation	3.86	.55	2.00 - 5.00	.77
Autonomy	3.92	.56	1.50 - 5.00	.87
Relatedness	4.02	.64	1.88 - 5.00	.91
Competence	3.64	.54	1.88 - 5.00	.86
Well-being (satisfaction with life)	3.58	.69	1.80 - 5.00	.85
Well-being (Cantril)	7.18	1.73	3.00-10.00	-
Ill-being	28.66	8.00	19.00-71.00	.90

staff; the variable ethnicity was not included as covariate due to the homogeneity of the responses), the model fit was comparable: normed chi-square = $220.54/117 = 1.88$, RMSEA = .070 [90% confidence interval .056 - .084], CFI = .956, SRMR = .070.

The individual paths in the model were examined based on the standardized parameter estimates (see Table 3). With regard to direct relationships, autonomy support was significantly related to the three basic psychological needs (autonomy: $\beta = .555, p < .001$; competence: $\beta = .442, p < .001$; relatedness: $\beta = .467, p < .001$). Autonomy support was also significantly and positively related to autonomous motivation ($\beta = .456, p < .001$); unexpectedly, the direct path from autonomy support to controlled motivation was also significant ($\beta = .304, p = .006$). With regard to direct relationships to well-being, there was a significant and positive relationship between well-being when measured with the SWLS and the needs for autonomy ($\beta = .347, p < .001$), competence ($\beta = .400, p < .001$), and relatedness ($\beta = .156, p = .014$). Well-being on the Cantril ladder showed a similar pattern (see Table 3). Well-being was also significantly and positively related to autonomous motivation ($\beta = .169, p = .002$ when measured with the SWLS and $\beta = .252, p < .001$ when measured with the Cantril ladder). The direct paths from autonomy support and from controlled motivation to well-being were not significant. When controlling for the available demographic characteristics of the participants (i.e., gender, age, IQ-score, living condition, and length of contact between participants and their support staff), the direct relationships between the variables were rather similar (see Table 3). There was one exception: the direct relationship between autonomy support and well-being when measured with the SWLS was significant when controlling

Table 3. *The direct and indirect relationships between the latent variables used in the study.*

	Model without covariates		Model with covariates	
	Estimate	P-value	Estimate	P-value
Direct effects				
Autonomy support with				
Autonomy	.555	.000	.557	.000
Relatedness	.467	.000	.482	.000
Competence	.442	.000	.439	.000
Autonomous motivation	.456	.000	.477	.000
Controlled motivation	.304	.006	.305	.008
Well-being (SWLS)	.137	.062	.156	.032
Well-being (Cantril)	.120	.136	.130	.110
Ill-being (BDI-II-NL)	-.074	.438	-.067	.495
Autonomous motivation with				
Autonomy	-.087	.358	-.074	.417
Relatedness	.226	.008	.198	.027
Competence	-.064	.468	-.039	.654
Controlled motivation with				
Autonomy	-.502	.000	-.523	.000
Relatedness	-.261	.006	-.209	.021
Competence	-.099	.375	-.122	.319
Well-being (SWLS) with				
Autonomy	.347	.000	.317	.000
Relatedness	.156	.014	.335	.002
Competence	.400	.000	.190	.000
Autonomous motivation	.169	.002	.172	.001
Controlled motivation	-.007	.911	-.024	.649

	Model without covariates		Model with covariates	
	Estimate	P-value	Estimate	P-value
Well-being (Cantril) with				
Autonomy	.348	.000	.344	.000
Relatedness	.143	.036	.147	.035
Competence	.306	.000	.277	.000
Autonomous motivation	.252	.000	.244	.000
Controlled motivation	-.076	.159	-.069	.189
Ill-being (BDI-II-NL) with				
Autonomy	-.335	.000	-.337	.000
Relatedness	-.097	.177	-.080	.285
Competence	-.426	.000	-.431	.000
Autonomous motivation	-.025	.667	-.032	.603
Controlled motivation	.068	.316	.060	.382
Indirect effects				
Autonomy support - Well-being (SWLS) via				
Controlled motivation	-.002	.910	-.007	.644
Autonomous motivation	.077	.017	.082	.015
Autonomy	.193	.000	.176	.000
Relatedness	.073	.026	.092	.007
Competence	.177	.000	1.47	.000
Autonomy support - Well-being (Cantril) via				
Controlled motivation	-.023	.194	-.021	.225
Autonomous motivation	.115	.002	.116	.003
Autonomy	.193	.000	.191	.000
Relatedness	.067	.048	.071	.044
Competence	.135	.000	.121	.001

	Model without covariates		Model with covariates	
	Estimate	P-value	Estimate	P-value
Autonomy support - Ill-being (BDI-II-NL) via				
Controlled motivation	.021	.313	.018	.372
Autonomous motivation	-.012	.670	-.015	.609
Autonomy	-.186	.002	-.188	.001
Relatedness	-.045	.184	-.038	.291
Competence	-.188	.001	-.189	.001
Autonomy support - Controlled motivation via				
Autonomy	-.279	.000	-.291	.000
Relatedness	-.122	.015	-.101	.023
Competence	-.044	.398	-.054	.341
Autonomy support - Autonomous motivation via				
Autonomy	-.048	.366	-.041	.420
Relatedness	.106	.013	.095	.031
Competence	-.029	.480	-.017	.656

for the demographic characteristics of the participants ($\beta = .156, p = .032$) while not significant when not controlling for these demographic characteristics ($\beta = .137, p = .062$).

With regard to the indirect relationships, autonomy support was related to controlled motivation indirectly via the mediating variables of autonomy ($\beta = -.279, p < .001$) and relatedness ($\beta = -.122, p = .015$); competence was not a significant mediating variable ($\beta = -.044, p = .398$). In addition, autonomy support was related to autonomous motivation indirectly via the mediating variable of relatedness ($\beta = .106, p = .013$); autonomy ($\beta = -.048, p = .366$) and competence ($\beta = -.029, p = .480$) were no significant mediating variables. Moreover, autonomy support was significantly related to well-being (measured with the SWLS) indirectly via the mediating variables of autonomy ($\beta = .193, p < .001$), competence ($\beta = .177, p < .001$) and relatedness ($\beta = .073, p = .026$). In addition, autonomy support was also related to well-being indirectly via the mediating variable of autonomous motivation ($\beta = .077, p = .017$); the indirect relation via controlled motivation was not significant ($\beta = -.002, p = .910$). A similar pattern of indirect relationships between autonomy support and well-being emerged with the Cantril ladder (see Table 3). Finally, with respect to ill-being, autonomy support was

related to ill-being indirectly via the mediating variables of autonomy ($\beta = -.186, p = .002$) and competence ($\beta = -.188, p = .001$); relatedness was not a significant mediating variable ($\beta = -.045, p = .184$). In addition, the indirect paths from autonomy support to ill-being via mediating variables autonomous motivation ($\beta = -.012, p = .670$) and controlled motivation ($\beta = .021, p = .313$) were not significant.

When controlling for the available demographic characteristics of the participants (i.e., gender, age, IQ-score, living condition, and length of contact between participants and their support staff), the indirect relationships between the variables were rather similar (see Table 3).

Discussion

The SDT was largely consistent with the interrelationships found between autonomy support, need satisfaction, autonomous motivation, and subjective well-being among people with mild to borderline ID. The direct associations as specified by the theory showed an adequate to good fit to the structural model that was tested. In addition, the associations were consistent with autonomous motivation and need satisfaction as explanations for the linkage between autonomy support and well-being. Therefore, similar to the general population, autonomy support, autonomous motivation, and satisfaction of basic psychological needs for autonomy, relatedness, and competence are important, interrelated concepts for people with mild to borderline ID in order to achieve subjective well-being.

Perceived autonomy support from support staff was hypothesized to predict autonomous motivation for continuing support and satisfaction of the basic needs for autonomy, relatedness, and competence, which, in line with previous research (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011), were both expected to relate to optimal psychological well-being. The results of the current study supported this hypothesis for people with mild to borderline ID. In addition, with regard to the indirect relationships between these constructs, both autonomous motivation and satisfaction of the needs for autonomy, relatedness, and competence mediated between autonomy support and well-being. They therefore explain the non-significant direct effect between autonomy support and well-being within this model. These mediating effects parallel results by Deci, Ryan, Gagné, Leone, Usunov, and Kornazheva (2001) within a work environment, showing that management autonomy support was associated with need satisfaction of employees, which, in turn, was associated with, among other outcomes, well-being. Hence, the model confirms that being perceived as autonomy supportive may be an important quality for support staff who aim to support the well-being of people with ID.

In the current study, it was also hypothesized that satisfaction of autonomy, relatedness, and competence would relate positively to autonomous motivation and negatively to controlled motivation for continuing support. The latter part of

the hypothesis was supported regarding the needs for autonomy and relatedness, suggesting that the more people with mild to borderline ID were dissatisfied with their needs for autonomy and relatedness, the more they indicated continuing support with a sense of pressure, demand, or coercion. Because need satisfaction supports the internalization of regulation (Deci & Ryan, 2000), satisfaction of the three needs was expected to relate positively with autonomous motivation. However, the results of the current study did not support this tenet; only the relationship between relatedness and autonomous motivation was significant. A possible explanation might be that people with ID perceive autonomy as independence and therefore, when feeling autonomous, believe that they have to make their own decisions without support. In that case, it would make sense that people with ID whose basic psychological needs are satisfied do not experience autonomous motivation for support. However, the opposite of autonomy is heteronomy (i.e., perceiving one's actions as controlled by forces that are alien to the self) rather than dependence (i.e., reliance on other people for support, guidance or supplies) (Chirkov, Ryan, Kim, & Kaplan, 2003). People can therefore be autonomously dependent on others, willingly trusting their support. An interesting question in this respect is whether one is always aware of the fact that one can be autonomously dependent on others. When focusing on people with ID, it might be even more difficult for them to realize this without being explicitly reminded of this, especially with respect to their support staff due to their dependent, and sometimes long-standing, relationship.

Limitations and implications for future research

Some limitations of this study should be mentioned. Firstly, 165 of the 368 individuals who were invited to participate in the study declined. Because we had no other data available for the non-participants, it was not possible to gauge possible sources of bias. When asked for the reason not to participate, the non-participants mainly indicated that they declined because of the time investment (1.5 hours) or because support staff reasoned that participation would be too stressful for them. Secondly, in the current study, we measured subjective well-being with two different measures (SWLS and Cantril) and subjective ill-being with the BDI-II-NL. However, SDT embraces the eudaimonic conceptualization of well-being (Ryan & Deci, 2001). Within this conceptualization, subjective vitality, a positive feeling of having available energy originated from the self (Ryan & Frederick, 1997), is an important indicator for well-being. Hence, future research might extend the model tested within the current study by including a measure of subjective vitality as well. Moreover, it would also be interesting to include, besides a measurement for depression, additional measures for ill-being in future research. Thirdly, as all data were based on self-reported measures only, shared method variance may have inflated the associations between the variables under study. Fourthly, although part of classification systems, due to the selection procedure, the current study did not take into account the standard error of measurement of the

IQ cut scores used to describe the sample size. Lastly, the design of the current study was cross-sectional, preventing the scope for conclusions about causality. Moreover, bidirectional relationships between variables, for example between need satisfaction and subjective well-being, cannot be ruled out. Therefore, it would be recommendable to test a similar SDT-model among people with mild to borderline ID in a longitudinal design in future research. In addition, it would be interesting to further explore the underlying mechanisms of the SDT-concepts using more qualitative research methods (Anderson & Chirkov, 2016).

Implications for practice

The current findings strengthen the case for client-oriented support made on the basis on adjacent work (Carr, Horner, & Turnball, 1999; Dykens, 2006; Wehmeyer, 2013). This is in line with the UNCRPD (United Nations, 2006) and national policies in most western countries, emphasizing the importance of autonomy of service users in general, including those with ID. The study conclusions support the beneficence of these policies, such that clients' subjective perception of an autonomy supportive environment, need satisfaction, and autonomous motivation were all related to subjective well-being. Given the important role of the social environment in a person's life and the fact that support staff are key people in the lives of people with mild to borderline ID (van Asselt-Goverts, Embregts, & Hendriks, 2013), support staff have a vital role in providing their client with a feeling of autonomy, relatedness, and competence through support focused on autonomy. Therefore, based on the results of this study, professionals and care organizations are encouraged to further increase the level of autonomy supportive care and client-oriented support by incorporating the principles of SDT in their interpersonal approach.

Moreover, the current study has critical implications for how treatment programs and interventions should be developed to promote autonomous motivation, especially because numerous treatment programs and interventions are built on concepts of controlled motivation. As autonomous motivation is related to subjective well-being, it is important to pay more attention to this understudied topic in the ID field. Recently, on the basis of a multiple-case experimental design, Frielink, Schuengel, Kroon, and Embregts (2015) provided initial evidence that motivation of people with mild to borderline ID to change substance abusive behavior can be influenced through an intervention based on SDT. However, given the importance of autonomous motivation, we urge for more research in this area, but also for more attention with respect to autonomous motivation in daily support and in treatment programs and interventions.

Concluding remarks

Overall, the results of the current study support the applicability of an SDT-model regarding support among people with mild to borderline ID. By showing that autonomy support, autonomous motivation, as well as the needs for autonomy, competence, and

relatedness were associated with psychological well-being, universality claims of the SDT were bolstered. The results should nonetheless be interpreted with caution, as more research is required to further investigate the causality of the direct and indirect relationships. That is, SDT shows potential as a guide towards enhancing subjective well-being and thus quality of life of people with mild to borderline ID through support focused on autonomy.

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Chapter 6

Modification of Motivational Interviewing for use with people with mild intellectual disability and challenging behavior

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Abstract

Background

Motivational Interviewing (MI) is a promising method to increase treatment motivation for people with mild intellectual disability (ID) and challenging behavior. The purpose of the present study was to identify how professionals could adapt MI techniques for use with clients.

Method

We conducted semistructured qualitative interviews and focus groups with 26 clients, parents, and professionals. A general inductive approach led to the identification of multiple core themes.

Results

The authors recommend several modifications to accommodate MI for use with clients: adapt to language level, adjust to cognitive abilities, and control for social desirability of responding. In addition, certain characteristics of professionals were also found to be critical for effective MI: trustworthiness, engagement, acceptance, empathy, and honesty.

Conclusions

Concrete recommendations for the adaptation of the MI techniques for use with people with mild ID and challenging behavior are identified. Certain characteristics of professionals are also critical for maximizing the treatment motivation of clients.

The prevalence of challenging behavior such as aggressive, self-injurious, and destructive behaviors among people with intellectual disability (ID) ranges from 5.5 to 16.8% (Lowe et al., 2007). These behaviors occur more frequently among people with ID than without ID (Emerson, Robertson, & Wood, 2005). Individuals with mild ID constitute the majority of people with ID (Curran, Mohr, Phillips, Cook, & Davis, 2000). And those individuals with challenging behavior can further present with complex care needs in connection with sexually offensive behavior (Murphy & Sinclair, 2009), delinquent behavior (Talbot, 2008), and/or substance-abuse problems (Carroll Chapman & Wu, 2012).

The care for people with mild ID and challenging behavior occurs at the interface of psychiatry, justice, addiction treatment services, and services for people with ID (Embregts, 2011), which means that the needs of people with ID and challenging behavior are difficult to address within the existing healthcare system (Embregts & Grimbel du Bois, 2005). People with mild ID and challenging behavior typically experience repeated failures due to organizational and other breakdowns in the healthcare system (Jahoda, Dagnan, Jarvie, & Kerr, 2006; Taylor, Novaco, Gillmer, & Thorne, 2002). In turn, these failures can give people with ID the feeling that they have no control over their behavior or the situations they find themselves in (Wehmeyer & Bolding, 2001). Learned helplessness may be the result (Seligman & Maier, 1967), and thereby lower motivation (Kunnen & Steenbeek, 1999). Extrinsic motivating factors (e.g., positive reinforcers) are often viewed as promising to encourage people with ID to act and become more involved (Schloss & Smith, 1998). As suggested by Meyer (1982), however, extrinsic motivating factors might undermine intrinsic motivation. It is intrinsic motivation that relates to treatment adherence, maintenance of change, and greater well-being in the long term (e.g., Ryan & Deci, 2000). Enhancing intrinsic motivation is therefore important, and, from such a perspective, Self-Determination Theory (Ryan & Deci, 2000) speaks of autonomously regulated behaviors that occur with a sense of personal endorsement and comprise both well-internalized extrinsic motivation and intrinsic motivation. The maintenance and increase of more autonomous forms of motivation can be facilitated or hindered by a person's social environment (Ryan & Deci, 2000). Professionals are key people in the lives of individuals with mild ID and challenging behavior, and they therefore have an important role to play. A clinical approach that can help professionals promote autonomous forms of motivation and shows many similarities to Self-Determination Theory (SDT) is Motivational Interviewing (MI) (Markland, Ryan, Tobin, & Rollnick, 2005; Vansteenkiste & Sheldon, 2006). In both MI and SDT, the autonomy of the service user is highly valued, along with the individual responsibility of the service user. The inner experiences and motives of the service user are thus part of both approaches and MI in particular (Deci & Ryan, 2012).

MI is defined as a collaborative, person-centered form of guiding to elicit and strengthen intrinsic motivation for change (Miller & Rollnick, 2009). MI resembles other psychotherapies with its emphasis on empathy, acceptance, and permissiveness, as described by Rogers (1951). In addition, MI includes collaboration, evocation, and an emphasis on autonomy (Miller & Rollnick, 2002). The counsellor communicates in a partner-like relationship. MI thus entails support as opposed to persuasion or coercion, and is explorative rather than exhortative. The role of the counsellor within the collaboration is not to convey wisdom and insight, but rather to evoke knowledge and insight. It is the client who makes decisions, as only the client is responsible for his or her behavior and any changes to this behavior. The counsellor thus holds the autonomy of the client in high regard and interacts according to the following principles: express empathy (i.e., listen respectfully to the client, with a desire to understand the client's perspective and show acceptance), develop discrepancy (i.e., create a distinction between current behavior and behavior based on broader goals and values articulated by the client as arguments for change and increase this distinction), roll with resistance (i.e., avoid arguing for change and invite instead the client to consider new information and perspectives), and support self-efficacy (i.e., promote the client's belief in their ability to carry out and succeed at a specific task). MI outlines five techniques to foster adherence to the aforementioned principles: open-ended questioning (i.e., invitation to tell own story using own words and thus no leading of the client in a certain direction), reflective listening (i.e., repetition, rephrasing, paraphrasing, and naming of emotions), affirming (i.e., use of statements or gestures to acknowledge, reinforce, and promote strengths and behaviors that can lead to or already reflect positive change), summarizing (i.e., highlighting of critical aspects or elements of discussion), and eliciting change-talk (i.e., promotion of self-motivating statements). The MI trajectory can entail one or multiple sessions and has in most cases a duration of 5–60 min. The sessions are conducted by a specially trained counsellor and typically held in the counsellor's office.

The evidence base for the efficacy of MI is strong within the fields of addictive behaviors and problem behaviors (Burke, Arkowitz, & Menchola, 2003; Dunn, Deroo, & Rivara, 2001; Hettema, Steele, & Miller, 2005; Lundahl & Burke, 2009; Rubak, Sandbaek, Lauritzen, & Christensen, 2005; Vasilaki, Hosier, & Cox, 2006). For example, in 2003, Burke and colleagues concluded that MI is just as effective as treatment-as-usual and superior to no treatment for the reduction of alcohol use, the reduction of other drug use, and adherence to both diet and exercise interventions. In a review of four meta-analyses, Lundahl and Burke (2009) also found MI to be more effective than no treatment and as effective as feasible treatment for substance use (alcohol and other drugs), increasing client engagement in treatment and reducing HIV-related risky behaviors like unprotected sex.

MI is a cognitively based method and thus requires at least some abstract reasoning ability. Lundahl and Burke (2009) therefore recently argued that MI is probably not suited for use with young children or people with ID. However, other researchers (e.g., Hensel, Stenfort Kroese, & Rose, 2007; McLaughlin, Taggart, Quinn, & Milligan, 2007; Taggart, McLaughlin, Quinn, & McFarlane, 2007) have argued that MI might be beneficial for people with ID as well. In a similar vein, there is a growing awareness that modification of the therapeutic approach can make other cognitive therapeutic interventions, such as cognitive behavior therapy, suitable for use with people with mild ID (Willner, 2006). Positive results have been obtained in addressing anger (Taylor et al., 2002; Willner, Jones, Tams, & Green, 2002) and depression (McCabe, McGillivray, & Newton, 2006) through the use of modified cognitive behavior therapy. In this study the authors aimed to explore whether MI could be modified for use with people with mild ID and challenging behavior in order to have a new tool to address the motivation of people to participate in treatment and, in turn, to improve treatment outcomes.

In case studies, MI has already been shown to be promising for the treatment of offenders with ID and alcohol-related problems (Mendel & Hipkins, 2002). Seven male clients with mild ID aged 18–54 years residing in a forensic service were selected to participate in a group in which MI techniques were applied to assist clients through the stages of change model (Prochaska & DiClemente, 1986). The group treatment consisted of three 1-hour sessions within a 2-week period of time. The results showed six of the seven participants recognized more of the negative as opposed to positive consequences of their behavior relative to baseline. In addition, these same six participants improved their motivation to change, according to the model of Prochaska and DiClemente (1986). One moved from the pre-contemplation stage (i.e., being unaware/unconcerned) to the contemplation stage (i.e., considering change behavior); the other five moved from the contemplation stage to the action stage (i.e., where an individual makes a commitment to change). In addition, using a visual analogue scale that ranged from 0 to 100% to rate their belief in being able to change the amount of alcohol consumed once discharged back into society, four of the seven participants reported increased self-efficacy. Rose and Walker (2000) conducted a single case study using a MI approach, which was embedded in a broader intervention aimed to support weight loss and the reduction of challenging behavior in a 29-year-old man with mild ID and Prader–Willi syndrome living in a residential setting. Whereas desirable behaviors were rewarded, the professionals made clear that challenging behavior was inappropriate. In addition, MI was used to initiate changes to routines and practices. The levels of challenging behavior quickly dropped and stayed at a lower level after implementation of MI. Whether MI or the broader intervention was responsible for the outcome was not examined.

It thus appears that MI is a promising method for increasing treatment motivation among persons with mild ID and challenging behavior. Research is nevertheless needed to show us how to employ MI with this population (McLaughlin,

Taggart, Quinn, & Milligan, 2007). The methods developed for the use of MI with the population without disability are, however, not automatically applicable to individuals with mild ID and challenging behavior. The purpose of the present study was therefore to identify how professionals could adapt the techniques employed in MI for use with people with mild ID and challenging behavior.

Method

Framework and recruitment of participants

Standard content analyses on the basis of a general inductive approach (Thomas, 2006) were conducted. This approach was chosen as our aim was to identify how professionals could adapt each of the MI techniques for use with people with mild ID and challenging behavior without prior assumptions, theories, or hypotheses guiding our exploration. Focus groups and individual interviews were conducted for this purpose with (a) healthcare professionals (staff members and psychologists), (b) individuals with ID and challenging behavior, and (c) parents of individuals with ID and challenging behavior. To recruit participants, we contacted people with mild ID and challenging behavior living in a residential treatment facility in the Netherlands, the parents of people with mild ID and challenging behavior living in this facility, and the professionals working in this facility. The authors submitted the research proposal to the scientific and ethics committee of the participating facility and this was approved. The first author provided the manager with information on the study, who thereafter selected 11 professionals (five staff members and six psychologists) to participate on the basis of their experience with, and knowledge of, both MI and working with people with mild ID and challenging behavior. The first author then contacted the professionals and fully informed them of the study; all voluntarily agreed to participate. The professionals had a mean age of 37.2 years (range = 24–59 years) and had worked with adolescents or adults with mild ID and challenging behavior for at least 2 years ($M = 6.3$ years); they worked an average of 26.4 hours a week. Two of the professionals were male; the other nine were female. Half of the professionals were unfamiliar with MI; the other half knew at least the key principles, and some even applied them during daily practice.

The five staff members participated in a single focus group. In addition, the six psychologists participated in one of two focus groups (three in each group). At the end of each focus group meeting, the professionals were asked to suggest individuals with mild ID and challenging behavior and also parents of children with mild ID and challenging behavior to participate in the study. The first author had individual introductory meetings with each client and each parent. All nine clients and seven parents initially agreed to participate. The parents were related to four children in the

facility, but only one of the children was participating in the present study. Prior to the interviews, consent was again requested and provided by all but one client who therefore did not participate further in the study.

The eight participating clients and the four children of the interviewed parents were all known to have mild ID and challenging behavior; they had a mean age of 25.3 years (range = 19–35 years). Four of the clients were female, the other eight were male. Of the eight participating clients, four attended a focus group in a forensic setting, two participated in one interview at the same time, and two had an individual interview due to long travel distances. Of the seven parents, five attended a focus group and one parental pair had an individual interview due to long travel distances.

A total of five focus groups, one interview with two participants at the same time and three individual interviews were conducted. The focus groups and interviews had an average duration of 98 min (range = 56–121 min).

The interview and materials

The location of the focus groups and interviews depended on the preferences of the participants: at the university, at the head office of the participating organization, or at the participants' home. Two interviewers were present at each interview; the first interviewer introduced new topics and posed open-ended questions, and the other, an interviewer fully informed about the purpose of the research, kept track of time and made sure that all MI techniques were discussed.

A semistructured interview guide covering the five MI techniques was developed and used in the focus groups with the professionals. Each of the focus groups started with an introduction of the participants, followed by a brief explanation of the current study and MI. Next, with the aid of a PowerPoint® presentation, the interviewers explained and discussed each of the five MI techniques (i.e., open-ended questioning, reflective listening, affirming, summarizing, and eliciting change-talk). The PowerPoint presentation was prepared by the researchers with the assistance of two experts in the field of MI and outlined the skills required for the comprehension and use of each MI technique. The interviewer asked the professionals if they thought that people with mild ID and challenging behavior typically had the required skills and, if not, what should be modified to make the technique suitable for use with people with mild ID and challenging behavior. The structure of the guide for the interviews with the parents and clients was the same as that for the professionals. Due to the sometimes emotional and personal nature of the stories of the parents and clients, however, the order of the items could change. For example, during the focus group with parents, one father commented on the required skills of a professional with respect to the MI technique open-ended questioning while addressing difficulties regarding other techniques as well.

Analysis

All focus groups and interviews were audiotaped with the participants' informed consent and then transcribed verbatim, using initials to guarantee anonymity. First, in accordance with a general inductive approach (Thomas, 2006), the raw data files were prepared and the transcripts were read in detail until the researcher was familiar with the content. Next, ATLAS.ti, a qualitative data analysis software package (Friese, 2012), was used to organise the raw data. Phrases of clear importance for the present study were assigned a code. These codes were based on the data itself and developed during the process of coding. Subsequently, the first author undertook a second level of coding that entailed the identification of the themes associated with the five MI techniques. In addition to these themes, many of the statements made by the participants were found to refer to certain characteristics of professionals. These statements were coded in the same manner as the other interview statements and categorized into several themes and subthemes. The identified themes, subthemes, and codes were discussed by the authors and three other researchers within our research group and adjusted when needed. As a result, a total of 550 statements, 351 codes, 17 themes, and 47 subthemes were available for further analysis and the formulation of recommendations.

Rigour of the methodology

Various trustworthiness and credibility checks were built into the present research. First, extensive discussions of the codes and proposed (sub)themes were conducted with the authors and three other researchers in order to ensure that the emerging themes were as rich as possible and took into account a variety of perspectives. In addition, a second coder administered coding checks to ensure the consistency and clarity of codes (Thomas, 2006). Finally, triangulation of data was achieved by interviewing different groups of stakeholders (i.e., professionals, parents, and clients).

Results

The themes discussed in connection with the five MI techniques are described and illustrated below. Each MI technique will be discussed in terms of its *form*, *structure*, and *content*. The *form* of each technique describes how a professional should compose language in order to be clearly understood by people with mild ID and challenging behavior. The *structure* illustrates how the language should be used, as well as how the conversation could be constructed for people with mild ID and challenging behavior. Finally, the *content* concerns the results of applying a technique and thus the comprehension by people with mild ID and challenging behavior. By examining the *form*, *structure*, and *content* of each technique, qualitative insight can be gained into how professionals could adapt MI techniques for use with people with mild ID and challenging behavior (see Table 1).

Table 1. Overview of recommended modifications for use of each MI technique with people with mild ID and challenging behavior.

Technique	Form	Structure	Content
<u>Open ended questioning</u>			
	Language: concrete and clear	One question at a time	Test whether client and staff mean the same
	Language: avoid 'why' questions	Ask question only once	Recognize that admitting lack of comprehension may be difficult for client
	Language: short sentences	Allow extra response time	
	Language: simple	Help client in answering question if one does not comprehend the question	
	Language: focus questions		
<u>Reflective listening</u>			
		Help client verbalize feelings	
		Help client with organization and structure of language	
<u>Affirming</u>			
	Language: concrete and clear	Use both verbal and nonverbal affirmations	Recognize that client grows from affirmations
		Make an affirmation personal	Recognize that successful experiences are important
		Affirm when something is done well, but do not exaggerate	Recognize that receiving an affirmation may be difficult for client
<u>Summarizing</u>			
	Language: simple, short sentences	Summarize frequently and in between topics	Recognize that admitting lack of comprehension may be difficult for client
		Make and clarify agreements	
		Ask client to give a summary	
<u>Eliciting change-talk</u>			
	Language: brief and clear	Take small steps	Recognize lack of consensus on capacity to imagine a hypothetical situation

In addition to the modifications of the specific MI techniques, many of the statements made by the participants concerned certain characteristics of professionals who work with people with mild ID and challenging behavior. These statements encompassed themes and subthemes that will be discussed in the last part of this section.

Open-ended questioning

Regarding the first technique of MI, namely, open-ended questioning, most of the statements from the participants concerned the *form* of the technique and revolved around the themes of using concrete and clear language, simple language, short sentences, focusing questions, and query words to start a question—although both clients and professionals indicated that open-ended questions that begin with the word “why” should be avoided, as such questions suggest that a client is being asked to account for something and typically evoke negative emotions on the part of clients. According to the professionals in this inquiry, questions should focus on a specific topic to ensure that the client with ID is able to understand the question. All respondents stated that the language used in open-ended questioning should be simple and adapted to the level of the client. According to one professional:

I think the response possibility is far too broad. Hence it should be focused more specifically. And the concepts of wanting something or expecting something, I think that these are very difficult terms. Questions must also thus be concrete.

Regarding the *structure* of open-ended questions, the participants offered statements about the maximum number of questions to be posed in a row, asking the same question more than once, giving more time for a response, and helping the client to understand and answer a question. Both parents and professionals indicated that clients need more time to respond to a question when they have ID to ensure comprehension:

An open question, you cannot answer with a “yes” or “no”. You have to think up something and then put that into words. They can do it [answer an open question], but they have to be given the time to do it.

In addition, clients indicated that asking the same question twice makes them feel like they have not been heard and, as a consequence, not been taken seriously. Furthermore, some clients stated that they are able to answer a number of questions in a row, whereas other clients, in addition to parents and professionals, stated that professionals should ask one question at a time. When a client is not able to answer a question both clients and professionals stated that the professional should provide the client with alternative answers to choose from. Furthermore, both clients and professionals indicated that it is experienced as pleasing and useful for the client to

hear actual examples from the professional's personal life, as this may help normalize client feelings and behavior. Parents, in contrast, found this inadvisable, as it could prompt clients to worry about the personal problems of the professional. In addition, participants mentioned several other ways to help people with mild ID and challenging behavior to understand a question. This included the use of pictures or film fragments but also the actual drawing of an image or role-playing.

Regarding the *content* of open-ended questioning, the professionals and parents pointed out that it is hard for clients to admit that they do not understand a question. As a consequence, the professional needs to test for adequate understanding and check that the client is sufficiently following the discussion by asking a direct question. For instance, a staff member discusses a certain topic and notices that the client has adopted a different posture. The staff member may wonder if this indicates tension or misunderstanding but is not sure and therefore asks:

I see you are sitting there like that now. Does this mean that you are feeling tense?

Reflective listening

With respect to the *form* and *content* of the technique of reflective listening, no specific modifications are required according to the participants. Regarding the *structure*, the professionals indicated that two adjustments were needed. First, clients sometimes need help with the organization and structure of their language, as they sometimes do not know exactly what they want to say and can get lost (i.e., forget where they were in a sentence or with an idea). For example, a professional may repeat the sentence in which the client got lost. Second, people with mild ID often need help with the verbalization of their feelings. As one professional explained:

Yes, that ... I can do that [help people with ID and challenging behavior verbalize their feelings] by giving examples. And by having them think back on what was difficult and what they did then, what they felt then; but, yeah, that is also really difficult, looking back.

Affirming

Regarding the *form* of the technique of affirming, the participants stated that, in the case of a verbal affirmation, professionals need to be specific and use clear language with clear intonation. As one professional put it:

You have to make affirmations concrete, and say: I am very pleased with this.

With respect to the *structure* of affirmation, the professionals indicated that they can use different types of affirmations: verbal and nonverbal. In both cases, the professionals and clients indicated that a professional should personalize the affirmation by making eye contact with the client and taking enough time in giving the affirmation. In addition, clients noted that although affirmations can be helpful when they have done something well, professionals should also be careful not to exaggerate:

I find affirmation of the same thing over and over again exaggerated. It's really not necessary. Just once or twice, I think that's enough. It should not get exaggerated as otherwise people will get too big for their boots.

In the eyes of one professional, however, professionals should affirm as much as possible because many clients learn as a result of such positive reinforcement

Regarding the *content* of affirming, the professionals indicated that the repetition of successful experiences and naming of these experiences can facilitate learning and behavior change. In addition, clients stated that although it is hard to receive affirmations, they do grow from them. According to a client:

An affirmation is important because then you feel better about yourself. Then you feel uplifted.

Summarizing

In line with the other MI techniques, participants once again stated that the language used in summaries (i.e., their *form*) should be simple and include short sentences. According to one client:

For me, my friends always say that Jack and Jill language is simply the clearest for us. Express things in a childlike manner. Little children also do not know what difficult words mean. ... Now that is the same for us because we have just a slightly lower learning level.

In addition, regarding the *structure* of summarizing, the professionals indicated that this is best done frequently and after each topic in order to clarify not only the preceding information but also the transition between topics:

After each topic, we close it off with a summary. Thus we don't summarize at the end of the conversation, but after each topic.

Furthermore, within a summary, the professional should clarify any agreements that have been made to see that the client indeed understands what has been agreed. One professional even suggested that clients could be given copies of agreements on paper so that the client can re-read them on occasion. In addition, some of the professionals indicated that a professional could ask the client to summarize the conversation rather than having it summarized by the professional. Although this is often hard for the client, a professional can nevertheless identify what appears to be important for the client and what is not (i.e., what has not taken root).

With respect to the *content* of summarizing, several clients pointed out that it is hard to admit to not understanding a word or phrase. According to one client:

I think that I am one of the few people who always asks what something means. I hear that ... a lot from the staff. That I keep on asking, and they think that's great. But lots and lots of clients don't do that. My friends don't either.

Even though some clients stated that they indicate when they do not understand a word or phrase, it is probably advisable for professionals to test for adequate understanding.

Eliciting change-talk

With respect to the *form* of the MI technique of eliciting change-talk, most of the statements offered by the participants concerned the *form* of the language. As one client put it:

This is again the same. [The language should be] brief and clear.

Regarding the *structure*, the professionals stated that taking small steps was important for persons with mild ID because a well-organized conversation allows clients to keep their thoughts straight as well. According to one professional:

Making the connection between advantages and disadvantages. ... A question of pros and cons is too difficult. They can't see the big picture. ... You have to add a little piece in between. They cannot make the one big step.

Regarding the *content* of the technique, some clients will be able to imagine a hypothetical situation, while others, according to both professionals and clients, will find this difficult; a person with ID may be concerned with observable and concrete reality. In the words of one professional:

That [imagining a hypothetical situation] is obviously very difficult. Clients often do not know how things might otherwise be.

Critical characteristics of the professional

In addition to the foregoing modifications of the MI techniques for use with people who have a mild ID and challenging behavior, the participants in the present study also highlighted certain characteristics of professionals working with this population. These aspects, divided into different themes and subthemes, are presented in Table 2.

Table 2. Themes and subthemes relevant to the characteristics of professionals working with people with mild ID and challenging behavior.

Theme	Subtheme
Confidential atmosphere	Social talk
	Confidence
	Equality
Involvement	Empathize with client
	Genuine interest
	Sincerity/honesty
	Staff compassion
	Listen
	Asking questions
Client central	Client responsibility
	Connect to client
Approach of professionals	Understanding approach
	Respectful approach
	Unambiguous approach
	Individual approach
	Stick to agreements
	Clarify concrete agreements/rules
	Mention concrete behavior of client

Confidential atmosphere

Both clients and professionals indicated that social talk is important for creating an ambience in which the client feels free to speak his or her mind. According to a client:

When a professional comes in and immediately asks how things are going, I find that pushy. She can first sit down and have a cup of coffee or tea with me, chat about something else and only then ask how things are going with me. I think that's much nicer, more personal.

In addition, a relationship of mutual trust (i.e., confidence in each other) is essential for the discussion of complicated and sometimes very sensitive issues. Finally, to achieve a confidential atmosphere, the professionals indicated that a sense of equality must be created (i.e., client and staff are equal); this also allows the client to talk freely.

Involvement

Participants stated that empathy and compassion are important, as well as showing a genuine interest in the conversational partner. In addition, the professional should listen actively to the client and demonstrate to the client that he or she is being heard. The clients indicated that involvement is related to asking questions, which clients experience as pleasing. Both the professionals and parents stated that professionals should be authentic and honest. This was expressed by one parent as follows:

Well, some, I do not know how to say it, some care staff are just not real. And he [the client] senses that. They [the care staff] perform ... they act. And I do not know if he sees through that or sees that the acting is bad, I do not know, but somehow he feels it. And the people [the care staff] do exactly what they are supposed to do. But it doesn't come across.

Client stands central

All of the participants agreed that the client should stand central. Two relevant subthemes were also apparent. First, the participants indicated that a professional must accept the choices made by the client, as one professional put it:

At the point when a client says, "I don't want that," you—as the professional—say: "okay, then we'll have to think up a solution together." Respect their choice, thus.

However, the professionals indicated they can nevertheless appeal to the clients' sense of responsibility and the need to become more autonomous in making decisions. Second, the professional needs to adapt to the client, both in terms of their language and the topics discussed; the level of the client's functioning must always be kept in mind.

Essential aspects of the professional's approach

The professionals indicated that a professional should demonstrate an understanding attitude in their interactions with clients. Furthermore, the clients indicated that being treated with respect was important. The professional should take the client seriously and make it clear to clients that they are being heard. In addition, participants emphasized the importance of adopting a consistent and unambiguous approach with each person. Differences in approach, depending on the professional, can be difficult for clients to handle. Moreover, participants indicated that each individual is unique and should thus be treated as such. According to a client:

Certain pathologies, they [the care staff] cannot handle all of them. Then you see that everyone is simply treated exactly the same. But everyone is different is what I always say. That does not work ... autism is not the same as a multiple complex developmental disorder.

Both professionals and clients must stick to agreements. According to the professionals and parents, clarity and concreteness with regard to agreements and new rules are important. The client must understand the purpose and significance of an agreement or rule. Finally, the professionals stated that a professional can verbalize or imitate observed clients' behaviors, in order to explore the meaning of this behavior from the perspective of a client and to show the impact of the behavior on the other.

Discussion

MI is a promising method for encouraging people with mild ID and challenging behavior to enter into and adhere to treatment. The aim of the present study was to identify how professionals could adapt the techniques of MI for use with people with mild ID and challenging behavior. In doing this, certain characteristics of professionals working with people with mild ID and challenging behavior were also identified.

The results indeed show a need for professionals to adapt the MI techniques in several ways to accommodate the special needs of people with mild ID and challenging behavior. With regard to the *form* of the techniques used and the language used in particular, the participants in the present study highlighted the need to adapt the communication to the language skills of the individuals with mild ID and challenging behavior. Simple, clear, and concrete language is essential for comprehension.

In addition, the participants recommended the use of short sentences, questions starting with a query word, and focusing questions. Pictures and role-playing can also help improve understanding. These results are consistent with the findings of other studies (e.g., Lindsay, 2009; Tuffrey-Wijne & McEnhill, 2008). Drawing on several studies, Tuffrey-Wijne and McEnhill (2008) identified the difficulties in communication experienced by people with ID and concluded that it is up to professionals to take these difficulties into account and adapt their language accordingly. In Lindsay's 2009 review of the development and evaluation of treatment programs for offenders with ID, it was concluded that avoiding jargon, using plain language, and introducing pictures and role-playing are crucial for coping with the obstacles posed by ID. Despite these findings and the participants in the present study indicating the importance of professionals adapting their communication to the language skills of people with mild ID and challenging behavior, professional care staff often cannot do this (Bradshaw, 2001). She compared staff self-reports of the communication acts used by people with ID with video observations of their actual communication acts. This showed that staff used complex language more often than not. Overestimation of the language skills of individuals with ID by professionals has been found to result in communication breakdown (Bradshaw, 2002). It should be noted that some of the recommendations made here are not only important within the context of MI but also for good communication with people with ID in general.

With regard to the *structure* of the MI techniques, the participants in the present study again pointed out the importance of adjusting the communication to the cognitive abilities of people with mild ID and challenging behavior. Professionals should pose only one question at a time, for example, and be sure to allow sufficient time for the client to respond. Other studies support these results. People with mild ID typically experience challenges with verbal short-term memories and working memories (van der Molen, van Luit, Jongmans, & van der Molen, 2007; 2009). In addition, difficulties with remembering multiple questions or multiple response options and thinking about answers may be difficult. This finding is also consistent with the results of the study by Tuffrey-Wijne and McEnhill (2008), who concluded that extra time is not only needed to repeat questions and explanations to ensure comprehension but also to gain trust and build a therapeutic relationship with the client. Similarly, in a study of the interactions between a counsellor and a woman with mild ID and autism, van Nijnatten and Heestermans (2012) found that refraining from speaking can indeed help a client think about an answer. Repetition was also mentioned by Bruce, Collins, Langdon, Powlitch, and Reynolds (2010) as an additional tool for helping people with ID to identify their feelings. Although the participants in the present study did not explicitly mention the importance of repetition for communication or reflection, they nevertheless mentioned the importance of repetition for reinforcement purposes: the repetition of successful experiences and the naming of these can facilitate learning and behavior change. The

participants similarly indicated that a professional can ask the client to summarize a conversation or part of a conversation in order to check comprehension and make sure that things have “sunk in”.

Finally, with regard to the *content* of the MI techniques when used with clients with ID and challenging behavior, there was little consensus in the present study on whether people with mild ID and challenging behavior are prepared to admit when they do not understand what is being said. People with mild ID are eager to please (Tuffrey-Wijne & McEnhill, 2008), and they are therefore often inclined to tell people what they want to hear (i.e., social desirability of responding). Indeed, people with mild ID do not always understand what is said (Tuffrey-Wijne & McEnhill, 2008), even when they have said that they understood (Lindsay, 2009). A possible solution for this situation is offered by the participants in the present study, namely, that a professional must test, in a positive manner, whether the client and professional mean the same thing and are thus saying the same thing more or less. If this is found to not be the case, then the professional must rephrase what he or she has said and again test for comprehension.

The importance of the characteristics of professionals working with people with mild ID and challenging behavior is undeniable. Participants in the present study mentioned this spontaneously—they were not prompted to do so—and their comments are consistent with the findings of other studies (e.g., Bigby, Clement, Mansell, & Beadle-Brown, 2009; Lewis & Stenfort Kroese, 2010). The participants in the present study indicated that trustworthiness, engagement, and acceptance, in addition to empathy and honesty, are important characteristics of professionals working with people with mild ID and challenging behavior. This finding is in line with the findings of a study by Clarkson, Murphy, Coldwell, and Dawson (2009), who interviewed 11 adults with ID and asked about the important characteristics of care staff. The respondents mentioned honesty, trust, and a caring manner as imperative. In other recent research involving six individual interviews and two focus group meetings with people with ID, Roeleveld, Embregts, Hendriks, and van den Bogaard (2011) found knowledge and understanding of the client, support, reliable and transparent communication, equality, and the building of a relationship to be critical competencies of staff members. Hermsen, Embregts, Hendriks, and Frielink (2014) found similar results when they asked 28 staff members working with people with mild ID about the barriers to, and facilitators of, professional loving care. The care staff mentioned recognition of the client and sharing a relationship of trust as important facilitating factors.

In order to identify the modifications required for the use of MI techniques with individuals with mild ID and challenging behavior, we held a number of focus group meetings and conducted several interviews. In such a manner, we were able to map the required modifications. In qualitative as well as in quantitative research, various trustworthiness and credibility checks need to be conducted to limit any researcher bias. In the present research, these checks included extensive discussions with other researchers about the emerging codes and (sub)themes. A possible limitation of

the present study is the selection process of the participants. That is, professionals were not selected at random but selected by the manager. In turn, professionals were asked to suggest both persons with a mild ID and challenging behavior and parents of children with mild ID and challenging behavior to participate in the study. This raises the question whether the present results can be generalized and therefore calls for a replication study on a more widespread scale with participants selected at random. Overall, MI appears to be a promising approach for increasing intrinsic motivation for treatment adherence of people with ID and challenging behavior, which is strongly related to maintenance of change and positive treatment outcomes (Ryan & Deci, 2000). We developed a range of recommendations for the adaptation of MI techniques and means of communication, to be used particularly when working with people with mild ID and challenging behavior. We also identified certain characteristics of professionals—aspects which must be present for MI to help people with mild ID and challenging behavior. Clearly, this study is only one step toward empirical demonstration of the utility and applicability of MI to enhance the participation and engagement of people with mild ID and challenging behavior in their treatment and care. In future research, we will also examine the effectiveness of MI with respect to Self-Determination Theory, which asserts that deploying MI in an appropriate manner with people with mild ID and challenging behavior can address the basic psychological need for autonomy, competence, and relatedness.

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Chapter 7

Pretreatment for substance-abusing people with intellectual disability: Intervening on autonomous motivation for treatment entry

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Abstract

Background

Despite a lack of consensus regarding prevalence rates of substance abuse, people with intellectual disability (ID) on average use substances slightly less often than their non-disabled peers. However, their use of substances is more often problematic. Avoidance of treatment is a crucial problem among substance abusing people with ID. This study tested a motivational intervention to facilitate autonomous motivation (i.e., wanting to change substance abuse because of a sense of free choice and volition) for engaging with a subsequent addiction treatment.

Method

A multiple case experimental design ($N = 6$) was conducted to measure day to day motivation to change substance abuse among individuals with mild ID ($N = 3$) and borderline level of intellectual functioning ($N = 3$) in the Netherlands. The participants (5 men, 1 woman) lived in the community (except one, he lived in a residential facility) and abused cannabis, alcohol, or hashish. During the intervention phase, the 10-session treatment program Beat the kick was delivered by an experienced psychologist, based on Motivational Interviewing (MI) techniques adapted for people with mild to borderline ID. Participants completed an adaptive self-reported inventory based on Self-Determination Theory (SDT) two to three times a week during baseline, intervention, and 1-month follow-up.

Results

The results of five of the six participants (one dropped out) showed that the type of motivation changed from more controlled types of motivation (i.e., external motivation and introjected motivation) at baseline to more autonomous types of motivation after completion of the intervention. In addition, the participants reported a significant increase in overall need satisfaction and autonomy satisfaction and a significantly decrease of overall need frustration.

Conclusions

The implementation of SDT and MI principles in the treatment program Beat the kick reliably changed the type of motivation. In addition, the experimental effects provide initial proof of the use and applicability of SDT among people with ID.

People with mild intellectual disability (ID) and people with borderline intellectual functioning, hereafter designated as people with mild to borderline ID, have won autonomy and freedom of choice as restrictive policies have been abandoned (Slayter, 2008). This positive development has, however, not changed the dire social economic position of this group. Lifting restrictive but also protective measures (such as community living) has increased exposure to substance trafficking and abuse. Although people with mild to borderline ID on average use substances slightly less often than their non-disabled peers, their substance use is more often problematic (Didden, Embregts, van der Toorn, & Laarhoven, 2009; McGillicuddy, 2006). By interviewing people with ID, Taggart, McLaughlin, Quinn, and McFarlan (2007) found various underlying issues for their substance use, which appears to be similar to their non-disabled peers, such as bereavements, physical and/or sexual abuse, mental health problems, domestic violence, and self-harm. Even more so than their peers without disabilities, substance abusers with mild to borderline ID fail to engage with the various treatment options offered, including addiction treatments adapted to intellectual disability (Carroll Chapman & Wu, 2012; Slayter, 2010). According to Taggart and his colleagues (2007), this might be because people with mild to borderline ID abusing substances often do not perceive themselves as having substance-related problems. Consequently, they might be in denial and not motivated to make changes regarding their substance abuse or to engage with services (Taggart et al., 2007). As treatment engagement is known to be predictive of treatment retention, which is in turn associated with greater treatment outcomes (Slayter, 2010), it is important to improve clients' involvement. According to Self-Determination Theory (SDT), autonomous motivation should increase client involvement and retention (Ryan, Plant, & O'Malley, 1995). Beat the kick (in Dutch: Sterker dan de kick; Kroon, Frielink, & Embregts, 2013), an individual 10-session manualized motivational pretreatment intervention for use with adults with mild to borderline ID, was developed to increase autonomous motivation for changing substance abuse, based on SDT and the principles of Motivational Interviewing (MI) (for more information, see Intervention in Method). A person is autonomously motivated for changing substance abuse when one decides to change because of a sense of free choice and volition (Ryan & Deci, 2000). The central question for this study was whether the implementation of SDT and MI principles in this intervention for people with mild to borderline ID would reliably change type of motivation.

Self-Determination Theory

Self-Determination Theory (SDT; Ryan & Deci, 2000) states that human motivation can be understood as a quest to satisfy universal drives within a dynamic social context. SDT distinguishes three universal basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 2000). The need for autonomy refers to the feeling that one can make one's own decisions and choices, whereas the need for relatedness refers to the desire to feel connected to other people. The need for competence refers to the

desire to feel effective in achieving valued outcomes. The extent to which a person perceives that a particular activity is fulfilling one or more of these needs determines people's level of autonomous motivation for these activities (Ryan & Deci, 2000).

According to SDT, there are different types of motivation. First of all, intrinsic motivation refers to performing an activity for the inherent satisfaction of the activity itself, whereas extrinsic motivation refers to doing an activity to attain a separate outcome (e.g., to obtain a reward or receive a punishment) (Ryan & Deci, 2000). Moreover, SDT states that extrinsic motivation comprises of multiple underlying reasons to perform an activity (in our case, changing substance abuse), which varies in its degree of experienced autonomy (Ryan & Connell, 1989). To detail these different forms of extrinsic motivation, Deci and Ryan (1985) introduced the organismic integration theory, a subtheory of SDT (see Figure 1). At the far left of the continuum is amotivation. Individuals who are amotivated lack intention or desire to act due to a lack of concern or valuation of the activity or a lack of perceived competence or positive efficacy beliefs (Ryan, Lynch, Vansteenkiste, & Deci, 2011). For example, one is amotivated if one refuses to change because one does not see the value of changing one's alcohol abuse for one's health. The first and least autonomous form of extrinsic motivation is categorized as external motivation, and occurs when a person wants to change substance abuse to obey an external request, to avoid punishments, or to obtain rewards. The second type of extrinsic motivation is labeled introjected motivation, in which a person wants to change one's substance abuse to attain ego enhancements (e.g., pride) and feelings of worth, or to avoid guilt and shame. Third, a more self-determined, or autonomous, form of extrinsic motivation is categorized as identified motivation when one considers changing substance abuse as personally important or valuable, for example to maintain or improve one's health. Fourth, the most autonomous form of extrinsic motivation is labeled integrated motivation, and

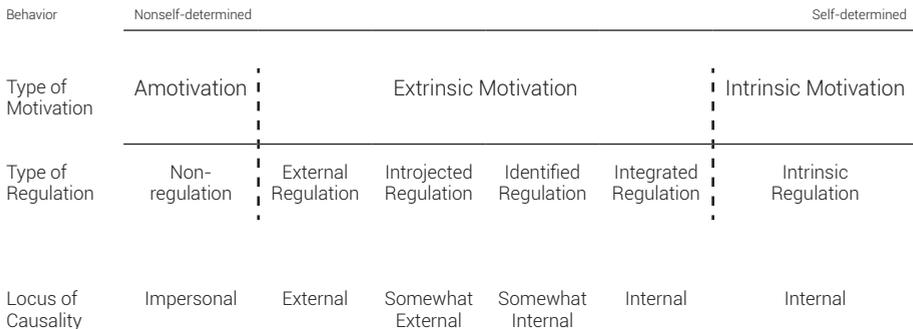


Figure 1. The self-determination continuum as described by SDT's Organismic Integration Theory, ranging from amotivation to intrinsic motivation (adopted from Deci & Ryan, 2000, reprinted by permission of Taylor & Francis, LLC (<http://www.tandfonline.com>)).

occurs when changing substance abuse is fully congruent with other values and needs of the person. The last two types of extrinsic motivation (identified and integrated motivation) together with intrinsic motivation are called autonomous motivation. The first two types, external motivation (being externally controlled) and introjected motivation (being internally controlled) can be combined into what is called controlled motivation.

More autonomous types of motivation (i.e., identification, integration, and intrinsic motivation) have been positively associated with greater client involvement and retention in addiction treatment program (Ryan et al., 1995), prolonged abstinence from smoking behavior (Williams et al., 2006), greater life satisfaction (Senécal, Nouwen, & White, 2000), and well-being (Ryan & Deci, 2000). In addition, Wild, Cunningham, and Ryan (2006) showed that autonomous treatment motivation predicted perceived benefits of reducing substance use and attempts to reduce drinking and drug use. In contrast, more controlled types of motivation (i.e., external motivation and introjection) have been positively associated with ill-being, more dropout and other negative health, treatment and well-being outcomes (Deci & Ryan, 2000).

Within the ID field few studies had SDT as a theoretical framework. A qualitative report by Farrell, Crocker, McDonough, and Sedgwick (2004) suggested that motivational orientations of people with ID may be stimulated by autonomy-supportive environments (i.e., an environment that fulfills the need for autonomy, competency, and relatedness). Using an observational design, Casey, Wang, and Boucher (2014) found support for the validity of the SDT conceptualization of motivation to learn to swim for people with Down syndrome. Both studies are in line with Deci (2004), who stated that individuals with ID will become more autonomously motivated if caregivers are autonomy-supportive and involved. A clinical approach that helps professionals facilitate autonomous types of motivation and share many similarities to SDT is Motivational Interviewing (MI) (Markland, Ryan, Tobin, & Rollnick, 2005; Vansteenkiste & Sheldon, 2006).

Motivational Interviewing

Motivational Interviewing can be defined as a collaborative, person-centered form of guidance towards more intrinsic motivation for change (Miller & Rollnick, 2002). Frielink and Embregts (2013) explained in more detail MI and provided concrete recommendations for the adaptation of MI techniques to people with mild to borderline ID: adapt to language level, adjust to cognitive abilities, and control for social desirability of responding. In addition, certain characteristics of professionals were also found to be critical for effective Motivational Interviewing: trustworthiness, engagement, acceptance, empathy, and honesty.

In case studies of MI, promising results were found for treatment of offenders with ID and alcohol related problems (Mendel & Hipkins, 2002). Using a pretest-posttest design, Mendel and Hipkins selected seven male participants (age: 18-54

years) with mild ID and alcohol-related problems residing in a forensic service to participate in a group in which MI techniques were applied to support them through the Transtheoretical Model of change (DiClemente & Prochaska, 1998). The treatment contained three sessions of 1 hour within a 2-week period of time. Six out of the seven participants enhanced their motivation to change; five moved from the contemplation stage (i.e., considering change behavior) to the action stage (i.e., an individual makes a commitment to change), the other one moved from the pre-contemplation stage (i.e., being unaware/unconcerned) to the contemplation stage. In addition, conducting a single case study, Rose and Walker (2000) used a MI approach which was embedded in a broader intervention aimed to assist weight reduction and the decrease of challenging behavior in a 29-year-old man with mild ID and Prader-Willi syndrome. The levels of challenging behavior quickly dropped and remained at a lower level after the deployment of MI; it was however not examined whether MI or the broader intervention was responsible for the outcome.

The present study

In the present study, we evaluated Beat the kick (Kroon et al., 2013), a motivational pretreatment intervention to facilitate autonomous motivation for engaging with addiction treatment. The pretreatment program is based on MI techniques adapted for this population (Frielink & Embregts, 2013) and the theoretical assumptions of SDT.

The first hypothesis was that the type of motivation would change from more controlled types of motivation at baseline to autonomous motivation at the intervention phase. In order to test this hypothesis, stability of autonomous motivation over time was gauged. This is important as to date most studies on motivation using SDT are cross-sectional or used a pretest posttest design. However, the ongoing experience of motivation to change substance abuse varies from day to day. Therefore, it is important to monitor this day to day motivation.

As described earlier, the satisfaction of the needs for autonomy, competence, and relatedness is associated with autonomous motivation. Therefore fulfilment and thwarting of the three basic psychological needs was assessed prior to the intervention, after completion of the intervention and at 1-month follow-up. This enabled testing the second hypothesis, namely whether there was an increase in need satisfaction and a decrease in need frustration at baseline, post-intervention and 1-month follow-up, to ascertain whether participation in the intervention had an effect on participants' overall need satisfaction and frustration.

Method

Design

This study used a multiple case experimental design with individual time series (Cook & Campbell, 1979) to measure day to day motivation with respect to change substance abuse. Participants completed an adaptive self-reported inventory two to three times a week during baseline, the intervention and 1-month follow-up. The length of the baseline varied across the participants from two to four weeks, depending on the moment the direct support staff of the participant, including the psychologist, were able to attend a 1.5-hours-training in which the therapist delivering the intervention informed them about the intervention as well as transferring general knowledge about addiction and substance abuse. The intervention period lasted at least ten weeks (one session a week) and because of external factors (e.g., participant was not at home at the appointed time, therapist delivering the intervention / participant was ill or on vacation) it lasted approximately 14 till 16 weeks. The follow-up at one month after the intervention compromised three measurements within one week's time.

In addition, a case series design with pre-intervention, post-intervention and 1-month follow-up measures was used to analyze potential changes in need satisfaction and frustration.

Participants

The participants were identified throughout a healthcare organization in the southern part of the Netherlands. Psychologists working at this organization were informed about the intervention and invited to sign up potential participants. Eligible participants had to be over 18 years of age, had mild to borderline ID (IQ-score between 50 and 85), abused substances and did not receive other treatment regarding this behavior. In addition, during the intake, the researcher (first author) administered a measurement (Treatment Self-Regulation Questionnaire; for more information, see Materials) to ensure participants were not already autonomously motivated to change their substance abuse. In the present study, the definition of substance abuse given by Taggart and colleagues (2006) was used: "The hazardous consumption of alcohol, illicit drugs and/or over use of prescribed medications which has been proven to be harmful to the persons' physical, psychological, interpersonal and social health within 12-month period" (page 589). Similar to Taggart and colleagues (2006), the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) definition of substance abuse was not used in present study, as aspects of the definition related to role obligation and legal implications were deemed to be less pertinent for people with mild to borderline ID.

As the present study evaluated a novel intervention and is also one of the first studies that monitored day to day motivation with respect to change substance abuse, our goal was to replicate the study among five participants. As we took into account

that several potential participants might drop out, nine potential participants were identified. Two individuals entered a detoxification treatment, and one person could not be reached to plan an intake, even after multiple attempts; these three participants were excluded from the present study. Accordingly, six participants were enrolled in the study. A brief profile of the participants follows:

Participant 1

Participant 1 was a 26-year-old woman who had a mild level of ID (IQ = 61). She lived independently in an apartment and received ambulant support once a week. Participant 1 had a paid job in a factory, although she was not able to work during the intervention because of chronic wrist strain. Prior to the intervention, both participant 1 and her direct support staff reported that she used cannabis several times a day. They could not remember when she started using cannabis, but during intake they both stated she started since at least 2005 (when she moved into her current apartment).

Participant 2

Participant 2 was a 39-year-old man who had a mild level of ID (IQ = 59) and was diagnosed with mood disorders. He lived independently in an apartment where he received ambulant support several times a week. Participant 2 attended a care farm twice a week; the other three days he stayed at home without organized day activities. During intake, participant 2 reported the use of hashish numerous times a day. In the past he used hard drugs (i.e., cocaine, ecstasy, speed) as well, but he stopped using these drugs several years ago by himself. His direct support staff reported as well that participant 2 did not use hard drugs any longer since several years. Participant 2 and direct support staff both indicated that he started using drugs, including hashish, as a teenager.

Participant 3

Participant 3 was a 19-year-old man who had a mild level of ID (IQ = 67) and was diagnosed with multiple-complex developmental disorder (MCDD). He lived in a 24-hour community residence together with two other individuals. Participant 3 did not participate in day activities, although he was enlisted to attend a care farm once a week. Prior to the training, both participant 3 and direct support staff reported that participant 3 used cannabis numerous times a day. In addition, they stated that he started using cannabis approximately six years ago. Furthermore, direct support staff maintained that participant 3 experimentally used hard drugs when he was 15-16 years of age, but stopped for at least two years now.

Participant 4

Participant 4 was a 27-year-old man with a borderline level of intellectual functioning (IQ = 81) and was diagnosed with pervasive developmental disorders not otherwise specified (PDD-NOS). He lived in a 24-hour residence together with seven other individuals. Participant 4 worked five days a week at a sheltered workshop. During intake, both participant 4 and direct support staff stated that participant 4 started to drink alcohol irregularly when he was 15-years of age. The last years, since he lived in the current residence, he started drinking alcohol heavily, three to four times a week. In addition to alcohol, he used cannabis infrequently.

Participant 5

Participant 5 was a 23-year-old man with a borderline level of intellectual functioning (IQ = 80) and was diagnosed with autism spectrum disorder (ASD). He lived independently in an apartment where he received ambulant support several times a week. Participant 5 worked five days a week at a sheltered workshop. Prior to the training, both participant 5 and direct support staff reported that he used cannabis several times a day; he started as a teenager.

Participant 6

Participant 6 was a 36-year-old man with a borderline level of intellectual functioning (IQ = 72). He lived independently in an apartment where he received ambulant support once to twice a week. Prior to the intervention, participant 6 had a paid job at the post office; he worked five shifts of four hours each week. During intake, participant 6 reported drinking alcohol frequently, in weekends up to 20 beers per day. His direct support staff reported as well that participant 6 used alcohol frequently and affirmed the same amount of beer. Participant 6 and direct support staff both indicated that he started drinking alcohol as a teenager.

Materials***Substance abuse***

As widely used screening instruments among the non-ID population were unsuitable for people with ID (van Duijvenbode et al., 2015) and because of a lack of instruments developed for people with ID, participants abusing substances were identified by experienced psychologists working with people with ID who abuse substances.

Autonomous motivation for changing substance abuse

The Treatment Self-Regulation Questionnaire (TSRQ; Ryan & Connell, 1989; Williams, Grow, Freedman, Ryan, & Deci, 1996) was adapted by the authors of the present study, to improve comprehension by people with mild to borderline ID. To adapt the questionnaire, two researchers familiar with both people with mild to borderline ID

and SDT rephrased each of the 15 TSRQ-items independently, safeguarding that the items were comprehensible for people with mild to borderline ID while ensuring the meaning according to SDT. Next, together with an experienced manager working with people with mild to borderline ID, the two researchers developed a consensus version based on these two versions. Afterwards, this consensus version was discussed within the research team, resulting in small adaptations. Finally, five persons with mild to borderline ID completed the TSRQ; they found the questionnaire easy to comprehend and a few minor adaptations to the phrasing and grammar were made to improve clarity, based on their recommendations.

This instrument assesses the different types of motivation for a particular behavior. In the present study, the TSRQ was used to rate the extent to which participants wanted to change their substance abuse because of coercive social pressures (external motivation), guilt about continued substance abuse (introjected motivation), or a personal choice to change (autonomous motivation); amotivation was also encompassed to rate the extent to which the participant did not want to change at all. Intrinsic motivation was not included in the current version of the TSRQ, as intrinsic motivation refers to performing an activity for the inherent gratification of the activity itself, and addiction treatments are not intended to be merely appealing or pleasant activities.

The TSRQ consisted of 15 items and included items such as "I would change my behavior because I would feel guilty or ashamed of myself if I do not change" (introjected motivation) and "I would change my behavior because it fits with what I consider important in my life" (autonomous motivation). On the original scale, the response format comprised a 7-point Likert scale. For the purpose of this study, the response format was reduced from seven to five response choices (Hartley & MacLean, 2006), whereas 1 = completely untrue and 5 = completely true. Mean scores for each subscale were calculated by summing the scores of the corresponding items and dividing the total score by the number of items. Based on a series of Confirmatory Factor Analysis (CFA), Levesque and colleagues (2007) confirmed the factor structure of the TSRQ and its invariance across four different sites in the USA and three health behaviors (i.e., tobacco use, diet, and exercise). Correlations between the subscales of the TSRQ and health outcomes supported the predictive validity; controlled motivation was significantly positively associated with various negative health outcomes (e.g., depression), whereas autonomous motivation was significant positively associated with various positive health outcomes (e.g., greater levels of physical activity and fruit and vegetable consumption). In addition, the internal consistency of each subscale was acceptable (all Cronbach's alpha values > .73, except one regarding amotivation ($\alpha = .41$)).

Need satisfaction

The Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS) was developed by Chen and colleagues (2015) and adapted by Frielink, Schuengel, and Embregts (2016) into the BPNSFS-Intellectual Disability (BPNSFS-ID) to improve comprehension by people with mild to borderline ID (for the adaptation, the same procedure applied as described above regarding the TSRQ). The BPNSFS-ID assessed both satisfaction and frustration of the three basic psychological needs for autonomy, relatedness, and competence. The BPNSFS-ID consisted of 24 items and contained items such as "In my life, I have warm feelings about people who are important to me" (satisfaction of the need relatedness), "In my life, I think that I have to do too many things" (frustration of the need autonomy), and "In my life, I have the feeling that I can reach my goals" (satisfaction of the need competence). All items were rated on a 5-point Likert scale (1 = completely untrue and 5 = completely true). Chen and colleagues (2015) confirmed the reliability and validity of the BPNSFS among students across four cultural groups (Belgium, China, USA, and Peru).

Procedure

All measures were recorded and logged by the first author. The intervention was conducted by the third author, who was an experienced psychologist in working with people with mild to borderline ID and substance abuse; the therapist delivering the intervention was blind to the outcomes reported on the various measures. The TSRQ and BPNSFS-ID were administered three times. The first measurement was at the start of the baseline (intake). Next, after completing the intervention, the measurements were administered for the second time and at 1-month follow-up for the last time. In addition to these three measurements, participants completed an adaptive form of TSRQ two to three times a week regarding their day to day motivation to change their substance abuse. These measurements started two days after the intake and continued during the baseline period and intervention. At 1-month follow-up, the adaptive TSRQ was completed two times within one week after the comprehensive follow-up measurement. The questions were asked over telephone (twice a week) and face-to-face (once a week, to build a connection and to involve participants as much as possible into the research); as the intervention progressed, most face to face appointments were replaced by telephone appointments. This method to collect data over the telephone was used to limit interviewer effects (i.e., compared to face-to-face interviews, personal characteristics of a researcher will be less obvious in interviews over the telephone and this method is therefore less intrusive (Phellas, Bloch, & Seale, 2011) and because interviews over the telephone made it possible to collect the data frequently because of the wide geographical area the participants were living. An exception was made for participants 2 and 6, who insisted upon merely one, respectively two face to face appointments a week and no measurements over telephone. During each measurement (both face-to-face and over telephone), the first author read each

question aloud while the participants had a printed version of the questionnaire in front of them to read along. The participants indicated the response by giving the number (1 to 5) which was then recorded and logged by the first author.

To measure day to day motivation with respect to change substance abuse, participants completed a self-reported inventory two to three times a week during baseline, the intervention period, and at 1-month follow-up. Given the robust problems of people with mild to borderline ID with respect to substance abuse, we expected that if motivation would change, it would do so gradually. Therefore, we developed an algorithm that determined which items of the inventory were administered during a particular measurement; we labeled this algorithm as an adaptive window (the algorithm is visualized on the basis of an extensive flowchart, which can be requested from the first author). The adaptive window determines on the basis of the previous measurement (see also Figure 2) what the range of motivation types on which responses were sought. For example, at a given measurement occasion, a participant had a mean score of 4 with respect to external motivation and mean scores of 2 for all other types of motivation. That meant that the participant was externally motivated to change the substance abuse. In this case, it was unlikely that this participant would

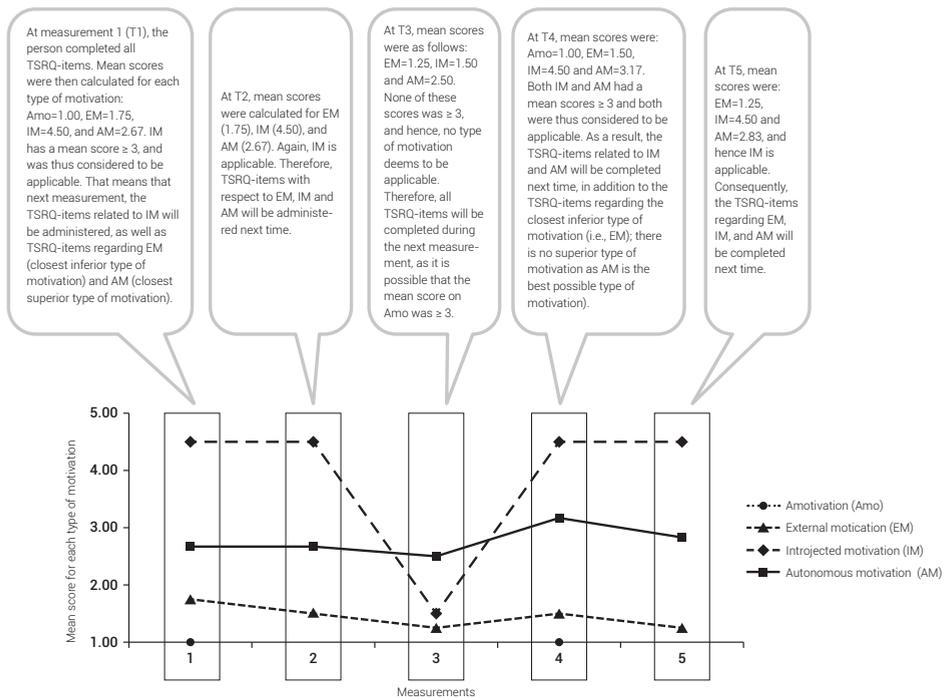


Figure 2. An example of the algorithm to determine which items of the inventory were administered during a particular measurement. Treatment Self-Regulation Questionnaire (TSRQ).

have been autonomously motivated at the next assessment. Therefore, to prevent a participant from answering questions outside the range of expected responses, merely questions regarding the current type of motivation in addition to items regarding the closest superior type of motivation and the closest inferior type of motivation were administered during the next measurement. In the example this means that during the next measurement, the TSRQ-items regarding amotivation (closest inferior type of motivation), external motivation (current type of motivation), and introjected motivation (closest superior type of motivation) were administered.

Intervention

Beat the kick, a ten-session, manualised intervention, was offered, based on the principles of MI (Frielink & Embregts, 2013; Miller & Rollnick, 2002) and SDT (Deci & Ryan, 2000). The aim of this motivational pretreatment intervention was to support the development of autonomous motivation of participants to change their substance abuse. After completion of the intervention, autonomously motivated participants were able to participate in an intervention specifically focused on changing the substance abuse itself.

Individual intervention sessions occurred weekly for 10 weeks, lasting approximately 45 minutes. The intervention sessions took place at the participant's home. Each session had the same structure. After revisiting the previous session by discussing the assigned homework, new material was discussed using various methods, such as internet assignments, studying cartoons, and viewing and discussing film fragments. Subsequently, the session was summarized and new homework was assigned. Homework practice was specified in each session. For example, after discussing the advantages and disadvantages of substance abuse and tempting situations to use substances, participants were asked to look at several graphic depictions of tempting situations and to mark those situations that were applicable to them. An overview of the treatment sessions is given in Table 1.

Prior to the intervention, the direct support staff of the participants, including the psychologist, attended a 1.5-hours-training, in which the therapist delivering the intervention (third author) informed them about the intervention as well as transferring general knowledge about addiction and substance abuse.

Data analysis

In order to evaluate the effect of the intervention regarding the frequent TSRQ-measurements, the graphs of the participants with respect to the evolution of the different types of motivation were visually inspected first by using the locally weighted scatterplot smoothing (Lowess) technique in R. The Lowess line fits the data locally using robust non-parametric models (Cleveland, 1981). When clear differentiation between baseline and intervention emerged, effect sizes were calculated using the Nonoverlap of All Pairs (NAP) method. NAP is an index of data overlap between baseline

Table 1. *An overview of the treatment sessions of Beat the kick.*

Session	Short description of the session
1.	Introduction to the "User manual" (a document focused on the client's substance abuse, motives to use substances and possible reasons to quite or use less substance); the document is updated at the end of each session and reviewed at the start of each new session. A short exploration of the substance use is done by a board game.
2.	Exploration of the client's knowledge and attitude of substance use on the basis of an internet assignment.
3.	Dialogue of the definition of substance addiction and substance abuse, and practice the differences between these two by using a video fragment and several graphics.
4.	Conversation on the advantages and disadvantages of substance use and abuse, and short introduction of the phenomenon craving.
5.	In-depth exploration of craving; what is craving, in which situations does the client experience craving and how does it work?
6.	Introduction to the cognitive behavioral therapy (ABC Model). Description of different ways to cope with craving, and explanation of the antecedent, belief, and emotion.
7.	Introduction to alternative activities, discuss the benefits of performing other activities and explore alternative behaviors (new activities).
8.	Examine the social network and identify a helper who can support the client in difficult situations.
9.	Review of intervention, and discuss relevant debated informant (why one wants to change, what alternatives one has and who one can contact for support) and summarize this on a wallet format for easy accessibility.
10.	Award a diploma, evaluation of the intervention and discuss possible subsequent steps.

and treatment phases in single-case-study research (Parker & Vannest, 2009) and is calculated by comparing each baseline data point with each treatment data point. As the goal in the present study was to support the development of autonomous motivation, a nonoverlapping pair is a unity in which the treatment data point was higher than the baseline data point. That is, if autonomous motivation, which was hypothesized to increase, has a mean score of 2 at the baseline data point and a mean score of 4 at the treatment data point, the score was considered to be a nonoverlapping pair. Likewise, as we hypothesized that qualitatively inferior types of motivation would decrease, if external motivation had a mean score of 4 at the baseline data point and a mean score of 2 at the treatment data point, the score was considered to be a nonoverlapping pair. If, for example, external motivation had a mean score of 3 at the baseline data point

and a mean score of 4 at the treatment data point, the score was considered to be an overlapping pair, because external motivation was hypothesized to decrease instead of increasing. A nonoverlapping pair was assigned a score zero, an overlapping pair was assigned a score one and equal data points were assigned half a score.

NAP is computed by dividing the total overlap score by the total number of comparisons. As stated by Parker and Vannest (2009), NAP scores between 50 and 65% can be classified as small treatment effects, scores between 66 and 92% as medium effects and scores between 93 and 100% as large effects.

In addition, a Friedman's test (non-parametric repeated measures comparisons) and post-hoc Wilcoxon signed-rank tests were used to compare mean scores of BPNSFS-ID between pre-intervention, post-intervention, and 1-month follow-up measures.

Ethical considerations

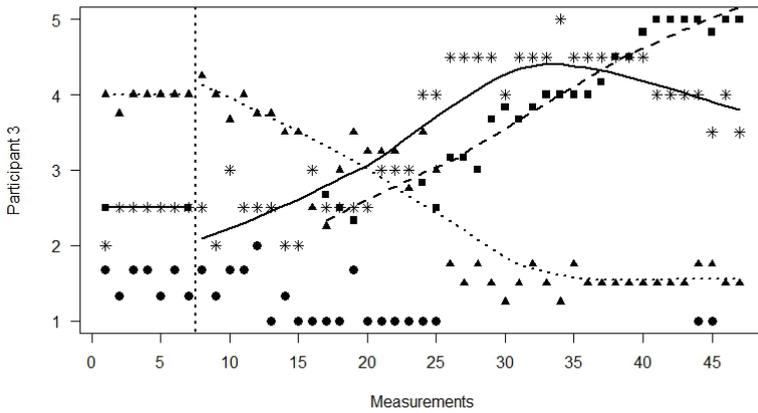
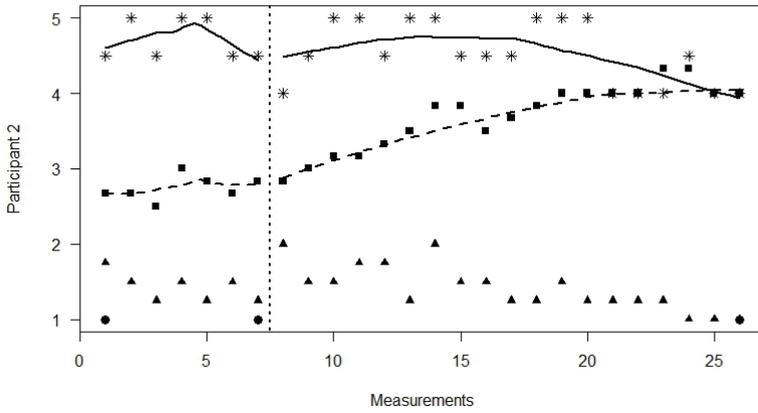
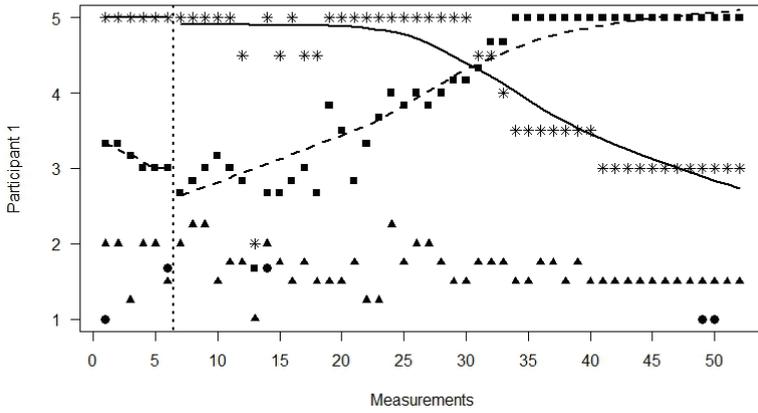
The study protocol was submitted to the Ethics Committee of Tilburg University who approved the study. All data were treated anonymously and confidentially. Informed consent was sought by providing information verbally and in writing with respect to the content and purpose of the study. Next, in line with Emerson and Hatton (2008), to ascertain that the participants understood what they agreed to, the ability of each potential participant to give informed consent was evaluated by determining whether they could recall: a) the aim and the content of the study, b) possible adverse aspects with respect to participation, and c) the possibility to withdraw consent at any time. All participants gave positive responses to all aspects and were therefore judged to be able to give informed consent. Consent was documented by signing an informed consent form by the participants.

Results

Five of the six clients completed the intervention; one (participant 5) dropped out after intervention session 4, and was thus considered as drop out for the present study. That is, the results reported are based on data of the five participants who completed the intervention.

Type of motivation

Figure 3 presents the extent to which participants did not want to change their substance abuse (amotivation), or the extent to which they wanted to change because of coercive social pressures (external motivation), guilt about continued substance abuse (introjected motivation), or a personal choice to change (autonomous motivation). The figure shows stability of the different types of motivation during baseline for all participants.



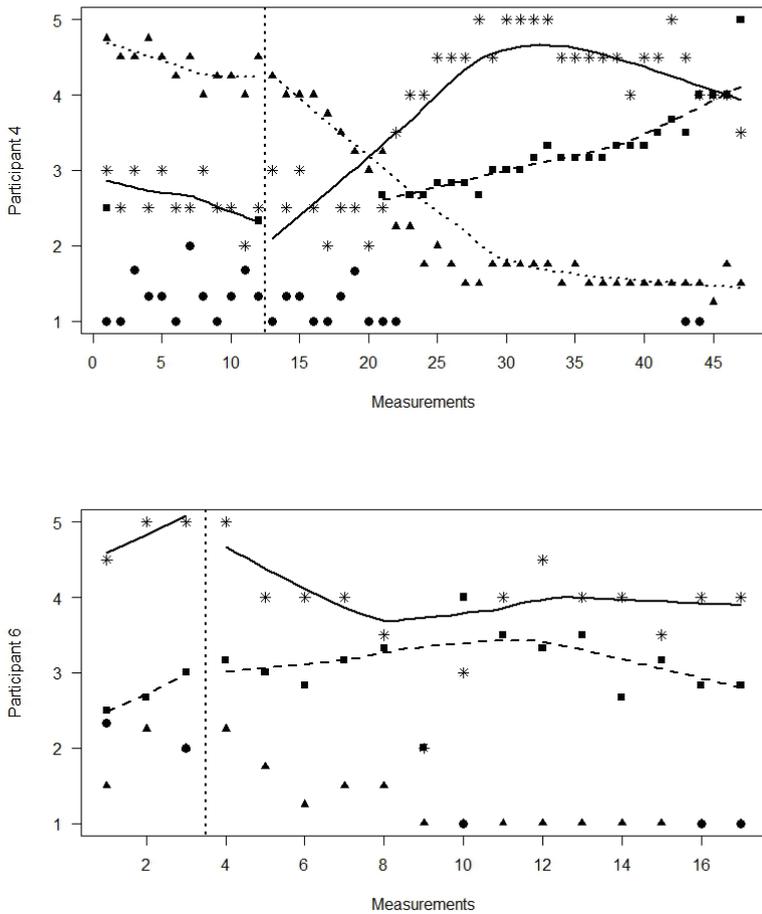


Figure 3. Visual representation of participants' different types of motivation during the baseline and the intervention.

- Amotivation
- ▲ External motivation
- * Introjected motivation
- Autonomous motivation

Note. The number of the measurements are allocated on the x-axis, the mean score on the different types of motivation are allocated on the y-axis. The dashed vertical line in each graph displays the difference between baseline and intervention. Lowess lines are plotted for the initial type of motivation and all superior types. An exception is made for the baseline of participant 6; a Lowess line is not useable for three measurements, and therefore a linear regression line is plotted.

Next, using the Lowess line, visual inspection shows that four of the five participants qualitatively enhanced their motivation to change their substance abuse. Participant 1 was initially introjected motivated (guilt about continuing substance abuse), but shifted to autonomous motivation as the intervention progressed (a personal choice to change substance abuse). Although introjected motivation remained suitable for participant 2 after completion of the intervention, autonomous motivation achieved the same level, suggesting that participant 2 wanted to change his substance abuse because of guilt as well as a personal choice. Participant 3 was initially externally motivated (wanted to change behavior because of coercive social pressures), and moved via introjected motivation to autonomous motivation as the intervention progressed. Participant 4 shifted from external motivation to an equal level of introjected motivation and autonomous motivation. Participant 6 did not show a qualitative enhancement in his motivation; he remained introjected motivated after completion of the intervention, although a small enhancement was seen in autonomous motivation. At 1-month follow-up, the results were similar to the post-intervention measurement for all participants.

As can be seen in Table 2, which lists the effects (NAP) and strength of effects, all participants (including participant 6) showed a medium to large improvement in autonomous motivation. In addition, all but one showed a medium to large decrease for the initially type of motivation; participant 2 showed a small decrease.

Need satisfaction and frustration

A Friedman's test was conducted to test whether there was a significant difference in need satisfaction and frustration at baseline, post-intervention and 1-month follow-up. There was a statistically significant increase in overall need satisfaction, $\chi^2(2) = 7.429, p = .024$, and a significant decrease in overall need frustration, $\chi^2(2) = 7.600, p = .022$. Post hoc analysis using Wilcoxon signed-rank tests identified the difference regarding overall need satisfaction as being between the baseline measure and the post-intervention measure ($Z = -2.070, p = .038$); the difference with respect to overall need frustration was found to be between the baseline and post-intervention as well ($Z = -2.023, p = .043$).

Subdivided by the three basic psychological needs, results showed a significant difference only in autonomy satisfaction $\chi^2(2) = 7.600, p = .022$ and autonomy frustration $\chi^2(2) = 6.000, p = .050$. Post-hoc analysis identified the difference regarding autonomy satisfaction as being between the baseline measure and the post-intervention measure ($Z = -2.032, p = .042$); there was no significant difference between the different measurements with respect to autonomy frustration, despite the overall reduction.

Table 2. NAP and strength of effect for each measured type of motivation per participant.

Participant	Type of regulation	NAP*	Standard error	Strength of effect
1.	External motivation	0.65	.15	Small decrease
	Introjection	0.79	.07	Medium decrease
	Autonomous motivation	0.74	.06	Medium improvement
2.	External motivation	0.55	.12	Small decrease
	Introjection	0.62	.11	Small decrease
	Autonomous motivation	0.98	.02	Large improvement
3.	Amotivation	0.89	.04	Medium decrease
	External motivation	0.94	.03	Large decrease
	Introjection	0.85	.06	Medium improvement
	Autonomous motivation	0.93	.05	Large improvement
4.	Amotivation	0.89	.05	Medium decrease
	External motivation	0.98	.01	Large decrease
	Introjection	0.84	.06	Medium improvement
	Autonomous motivation	1.00	.00	Large improvement
6.	External motivation	0.89	.08	Medium decrease
	Introjection	0.94	.06	Large decrease
	Autonomous motivation	0.81	.12	Medium improvement

*The NAP, also called Area Under the Curve, is equivalent to the effect size. Determination of strength of effect size is based on Parker and Vannest (2009): small effects: .50-.65; medium effects: .66-.92; large effects: .93-1.00

Discussion

This multiple case experimental study was conducted to test the following two hypothesis: (a) Participation in the intervention Beat the kick would alter the type of motivation from more controlled types of motivation at baseline to autonomous motivation at the intervention phase; and (b) Participation in the intervention would increase overall need satisfaction and decrease overall need frustration from baseline to intervention.

With regard to the first hypothesis, visual inspection showed a clear differentiation between baseline and intervention for all participants. Effect sizes were calculated using the Nonoverlap of All Pairs (NAP) method, revealing that all participants showed a medium to large improvement in autonomous motivation. In addition, all

but one showed a medium to large decrease for the initial type of motivation. These alternations were maintained up to one month after completion of the intervention. To the best of our knowledge, this is the first study focusing on intervening on autonomous motivation among people with mild to borderline ID. The results are consistent with the findings of Williams and colleagues (2006), Fortier and colleagues (2007) and Münster-Halvari and Halvari (2006) in non-ID populations; in these studies a SDT-intervention facilitated the internalization of autonomous motivation as well. That is, patients experienced greater autonomy support and reported greater autonomous motivations. Within the intervention *Beat the kick*, an important responsibility of the therapist delivering the intervention is to create an autonomy supportive environment, by providing relevant information, supporting patients' initiatives and acknowledging their perspectives. Within SDT, autonomy supportive social environments or specific factors within a social environment (e.g., professionals) have been found to promote autonomous motivation (e.g., Williams et al., 2006). Therefore, the findings of the present study provide initial evidence for the SDT-derived hypothesis that individuals with ID will become more autonomously motivated if caregivers are autonomy-supportive and involved (Deci, 2004; Deci & Ryan, 2000).

The outcome that the development of autonomous motivation in people with mild to borderline ID with respect to changing a particular behavior can be facilitated by the social environment (i.e., offering an intervention based on SDT and MI) is important. Indeed, developing autonomous motivation is an important aspect for all people, however, it is specifically challenging for people with mild to borderline ID. That is, people with mild to borderline ID are not only more inclined to blame the environment instead of oneself (i.e., having a more external locus of control; Nader Grosbois & Vieillevoye, 2012), they also experience the environment as more negative when compared to non-intellectually disabled peers. Creating an autonomy supportive environment that facilitates autonomous motivation in people with mild to borderline ID with respect to change behavior is therefore a difficult but important challenge, which seems attainable according to the present study.

With regard to the second hypothesis, the study revealed that participation in the intervention had an effect on overall need satisfaction and frustration, and specifically on the basic psychological need for autonomy. That is, there was an increase in overall need satisfaction, and more specific in autonomy satisfaction, and a decrease in overall need frustration between baseline and post-intervention. This is in line with the findings of Milyavskaya and Koestner (2011), who cited evidence suggesting that need satisfaction leads to autonomous motivation, and in turn, that autonomous motivation leads to positive outcomes, including well-being in addition to healthier lifestyles and eating behavior (Pelletier, Dion, Slovinec-D'Angelo, & Reid, 2004). Also, in a study conducted by van den Broeck, Vansteenkiste, de Witte, Soenens, and Lens (2010) satisfaction of each of the basic psychological needs (overall need satisfaction) related positively to employees autonomous motivation. The link between

autonomous motivation, need satisfaction (and satisfaction of the need for autonomy in particular) and actual change in substance use in people with mild to borderline ID is theoretically interesting, and should be examined in further research. Moreover, future research should also focus on the various underlying issues for substance use as reported by Taggart and colleagues (2007), as the link between autonomous motivation, need satisfaction, and actual change in substance abuse might vary for the different underlying issues.

Although the results of the present study are promising, the study has some limitations. Firstly, the participants were actively recruited to participate in the intervention and thus not selected at random. Secondly, due to organizational and practical restraints, AB designs were used instead of more extensive designs such as a multiple baseline design. This raises the question whether the present results can be generalized and therefore calls for a replication study on a more widespread scale with participants selected at random and preferably using multiple baseline designs. Lastly, although social desirability might also be a possible limitation, most measurements took place over telephone and cues such as facial expressions could not be given. Moreover, the researcher avoided judgmental statements, and thus limiting the expression of social desirability. In addition, based on visual inspection of the baseline measurements, no evidence was found for a Hawthorne effect or the potential impact of practice effects; therefore it is improbable that the observed effect on the development of autonomous motivation was biased by one of these effects.

The intervention Beat the kick was found to be effective to facilitate the development of autonomous motivation in five people with mild to borderline ID with respect to change substance abuse and to support the internalization of controlled motivation. In this respect, Beat the kick seems to be useful as a motivational pretreatment intervention to facilitate autonomous motivation for engaging with addiction treatment. That is an important and useful outcome, as autonomous motivation is associated with a variety of positive outcomes in the general, non-disabled population such as greater client involvement and retention in addiction treatment program and greater life satisfaction and well-being. Moreover, this outcome is relevant for clinical practice across both ID and mainstream addiction services as a lack of motivation to engage in treatment leads to failure of many treatments in both services. As the current study illustrates that motivation of people with mild to borderline ID can be influenced, treatments might become more effective, which prevent spending money on treatments that will not work until clients are autonomously motivated to engage. Moreover, it would be interesting to detect whether this approach is beneficial for other treatments as well. In addition, the link between autonomous motivation, need satisfaction and actual change in substance use in people with mild to borderline ID should be examined in further research. Another important result of the present study is initial evidence of empirical demonstration of the use and applicability of SDT among

people with ID. Further research is needed to evaluate the applicability of SDT to people with mild to borderline ID on a more widespread scale with participants selected at random.

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Chapter 8

General discussion

The studies presented in this thesis focused on better understanding self-determination through the lens of Self-Determination Theory (SDT). The aim of this was to better judge the relevance of SDT for people with mild to borderline intellectual disability (ID; IQ between 50 and 85) and to improve support for people with mild to borderline ID in order to attain optimal health and subjective well-being. According to SDT, social environments that support the three basic psychological needs for autonomy, relatedness, and competence, foster greater subjective well-being and autonomous motivation for activities (Ryan & Deci, 2000). Although SDT is argued to be universally applicable, there is a dearth of empirical research examining the links between the SDT-concepts of autonomy support, need satisfaction, and autonomous motivation in people with ID. In addition, there is a lack of valid and reliable instruments measuring these concepts in people with mild to borderline ID. Ideally, this thesis would include people along the full range of ID levels. However, the SDT-concepts are inherently subjective and proxy reporting would often be required in the case of people with moderate to severe ID. This thesis therefore focused merely principally on people with mild to borderline ID (IQ 50 – 85). By doing so, the current thesis provides a basis for future work, including in people with more severe ID.

The results of three studies are presented in this thesis. The first was a large-scale study ($N = 186$) that had two main parts. It was firstly necessary to adapt and validate self-report questionnaires to measure autonomy support, autonomous motivation, and need satisfaction among people with mild to borderline ID. After this the questionnaires could be used to test the tenets of SDT within a population of people with mild to borderline ID. The second study was a qualitative study that aimed to identify how professionals can adapt a clinical approach supported by SDT, Motivational Interviewing (MI), for use with people with mild to borderline ID. The third study was a multiple-case experimental intervention study to evaluate whether an SDT-based intervention could facilitate the internalization of autonomous motivation among people with mild to borderline ID.

In this chapter, the main findings of the thesis are first summarized, integrated, and discussed. Next, the main conclusions are considered in the context of the strengths and limitations of the study, followed by the implications of this study for policy, practice, and education. The chapter ends with a general conclusion.

Main findings and interpretations

Adapting and validating self-report SDT-questionnaires

As mentioned previously, the concepts of autonomy support, need satisfaction, and autonomous motivation are supposed to be universally important (Deci, 2004; Deci & Ryan, 2000). However, these concepts have seldom been tested in people with ID because of a lack of psychometrically adequate instruments. Therefore, Chapters 2, 3,

and 4 described the adaptation and validation of self-report questionnaires measuring autonomy support (Chapter 2), need satisfaction (Chapter 3), and autonomous motivation (Chapter 4). Selected through simple random sampling, a total of 186 people with mild to borderline ID from four ID-services in a mixed urban / rural area in the southern part of the Netherlands participated in this study. All participants (110 males, 76 females) were aged above 18 years ($M = 40.3$, $SD = 14.9$, range = 18.1 – 84.8) and had at least weekly support provided by support staff for a minimum of three months. The support provided by support staff focused primarily on improving skills such as household tasks, using money, and travelling independently. The mean IQ on file was 67; 109 participants had a mild ID and 77 had a borderline level of intellectual functioning. Sixty-seven participants (36%) lived independently in the community (with or without partner), and 107 (58%) lived in a supported accommodation, either in the community ($N = 84$, 46%) or in a residential facility ($N = 23$, 12%); the remaining 12 participants (6%) lived with their family.

Autonomy support

Chapter 2 focused on the construct validity and reliability of the Health Care Climate Questionnaire – Intellectual Disability (HCCQ-ID), an instrument aimed at autonomy support by support staff as perceived by people with ID. Similar to the original HCCQ (Williams, Grow, Freedman, Ryan, & Deci, 1996), the expected one-factor structure was found for the HCCQ-ID. Both the internal consistency ($\alpha = .93$) and the test-retest reliability ($r = .85$) were good. Hence, the results of the present study provide initial support for the construct validity and reliability of the HCCQ-ID in a population of people with mild to borderline ID.

This study used a 5-point Likert scale to assess satisfaction with autonomy support. Most participants were satisfied to very satisfied with the autonomy support provided by their support staff ($M = 4.01$, $SD = 0.56$, range = 1.93-5.00). This is in broad agreement with studies in, among others, psychiatric outpatients (e.g., Jochems, Mulder, Duivenvoorden, van der Feltz-Cornelis, & van Dam, 2014) and people with health-related problems such as patients with severe obesity (e.g., Williams et al., 1996). It might be that participants in the present study were truly satisfied with the experienced autonomy support, but the results might also be explained by the reluctance of people with mild to borderline ID to criticize their support staff because of their dependent, and sometimes long-standing, relationship. Additionally the HCCQ-ID might not discriminate well between levels of experienced autonomy support. Because we are not aware of other instruments measuring autonomy support among people with mild to borderline ID, adding both neutral formulated items and items measuring the opposite of autonomy support (i.e., control) to the HCCQ-ID would be recommended in future studies to further improve the distinctiveness of this instrument.

Recently, Emond Pelletier and Joussemet (2016) conducted a study to examine whether autonomy support can foster the sense of autonomy of people with a mild ID. In order to do so, they compared situations with and without autonomy support. People within an autonomy supportive context experienced more autonomy satisfaction when compared to people without autonomy support. Moreover, people within the autonomy supportive context perceived more value to the activity, implying that the advantages of autonomy support within the general population can be extended to people with mild ID. In their study, Emond Pelletier and Joussemet (2016) attempted to actively provide autonomy support during a learning activity. However, they did not measure to what extent the participants actually experienced autonomy support. Hence, replicating their study while adding an instrument to measure autonomy support, such as the HCCQ-ID, would be important for future research.

Need satisfaction

In Chapter 3, the Basic Psychological Need Satisfaction and Frustration Scale – Intellectual Disability (BPNSFS-ID), an adapted version of the original BPNSFS (Chen et al., 2015), was validated to operationalize satisfaction and frustration with the three basic psychological needs according to SDT (i.e., autonomy, relatedness, and competence). The results indicated an adequate factorial structure of the BPNSFS-ID, comprising the satisfaction and frustration of each of the three needs. This finding is consistent with recent studies among non-ID populations (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011; Chen et al., 2015; Unanue, Dittmar, Vignoles, & Vansteenkiste, 2014) and theory (Vansteenkiste & Ryan, 2013), suggesting that need satisfaction and need frustration are best viewed as independent concepts with separate precedents and predicting distinct results.

In addition, the associations between the BPNSFS-ID subscales autonomy, relatedness, and competence, and the self-determination subscale of the Personal Outcome Scale (POS), the De Jong Gierveld Loneliness Scale, and the General Self-Efficacy Scale – 12 (GSES-12), supported the construct validity with strong, significant Pearson correlations ranging between $r = .60$ and $r = .71$. Moreover, the BPNSFS-ID demonstrated high internal consistency ($\alpha = .92$) and 2-week test-retest reliability ($r = .81$ for the composite subscale autonomy, $r = .69$ for the composite subscale relatedness, and $r = .85$ for the composite subscale competence). Hence, the BPNSFS-ID proved to be a valid and reliable measure of basic psychological need satisfaction and need frustration among people with mild to borderline ID.

Using a 5-point Likert scale, the mean value of the composite subscale autonomy was 3.92 ($SD = 0.56$, range = 1.50 – 5.00), the mean value of the composite subscale relatedness was 4.02 ($SD = 0.64$, range = 1.88 – 5.00), and the mean value of the composite subscale competence was 3.64 ($SD = 0.54$, range = 1.88 – 5.00). All mean scores are above average, indicating that most participants perceived their needs for autonomy, relatedness, and competence as mostly satisfied. This finding is

similar to other studies (e.g., Campbell et al., 2015; Chen et al., 2015), suggesting that the basic psychological needs of people with mild to borderline ID are satisfied to a degree comparable to non-ID populations.

Interestingly, the items of the BPNSFS-ID are related to the perception of autonomy, relatedness, and competence in general (i.e., "In my life, I can do whatever I want when I want"). However, given the important role of the social environment in a person's life and the fact that support staff are key people in the lives of people with mild to borderline ID (van Asselt-Goverts, Embregts, & Hendriks, 2013; Embregts, 2011), it would be interesting to explore the need satisfaction for autonomy, relatedness, and competence within the relationship with their support staff. That is, for example, the question would not be "In my life, I can do whatever I want when I want", but rather "In my relationship with X [name support staff], I can do whatever I want when I want". Within the general population, such research regarding relational need satisfaction and need frustration has been conducted by Vanhee, Lemmens, and Verhofstadt (2016) in men and women in a committed relationship. Future research should focus on the unique contribution of the relational need satisfaction between people with mild to borderline ID and their support staff when compared to the general need satisfaction.

Autonomous motivation

In Chapter 4, the assumption was tested whether the four subtypes of extrinsic motivation can be differentiated in people with mild to borderline ID. The study used an adapted version of the Self-Regulation Questionnaire (SRQ; Ryan & Connell, 1989), applied to two different life domains, exercise and support. Results supported the distinction between the four subtypes of extrinsic motivation in both domains. In addition, the correlation coefficients supported a quasi-simplex pattern of correlations among the subtypes, indicating that adjacent subtypes were more closely related than non-adjacent subtypes. That is, the high correlation coefficients between external motivation and introjected motivation (together controlled motivation) and between identified motivation and integrated motivation (together autonomous motivation) were consistent with a higher order distinction that is made between controlled motivation and autonomous motivation. Moreover, the study found Cronbach's alphas and test-retest reliabilities to be adequate for early stage research (Nunnally, Bernstein, & Berge, 1967). Overall, the results of the current study provided initial evidence for the universality of the four subtypes of extrinsic motivation across populations with and without ID. The reliability of the SRQ could be improved in future studies, for example by adding items to scales consisting of merely two items. Additionally, given the quasi-simplex pattern, a higher order distinction within extrinsic motivation was also supported by the data. This dichotomy is in line with the proposal of Reid, Vallerand, Poulin, and Crocker (2009) that different types of extrinsic motivation could be clustered into just two subtypes (i.e., self-determined and non-self-determined motivation).

The domain of motivation has not been studied extensively within the ID-field, but people with ID are often perceived as being less motivated and more passive (Emond Pelletier & Joussemet, 2016). Although it was not the primary aim of the current study, our findings did not confirm this assumption. Indeed, the results of the study show that participants generally experienced autonomous motivation for both exercise and support rather than controlled motivation. Only the results regarding the domain of exercise can be compared with non-ID populations because support provided by support staff has no parallel in the populations of people without ID. This comparison revealed that people with ID reported a similar degree of autonomous motivation to people without ID. For example, Edmunds, Ntoumanis, and Duda (2008) found in an intervention study ($N = 56$) that female university students were more autonomously motivated for exercise when compared to controlled motivation. Moreover, within a large sample ($N = 1079$) of regular exercisers, Duncan, Hall, Wilson, and Jenny (2010) found that both male and female exercisers reported more forms of autonomous motivation than controlling forms of motivation.

Conclusion

In summary, the HCCQ-ID, the BPNSFS-ID, and both adapted versions of the SRQ proved to possess sufficient psychometric properties to be used as instruments for measuring autonomy support, need satisfaction, and autonomous motivation among people with mild to borderline ID. These validated self-report questionnaires are the first to reliably assess the SDT-concepts autonomy support, need satisfaction, and autonomous motivation in people with mild to borderline ID. This is a fundamental first step in testing whether the tenets of SDT also apply to people with mild to borderline ID.

Testing the tenets of SDT among people with mild to borderline ID

After the validation of the three self-report SDT-questionnaires described in Chapters 2, 3, and 4, the tenets of SDT were tested in Chapter 5. Associations between autonomy support, need satisfaction, autonomous motivation for support, and subjective well-being were tested using Structural Equation Modelling (SEM). The results showed that perceived autonomy support from support staff was positively associated with autonomous motivation for support and with satisfaction of the needs for autonomy, relatedness, and competence. In addition, autonomous motivation for support and need satisfaction were associated with higher subjective well-being. Moreover, autonomous motivation and need satisfaction mediated the association between autonomy support and well-being. Lastly, need satisfaction of the needs for autonomy and relatedness was negatively associated with controlled motivation, while satisfaction of the need for relatedness was positively associated with autonomous motivation. When replacing well-being with ill-being, measured as depression, the direct and indirect relationships between the SDT-concepts were, despite being reversed, rather similar. The relationship between autonomy and competence on the one hand and ill-being on the other hand

was significant yet negative; the relationship between ill-being and the other SDT-concepts was not significant. Moreover, in contrast to the model with well-being as outcome measure, neither autonomy support nor the basic need for relatedness were related to ill-being indirectly via the mediating variable of autonomous motivation.

The universality claim of SDT was bolstered by showing that autonomy support, autonomous motivation, as well as the needs for autonomy, competence, and relatedness were associated with subjective well-being, and rather similar, despite being reversed, outcomes when well-being is replaced by ill-being as outcome measure. It should be mentioned, however, that this study had a cross-sectional, non-experimental research design, and hence, direct causal interpretations cannot be drawn from the findings. Nevertheless, the study showed that SDT has potential as a guide towards enhancing subjective well-being and thus quality of life of people with mild to borderline ID through support focused on autonomy. This is imperative, as more insight is needed into how to support people with mild to borderline ID in such a way that optimal subjective well-being can be achieved. Given the important role of the social environment in a person's life and the fact that support staff are key people in the lives of people with mild to borderline ID (van Asselt-Goverts et al., 2013; Embregts, 2011), support staff have a vital role in providing their client with a feeling of autonomy, relatedness, and competence. This will increase the client's subjective well-being and decrease the client's subjective ill-being, which are, among others, essential outcome measures for support.

Against expectations, only the relationship between relatedness and autonomous motivation was significant. A possible explanation might be that people with ID perceive autonomy as independence and therefore, when feeling autonomous, believe that they have to make their own decisions without support. In that case, it would make sense that people with ID whose basic psychological needs are satisfied do not experience autonomous motivation for support. However, the opposite of autonomy is heteronomy (i.e., perceiving one's actions as controlled by forces that are alien to the self) rather than dependence (i.e., reliance on other people for support, guidance or supplies) (Chirkov, Ryan, Kim, & Kaplan, 2003). People can therefore be autonomously dependent on others, willingly trusting their support. An interesting question in this respect is whether one is always aware of the fact that one can be autonomously dependent on others. When focusing on people with ID, it might be even more difficult for them to realize this without being explicitly reminded of this, especially with respect to their support staff due to their dependent, and sometimes long-standing, relationship.

Next, in order to provide suggestions to support staff on how to develop such an autonomy supportive environment, Motivational Interviewing (MI) was studied as an exemplary case of a broader class of methods to increase autonomous motivation.

Adapting MI techniques for use with people with mild to borderline ID

MI was chosen as an example of a broader class of methods to increase autonomous motivation both because it was considered to be a promising method for increasing motivation among people with mild to borderline ID and because its theoretical basis shares many ideas with SDT (Deci & Ryan, 2012; Markland, Ryan, Tobin, & Rollnick, 2005; Vansteenkiste & Sheldon, 2006). However, in order to employ MI with people with mild to borderline ID, it was first necessary to show whether adaptations in the MI techniques were required (McLaughlin, Taggart, Quinn, & Milligan, 2007). Therefore, the purpose of the study in Chapter 6 was to identify how professionals could adapt MI techniques for use with people with mild to borderline ID. Semi-structured qualitative interviews and focus groups were conducted with clients, parents, and professionals ($N = 26$). This resulted in the recommendation of several modifications to accommodate MI: adapt to language level, adjust to cognitive abilities, and control for social desirability of responding. In addition, certain characteristics of professionals were also found to be critical for effective MI: trustworthiness, engagement, acceptance, empathy, and honesty. It should be noted that some of the recommendations made here are not only important within the context of MI and SDT, but also for optimal communication with people with ID in general.

The results of this qualitative study are in line with previous research focusing on issues to be addressed in conversations with people with mild to borderline ID (Clarkson, Murphy, Coldwell, & Dawson, 2009; Lindsay, 2009; Reuzel, Embregts, Bosman, van Nieuwenhuijzen, & Jahoda, 2016; Roeleveld, Embregts, Hendriks, & van den Bogaard, 2011; Tuffrey-Wijne & McEnhill, 2008). For example, Reuzel and colleagues (2016) reported that people with ID valued the helpful advice and the practical and reliable support they received from support staff in addition to the opportunities to tell their story. Both the people with ID and their support staff emphasized the importance of having a trusting relationship. Moreover, Clarkson and colleagues (2009) and Roeleveld and colleagues (2011) found that honesty, trust, and caring are important characteristics of interactions with support staff.

The study in Chapter 6 identified how professionals could adapt MI techniques for use with people with mild to borderline ID and also highlighted important characteristics of support staff during conversations. However, this study did not investigate whether the use of SDT and MI techniques in an intervention would be beneficial for people with mild to borderline ID. This question was central to the study in Chapter 7.

Applying SDT to foster practice: Facilitating autonomous motivation and satisfying needs

Finally, Chapter 7 described an intervention study testing a number of implications from the preceding studies. We tested a motivational pretreatment intervention (*Beat the kick*; Kroon, Frielink, & Embregts, 2013) to facilitate autonomous motivation

to engage in a subsequent addiction treatment (i.e., wanting to change substance abuse behavior because of a sense of free choice and volition). Eligible participants had to be over 18 years of age, had mild to borderline ID, abused substances, did not receive other treatments regarding this behavior, and were not already autonomously motivated to change their substance abuse. A multiple-case experimental design ($N = 6$) was used to assess day-to-day motivation (measured with the SRQ; Chapter 4) to change substance abuse behavior (i.e., cannabis, alcohol, or hashish). During the intervention phase, the 10-session treatment program *Beat the kick* (Kroon et al., 2013) was delivered by an experienced psychologist. Participants completed the SRQ two to three times a week during baseline, intervention and a 1-month follow-up. Moreover, need satisfaction and need frustration (measured with the BPNSFS-ID; Chapter 3) were assessed once during baseline, after completion of the intervention, and at 1-month follow-up. In addition, the recommended modifications to accommodate MI for use with people with mild to borderline ID (Chapter 6) were applied during the intervention.

In five of the six participants (one dropped out) the type of motivation changed from more controlled types of motivation (i.e., external motivation and introjected motivation) at baseline to more autonomous types of motivation after completion of the intervention. In addition, after completion of the intervention the participants reported a significant increase in overall need satisfaction and in satisfaction of the need for autonomy as well as a significant decrease of overall need frustration. From this it can be concluded that the implementation of SDT and MI techniques in the pretreatment intervention *Beat the kick* reliably changed the type of motivation. Moreover, in addition to the cross-sectional evidence described in Chapter 5, the experimental effects provided further proof of the use and applicability of SDT among people with ID.

Chapter 7 illustrates that a motivational pretreatment intervention can facilitate autonomous motivation for engaging with, in this case, an addiction treatment in people with mild to borderline ID. That is an important and useful outcome because autonomous motivation is related to a range of positive outcomes in the general, non-disabled population. These include greater client involvement and continuation in an addiction treatment program and greater life satisfaction and subjective well-being. Likewise, the study in Chapter 5 provided evidence for a significant association between autonomous motivation and subjective well-being in people with mild to borderline ID. The finding that a motivational pretreatment intervention can facilitate autonomous motivation when applying the recommended adaptations to the MI-techniques described in Chapter 6, is also relevant for clinical practice because it may be helpful for care avoiders, dropouts, and other people for whom regular interventions are not effective. Given the high rates of dropout, this is particularly important for people with mild to borderline ID showing challenging behaviors in (residential) treatment facilities. In most cases, a lack of motivation to engage in treatment leads to failure

of the treatment. By facilitating autonomous motivation for engaging with treatment, treatments within the ID field might become more effective while also upholding both affordable and qualitative good treatments.

Limitations and directions for future research

In the studies reported in this thesis, multiple designs (cross-sectional, qualitative, and multiple-case experimental) and different methods (self-report questionnaires, semi-structured interviews and focus groups) were used. As no instruments were available to measure autonomy support, need satisfaction, and autonomous motivation in people with mild to borderline ID, the set of studies reported in this thesis focused on adapting existing instruments used in the general population for use with people with mild to borderline ID and exploring the psychometric properties of these instruments with a proper sample size. The findings provided evidence for the validity and reliability of the instruments, which were therefore used in the overall study (Chapter 5) and in the intervention study (Chapter 7). However, despite these strengths, several limitations of the studies should be mentioned. Whereas each chapter dealt with its own particular limitations, a number of general limitations will be addressed.

A first limitation is the cross-sectional design of most of the studies presented here, limiting the scope for conclusions about causality. Based on the results of the studies, SDT shows potential as a coherent guide to enhancing subjective well-being and thus quality of life of people with mild to borderline ID through support focused on autonomy. However, the results do not indicate, for example, whether perceived autonomy support results in well-being or vice versa. Therefore, testing a similar SDT-model in people with mild to borderline ID in a longitudinal-experimental design would be recommended. This would allow investigation of the causality of the direct and indirect relationships. Although the intervention study (Chapter 7) provides some first insights into causality (assuming that employing MI is a form of autonomy support), large-scale experimental designs focusing on multiple outcome measures are also needed to draw firm conclusions about causality.

A second limitation is the scope of the target population of these studies. We focused on people with mild to borderline ID and, therefore, the results cannot be generalized to other ID target populations such as people with moderate or severe ID. The current studies focused on people with mild to borderline ID receiving at least weekly support aimed primarily at improving skills such as household tasks, using money, and travelling independently because this target population was deemed able to provide personal reflections on measures investigating perceived autonomy support, need satisfaction, and autonomous motivation. In contrast, in people with more severe levels of ID these reflections would often be mediated by significant others. Although the results of these studies bolster the universality claim of SDT among people with mild to borderline ID by showing that autonomy support, autonomous motivation, as

well as the needs for autonomy, competence, and relatedness are associated with psychological well-being, further steps are needed to test whether the universality claim can be upheld in people with more severe types of ID. Measuring autonomy support, need satisfaction and autonomous motivation using self-report questionnaires, however, is more complex for people with moderate to severe ID. Therefore, future research should focus on two issues. Firstly, it would be interesting to explore whether proxies can make a good judgment. Currently, in another project at Tilburg University, people with ID, their relatives and their support staff all respond to the BPNSFS-ID from the perspective of the client, providing the possibility to identify to what extent proxies (in this case relatives and support staff) are able to interpret the need satisfaction and need frustration of people with mild ID (Embregts et al., in preparation). Secondly, observational studies may be interesting. Zijlmans, Embregts, Gerits, Bosman, and Derksen (2014) adapted an observation system, originally developed by Custers, Kuin, Riksen-Walraven, and Westerhof (2012), to score video recordings of interactions between support staff and people with ID. The staff behavior scales of the observation system focus on the extent to which staff support the client's needs for autonomy, relatedness, and competence. In addition to these staff behavior scales, three client scales measure clients' depressed affect, positive affect, and negativity. While Zijlmans and colleagues (2014) included people with mild to borderline ID, other colleagues at Tilburg University focused in their exploratory study on the interactions between professionals and people with severe levels of ID (Embregts et al., in preparation). It would be interesting to use the observation system to assess the interactions between support staff and people with (more severe) ID on a larger scale. It should be noted however, that the client scales do not measure to what extent people with ID experience satisfaction of the three needs. Hence, it would be interesting to explore whether people with ID perceive their needs as satisfied in a similar way as observed by staff behavior scales.

A third limitation of the current studies is the scope of the target behavior in the intervention study (Chapter 7). The intervention study only focuses on assessing day-to-day motivation to change substance abuse behavior (i.e., cannabis, alcohol, or hashish) among individuals with mild to borderline ID. Although it was not the goal of the intervention, it would have been interesting to see whether autonomous motivation for changing substance abusing behavior resulted in an actual reduction in substance abusing behavior. It is recommended that future research includes measures of actual behavior change. Moreover, as the results of this thesis strictly apply to intervention with substance-abusing people with ID, it would be interesting to find out whether an approach based on SDT and MI principles is beneficial for other domains as well, including, for example, medication usage, physical activity, and challenging behaviors. In other research at Tilburg University focusing on challenging behavior (van den Bogaard, Nijman, Palmstierna, & Embregts, 2016a; 2016b), observational measurements have been used to assess the characteristics of different forms of challenging behavior

(e.g., aggression and self-harm). These measurements help staff to get more insight into challenging behavior, such as what the triggers are and what the reactions to these behaviors are. Combining the current research with their research would be an interesting starting point to get more insight into actual behavior changes.

A fourth limitation is the determination of the ID-level of the participants. In all chapters of this thesis, reported IQ-scores were based on clients' files. According to these files, all participants had an IQ-score between 50 and 85. However, for numerous participants, their last psychological assessment was more than 2 years ago. This raises the question as to whether the periodic psychological assessment was still valid and therefore, whether the reported IQ-scores reflect current intellectual functioning. Although the psychological burden would have been too high if a full IQ-test was included, a shortened IQ-test might have been possible. Recently started research at Tilburg University (Giesbers, Tournier, Hendriks, Jahoda, Hastings, & Embregts, in preparation; Tournier, Giesbers, Hendriks, Hastings, Jahoda, & Embregts, in preparation) included the assessment of intelligence by administrating two subscales of the WAIS-IV: matrix reasoning and vocabulary. In addition, Kunseler, Schuengel, Embregts, and Mergler (2016) recommended in the Basic Minimal Dataset intellectual disability (in Dutch: Basis Minimale Dataset (MDS) verstandelijke beperking) the use of a small number of subscales (two or four) to determine the overall level of intelligence of a person. It should be noted that these shortened IQ-assessments are only recommended for screening purposes in research. This indication should not be used for classification purposes or treatment guidelines.

A final limitation is related to the theoretical starting point of this thesis. This was a theory derived from mainstream psychology (i.e., SDT). This theory has been used in this set of studies to explore whether people with mild to borderline ID experience constructs such as autonomy support, need satisfaction, and autonomous motivation in a similar way to people without ID. An important advantage of this approach is that it avoids unnecessary dividing lines and conceptual boundaries between people with and without ID. Such an approach, however, has the risk that, unless everything fits perfectly, people with ID have to fit into concepts that are not derived from themselves. Moreover, people with a disability, whether it is an ID, a visual disability, a hearing impairment or a motor impairment, might interpret the various SDT-constructs differently. For example, for the general population, a typical item regarding autonomy satisfaction might be 'I make my own decisions'. Now, imagine Paul from the General introduction of this thesis, who had a mild ID and lives in a 24-hour residential facility. His support staff make all decisions for him, so one might conclude that Paul does not experience that he can make his own decisions. However, as mentioned previously, people can be autonomously dependent on others, willingly trusting on their support. If this were the case, one might conclude that Paul does make his own decisions by willingly trusting the support provided by his support staff. Although the outcome is similar (i.e., Paul's support staff make the decisions), there is a fundamental difference

between the two perspectives which raises the question how people with ID would perceive and define autonomy. Hence, it would be interesting to further explore the underlying mechanisms of the SDT-constructs of autonomy support, need satisfaction, and autonomous motivation, using more qualitative research methods such as semi-structured interviews with people with ID, their relatives, and support staff (Anderson & Chirkov, 2016).

Implications

Scientific implications

In the present thesis, several general scientific implications can be distinguished. First, the studies presented in this thesis adapted and validated three urgently needed self-report SDT-questionnaires in people with mild to borderline ID. This is important because there was a lack of psychometrically sound instruments to measure autonomy support, need satisfaction, and autonomous motivation in this population. Although the current thesis provides support for the psychometric properties of the three adapted SDT-questionnaires, future research should focus on further improving the HCCQ-ID, the BPNSFS-ID, and the SRQ. As mentioned previously, it would be desirable for future research to further improve the distinctiveness of the HCCQ-ID by adding both neutral formulated items and items measuring the opposite of autonomy support (i.e., control). Moreover, the SRQ also requires more items to further improve the reliability of measuring autonomous motivation. Recently, Katz and Cohen (2014) used a projective instrument to assess autonomous motivation in students with borderline ID. This projective instrument was developed because they argued that the results of self-reported questionnaires are questionable. This is because people with ID may experience difficulties with activities requiring symbolic, abstract, and conceptual thinking and with responding to cognitive complex sentences. On the basis of their study in 88 students, Katz and Cohen (2014) found that autonomous motivation was significantly positively related to positive affect and teachers' need support, whereas controlled motivation was significantly negatively related to positive affect and teachers' need support. Katz and Cohen concluded that the projective instrument can be used to validly measure the autonomous motivation of students with borderline ID. It should be mentioned, however, that this projective instrument is not validated for Dutch populations and little information is available about the reliability of the test. As the psychometric properties of the SRQ also need more attention in future research (e.g., due to the small number of items of the SRQ used in the current thesis the internal reliability of the SRQ is moderate), it would be interesting to compare a Dutch translation of the projective test with the SRQ to further validate them for people with mild to borderline ID in the Netherlands.

Second, this thesis provides support for the universality claim of SDT (Deci & Ryan, 2000; Ryan & Deci, 2000). The central SDT-tenets have been tested in a large number of cross-cultural studies worldwide and, based on these outcomes, the tenets are believed to be applicable to culturally diverse populations. However, the vast majority of these studies focused on non-ID populations. The studies in this thesis add to the scientific literature by showing that, in general, the SDT-tenets are also applicable to people with mild to borderline ID, and hence, provide additional support for the universality claim of SDT. It should be mentioned, however, that the findings did not support all propositions. For example, contrary to expectations, satisfaction of the three needs was not found to be related to autonomous motivation. As described previously, a possible explanation might be that, due to perceived autonomy support and need satisfaction, individuals might experience increased self-determination, and when self-determined, individuals might experience support as unnecessary and, therefore, not experience autonomous motivation for it. Another explanation might be that people with ID perceive autonomy as independence and therefore do not realize they can be autonomously dependent on others, willingly trusting on the support provided by their support staff. Future research is required to further investigate these unexpected outcomes. A starting point might be to qualitatively explore how people with mild to borderline ID would define autonomous motivation and how they think it can be facilitated.

Third, although MI is considered to be a promising method for increasing motivation among people with mild to borderline ID, research was needed to show how to employ MI within this population (McLaughlin et al., 2007). This thesis adds to the scientific literature by identifying how professionals could adapt MI techniques for use with people with mild to borderline ID. Semi-structured qualitative interviews and focus groups were conducted with clients, parents, and professionals ($N = 26$), resulting in the recommendation of several modifications to accommodate MI.

Fourth, the present thesis also adds to the scientific literature by illustrating that autonomous motivation of people with mild to borderline ID can be facilitated by a motivational (pretreatment) intervention based on SDT and MI-principles. That is an important and useful outcome because autonomous motivation is related to a range of positive outcomes in the general, non-disabled population such as greater client involvement and retention in addiction treatment program and greater life satisfaction and well-being.

Implications for practice and policy

The findings from the studies presented in this thesis also have implications for practice and policy. First, they provide support for a theoretical framework to advocate for the importance of client-oriented support. This is in line with the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD; United Nations, 2006) and national policy in the Netherlands, both emphasizing the importance of autonomy

and self-determination of service users in general, including those with ID. The studies in this thesis show that the clients' subjective perception of an autonomy supportive environment, need satisfaction, and autonomous motivation are all related to subjective well-being, which is an imperative outcome measure for all human beings. Therefore, based on the results of these studies, professionals and care organizations are encouraged to further increase the level of autonomy supportive care and client-oriented support based on the principles of SDT.

Second, given the important role of an autonomy supportive environment, need satisfaction, and autonomous motivation in subjective well-being, it is recommended that these three SDT-constructs are systematically mapped for individuals with mild to borderline ID. This might be part of Routine Outcome Monitoring (ROM) as a method to systematically collect data on the effectiveness of treatments and provided support. However, as not all ID-services work with ROM, the assessment of an autonomy supportive environment, need satisfaction, and autonomous motivation might also be included as part of the MDS intellectual disability (Kunseler et al., 2016) and as part of instruments measuring the perceptions of satisfaction with services and support by people with ID (also referred to as client experience tools, in Dutch cliëntervaringsinstrumenten). Combined in a domain-specific MDS regarding self-determination, the concepts of autonomy support, need satisfaction, and autonomous motivation might be a valuable addition to the basic MDS developed by Kunseler and colleagues (2016). Scholars conducting research within the National Program for people with a disability (in Dutch: Nationaal Programma Gehandicaptten Gewoon Bijzonder) should be encouraged to use this domain-specific MDS as part of their data collection, in order to develop a nationwide large-scale database to get a more complete picture of self-determination in people with ID. With respect to the client experience tools, each person with an ID receiving support from an ID service has to complete such a tool once every three year together with their support staff. The Dutch association of ID services (Vereniging Gehandicaptenzorg Nederland, VGN) has appointed a committee of experts to evaluate the tools used in the Netherlands. Since June 2016, ID services can choose between eleven tools (VGN, 2016). Given the importance of autonomy support, need satisfaction, and autonomous motivation, we suggest including these concepts in these client experience tools when they are subject to further development.

Whether mapped through ROM, a domain-specific MDS or a client experience tools, administering the self-report questionnaires presented in this thesis will provide professionals with a clear understanding of the extent to which clients perceive their environment as autonomy supportive, experience their needs for autonomy, relatedness, and competence as satisfied, and perceive themselves as autonomously motivated. This can help to enhance the support provided. For example, when clients do not feel that they can make their own choices, and they do not willingly trust the support provided by support staff (i.e., they are not autonomously dependent), and their support staff are not aware of this, it is likely that the clients will not perceive

autonomous motivation. If this is the case, their subjective well-being will decrease. By providing clients more choice- and decision-making, support staff will probably facilitate autonomous motivation, which will lead to increased subjective well-being. By repeating the assessment of autonomy support, need satisfaction, and autonomous motivation at regular time intervals, it is possible to examine the progress over time.

Third, the studies presented in this thesis show that it is possible to facilitate autonomous motivation of people with mild to borderline ID and that it is important for support staff to do so. In part this is because behavior change that is produced by autonomous motivation rather than controlled motivation is more likely to be maintained (Deci & Ryan, 2000).. In addition, autonomous motivation is related to a variety of positive outcomes that are not seen with controlled motivation. Because providing an autonomy supportive environment is strongly associated with autonomous motivation, support staff should minimize control and pressure to impose their own agenda while eliciting the client's perspective, providing choices, supporting self-initiatives, and offering pertinent information. Building a trusting relationship between support staff and people with ID is imperative in this respect and support staff can be taught using several training methods such as Professional Loving Care (in Dutch: Menslievende Professionalisering; Embregts, Hermsen, & Taminiau, 2015) and Spotlight on Support Staff (in Dutch: Begeleiders in Beeld; Embregts & Zijlmans, 2016). Connecting to the requests, needs, and wishes of people with ID is a vital element of these courses. In this respect, it is important to mention that, while encouraging autonomy, the need for support and the susceptibility of people with ID should not be disregarded (Embregts, 2011).

Fourth, because the implementation of SDT and MI reliably changed the type of motivation of people with mild to borderline ID, we would recommend that ID-services offer courses in the use of SDT and MI in their daily work to their employees. Such training courses should include a combination of in-service training (classroom/workshop) and coaching on the job (van Oorsouw, Embregts, Bosman, & Jahoda, 2009).It should be noted that this should not merely include the recommended adaptations of the MI techniques described in Chapter 6, but should also cover issues regarding important characteristics of support staff, such as honesty, trust, and caring, (Reuzel, 2016; Roeleveld, et al., 2011). In addition, it is also imperative that the training teaches that the core of the provided support is embedded in autonomy support and emphasis on the basic psychological needs. We recommend conducting a pre-training assessment to determine how familiar support staff are already with SDT. This assessment can be used to direct the content of the training course to fit the specific needs of the participants.

General conclusion

The aim of the current thesis was to contribute to a better understanding of self-determination through the lens of SDT, to better judge its relevance for people with mild to borderline ID, and to improve support for people with mild to borderline ID so that they can attain optimal health and subjective well-being. After the validation of three self-report questionnaires regarding autonomy support, need satisfaction, and autonomous motivation, the universality claim of the SDT has been bolstered by showing that these three SDT-concepts were associated with subjective well-being. Moreover, it was shown that a motivational (pretreatment) intervention can facilitate autonomous motivation among people with mild to borderline ID. These results are important because they provide valuable insights into how to support people with mild to borderline ID in such a way that optimal subjective well-being can be achieved. In other words, autonomy-supportive support staff who are able to provide their clients with feelings of autonomy, relatedness, and competence, will increase their clients' subjective well-being, which is, among others, an essential outcome measure for support. Therefore, SDT shows potential as a guide towards enhancing subjective well-being and thus quality of life of people with mild to borderline ID through support focused on autonomy, which makes it highly relevant for people with mild to borderline ID.

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Summary

The studies presented in this thesis focused on better understanding self-determination through the lens of the Self-Determination Theory (SDT). The aim was to explore the relevance of SDT for people with mild to borderline intellectual disability (ID) and to contribute to better support for improving health and subjective well-being. According to SDT, social environments that support the three basic psychological needs for autonomy, relatedness, and competence foster greater subjective well-being and autonomous motivation for activities within those environments. Although SDT is argued to be universally applicable, there is a dearth of empirical research examining the links between the SDT-concepts of autonomy support, need satisfaction, and autonomous motivation in people with ID. In addition, there is a lack of valid and reliable instruments measuring these concepts in people with mild to borderline ID. The studies in this thesis contribute to filling this gap.

Ideally, this thesis would include people along the full range of ID levels. However, the SDT-concepts are inherently subjective and proxy reporting or observation scales would often be required in the case of people with moderate to profound ID. This thesis therefore focused on people with mild to borderline ID (IQ 50 – 85).

General introduction

The general introduction (**Chapter 1**) provides a brief exploration of existing theoretical concepts of self-determination. Self-determination refers to "the attitudes and abilities required to act as the primary causal agent in one's life and to make choices regarding one's actions free from undue external influence or interference" (Wehmeyer, 1992, p. 305). Hence, people who are self-determined know what they want and how they can acquire it. They choose and set goals and then work to reach those goals. Recently, Shogren and colleagues (2015) proposed a revision of Wehmeyer's definition of self-determination. In the revised model, the Causal Agency Theory (CAT), self-determination is described as a "dispositional characteristic manifested as acting as the causal agent in one's life" (p. 258). Causal agents (i.e., self-determined people) act in service to freely chosen goals. Three essential characteristics are important for self-determination: volitional action (i.e., making conscious, intentional choices based on personal preferences), agentic action (i.e., being self-regulated and self-directed in the service of a goal), and action-control beliefs (i.e., having a sense of personal empowerment). These essential characteristics are affected by the basic psychological needs for autonomy, relatedness, and competence as defined in Deci and Ryan's SDT (2000). According to CAT, when the social environment provides support and opportunities to engage in self-determined action, an individual becomes a causal agent whose acts may lead to satisfaction of the needs for autonomy, relatedness, and competence. CAT therefore aligns with SDT in viewing autonomy, relatedness, and competence as basic psychological needs that need to be met in order to develop self-determination.

Satisfaction of these basic psychological needs fosters subjective well-being and also shapes the required conditions for volitional action, agentic action, and action-control beliefs.

SDT provides a comprehensive framework for the study of human motivation and personality. Central to SDT is the tenet that social environments supporting the three basic psychological needs for autonomy, relatedness, and competence are important. The satisfaction of these needs fosters, among other things, self-determination, autonomous motivation for activities, and enhanced subjective well-being. In a similar way SDT proposes that unsupported or thwarted basic psychological needs contribute to maladaptive functioning and depression as well as extrinsic forms of motivation or losing motivation altogether. Although SDT is argued to be universally applicable, the meaning for people with ID of the broader set of propositions within SDT has received very little attention until now. Therefore in this thesis we studied these propositions, and the SDT-constructs autonomy support, need satisfaction, and autonomous motivation themselves, in line with the principle in the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) that people, regardless of level of intellectual functioning, are to be treated as equal.

In the subsequent chapters in this thesis, the results of three studies are presented. The first was a large-scale study ($N = 186$) that had two main parts. It was firstly necessary to adapt and validate self-report questionnaires to measure autonomy support (Chapter 2), need satisfaction (Chapter 3), and autonomous motivation (Chapter 4) among people with mild to borderline ID. After this, the questionnaires could be used to test the tenets of SDT within a population of people with mild to borderline ID (Chapter 5). The second study (Chapter 6) was a qualitative study that aimed to identify how professionals can adapt a clinical approach supported by SDT for use with people with mild to borderline ID. The clinical approach chosen was Motivational Interviewing (MI). The third study (Chapter 7) was a multiple-case experimental intervention study to evaluate whether an SDT-based intervention could facilitate the internalization of autonomous motivation among people with mild to borderline ID.

Study 1: Adapting and validating self-report SDT-questionnaires and testing the tenets of SDT

Chapters 2, 3, and 4 described the adaptation and validation of self-report questionnaires measuring autonomy support (Chapter 2), need satisfaction (Chapter 3), and autonomous motivation (Chapter 4). Selected through simple random sampling, a total of 186 people with mild to borderline ID from four ID-services in a mixed urban / rural area in the southern part of the Netherlands participated in this study. All participants (110 males, 76 females) were aged above 18 years ($M = 40.3$, $SD = 14.9$, range = 18.1 – 84.8) and had at least weekly support provided by support staff for a minimum of three months. The support provided by support staff focused primarily on improving skills such as household tasks, using money, and travelling independently. The mean IQ on

file was 67; 109 participants had a mild ID and 77 had a borderline level of intellectual functioning. Sixty-seven participants (36%) lived independently in the community (with or without partner), and 107 (58%) lived in a supported accommodation, either in the community ($N = 84$, 46%) or in a residential facility ($N = 23$, 12%); the remaining 12 participants (6%) lived with their family.

Chapter 2 focused on the construct validity and reliability of the Health Care Climate Questionnaire – Intellectual Disability (HCCQ-ID), an instrument aimed at autonomy support by support staff as perceived by people with ID. Similar to the original HCCQ, the expected one-factor structure was found for the HCCQ-ID. Both the internal consistency ($\alpha = .93$) and the test-retest reliability ($r = .85$) were good. Hence, the results of Chapter 2 provided initial support for the construct validity and reliability of the HCCQ-ID in a population of people with mild to borderline ID.

Most participants were satisfied to very satisfied with the autonomy support provided by their support staff. This is in broad agreement with studies in, among others, psychiatric outpatients and people with health-related problems such as patients with severe obesity. It might be that participants were truly satisfied with the experienced autonomy support, but our results might also indicate a reluctance of people with mild to borderline ID to criticize their support staff because of their dependent, and sometimes long-standing, relationship. Additionally the HCCQ-ID might not discriminate well between levels of experienced autonomy support. Adding both neutral formulated items and items measuring the opposite of autonomy support (i.e., control) to the HCCQ-ID would be recommended in future studies to further improve the distinctiveness of this instrument.

In **Chapter 3**, the Basic Psychological Need Satisfaction and Frustration Scale – Intellectual Disability (BPNSFS-ID), an adapted version of the original BPNSFS, was validated to operationalize satisfaction and frustration with the three basic psychological needs according to SDT (i.e., autonomy, relatedness, and competence). The results indicated an adequate factorial structure of the BPNSFS-ID, comprising the satisfaction and frustration of each of the three needs. This finding is consistent with recent studies among non-ID populations and theory, suggesting that need satisfaction and need frustration are best viewed as independent concepts with separate precedents and predicting distinct results. In addition, the study supported the construct validity with strong, significant Pearson correlations ranging between $r = .60$ and $r = .71$. Moreover, the BPNSFS-ID demonstrated high internal consistency ($\alpha = .92$) and 2-week test-retest reliability ($r = .81$ for the composite subscale autonomy, $r = .69$ for the composite subscale relatedness, and $r = .85$ for the composite subscale competence). Hence, the BPNSFS-ID proved to be a valid and reliable measure of basic psychological need satisfaction and need frustration among people with mild to borderline ID.

In **Chapter 4**, the assumption was tested whether the four subtypes of extrinsic motivation can be differentiated in people with mild to borderline ID. The study used an adapted version of the Self-Regulation Questionnaire (SRQ), applied to two different life domains, exercise and support. Results supported the distinction between the four subtypes of extrinsic motivation in both domains. In addition, the correlation coefficients supported a simplex pattern of correlations among the subtypes, indicating that adjacent subtypes were more closely related than non-adjacent subtypes. That is, the high correlation coefficients between external motivation and introjected motivation (together controlled motivation) and between identified motivation and integrated motivation (together autonomous motivation) were consistent with the higher order distinction that is made between controlled motivation and autonomous motivation. Moreover, the study found Cronbach's alphas and test-retest reliabilities to be adequate for early stage research. Overall, the results of the current study provided initial evidence for the universality of the four subtypes of extrinsic motivation across populations with and without ID. The reliability of the SRQ could be improved in future studies, for example by adding items to scales consisting of merely two items. Additionally, given the simplex pattern, a higher order distinction within extrinsic motivation was also supported by the data. This dichotomy is in line with the proposal that different subtypes of extrinsic motivation could be clustered into just two subtypes (i.e., self-determined and non-self-determined motivation).

After the validation of the three self-report SDT-questionnaires described in Chapters 2, 3, and 4, the tenets of SDT were tested in **Chapter 5**. Associations between autonomy support, need satisfaction, autonomous motivation for support, and subjective well-being were described using Structural Equation Modelling (SEM). Perceived autonomy support from support staff was positively associated with autonomous motivation for support and with satisfaction of the needs for autonomy, relatedness, and competence. In addition, autonomous motivation for support and need satisfaction were associated with higher subjective well-being. Moreover, autonomous motivation and need satisfaction mediated the association between autonomy support and well-being. Lastly, satisfaction of the needs for autonomy and relatedness was negatively associated with controlled motivation, while satisfaction of the need for relatedness was positively associated with autonomous motivation. When replacing well-being with ill-being, operationalized as depression, the direct and indirect relationships between the SDT-concepts were, despite being reversed, rather similar. The relationship between autonomy and competence on the one hand and ill-being on the other hand was significant yet negative; the relationship between ill-being and the other SDT-concepts was not significant. Moreover, in contrast to the model focusing on well-being as outcome measure, neither autonomy support nor the basic need for relatedness were related to ill-being indirectly via the mediating variable of autonomous motivation.

The universality claim of SDT was bolstered by showing that autonomy support, autonomous motivation, as well as the needs for autonomy, competence, and relatedness were associated with subjective well-being. When well-being is replaced by ill-being as outcome measure, almost similar results were shown, despite being reversed. It should be mentioned, however, that this study had a cross-sectional, non-experimental research design, and hence, direct causal interpretations cannot be drawn from the findings.

Study 2: Adapting Motivational Interviewing (MI) for use with people with mild to borderline ID

Motivational Interviewing (MI) was chosen as an example of a broader class of methods to increase autonomous motivation both because it was considered to be a promising method for increasing motivation among people with mild to borderline ID and because its theoretical basis shares many ideas with SDT. However, in order to employ MI with people with mild to borderline ID, it was first necessary to show whether adaptations in the MI techniques were required. Therefore, the purpose of **Chapter 6** was to identify how professionals could adapt MI techniques for use with people with mild to borderline ID. Semi-structured interviews and focus groups were conducted with clients, parents, and professionals ($N = 26$). This resulted in recommending several modifications to accommodate MI: adapt to language level, adjust to cognitive abilities, and control for social desirability of responding. In addition, certain characteristics of professionals were also found to be critical for the use of MI: trustworthiness, engagement, acceptance, empathy, and honesty. It should be noted that some of the recommendations made here are not only important within the context of MI, but also for optimal communication with people with ID in general.

Study 3: Applying SDT to foster practice: Facilitating autonomous motivation and satisfying needs

Chapter 6 identified how professionals could adapt MI for use with people with mild to borderline ID and also highlighted important characteristics of support staff during conversations. Subsequently, in **Chapter 7**, an intervention study was conducted in which a number of hypotheses were tested underlying the preceding studies. We tested a motivational pretreatment intervention (called 'Beat the kick') to facilitate autonomous motivation to engage in a subsequent addiction treatment (i.e., wanting to change substance abuse behavior because of a sense of free choice and volition). Eligible participants had to be over 18 years of age, had mild to borderline ID (IQ score between 50 and 85), abused substances, did not receive other treatments regarding this behavior, and were not already autonomously motivated to change their substance abuse. A multiple-case experimental design ($N = 6$) was conducted to assess day-to-day motivation (measured with the SRQ; Chapter 4) to change substance abuse behavior (i.e., cannabis, alcohol, or hashish). During the intervention phase, the

10-session treatment program 'Beat the kick' was delivered by an experienced psychologist. Participants completed the SRQ two to three times a week during baseline, intervention, and a 1-month follow-up. Moreover, need satisfaction and need frustration (measured with the BPNSFS-ID; Chapter 3) were assessed once during baseline, after completion of the intervention, and at 1-month follow-up. In addition, the recommended modifications to accommodate MI for use with people with mild to borderline ID (Chapter 6) were applied during the intervention.

In five of the six participants (one dropped out) the type of motivation changed from more controlled types of motivation (i.e., external motivation and introjected motivation) at baseline to more autonomous types of motivation after completion of the intervention. In addition, after completion of the intervention the participants reported a significant increase in overall need satisfaction and in satisfaction of the need for autonomy as well as a significant decrease of overall need frustration. From this it can be concluded that the implementation of SDT and MI techniques in the pretreatment intervention 'Beat the kick' reliably changed the type of motivation. Moreover, in addition to the cross-sectional evidence described in Chapter 5, the experimental effects provided further proof of the use and applicability of SDT among people with ID.

General discussion

Finally, in **Chapter 8**, the main findings of the thesis are summarized, integrated, and discussed. The conclusions drawn from these findings should be considered in the light of the strengths and limitations of the studies. In the studies reported in this thesis, multiple designs (cross-sectional, qualitative, and multiple-case experimental) and different methods (self-report questionnaires, semi-structured interviews and focus groups) were used. As no instruments were available to measure autonomy support, need satisfaction, and autonomous motivation in people with mild to borderline ID, the set of studies reported in this thesis focused on adapting existing instruments used in the general population for use with people with mild to borderline ID and exploring the psychometric properties of these instruments with a proper sample size (Chapters 2, 3 and 4). The findings provided evidence for the validity and reliability of the instruments, which were therefore used in the overall study (Chapter 5) and in the intervention study (Chapter 7).

However, despite these strengths, several general limitations of the studies should be mentioned. First, the cross-sectional design of most of the studies presented in this thesis (Chapters 2 to 5) limited the scope for conclusions about causality. Second, the scope of the target population of these studies (i.e., we focused on people with mild to borderline ID) prevented us from generalizing the results to other ID target populations such as people with moderate or profound ID. Third, the scope of the target behavior in the intervention study was on assessing day-to-day motivation to change substance abuse behavior (i.e., cannabis, alcohol, or hashish) among individuals with

mild to borderline ID. Although it was not the goal of the intervention, it would have been interesting to see whether autonomous motivation for changing substance abusing behavior resulted in an actual reduction in substance abusing behavior. Fourth, the determination of the ID-level of the participants was based on reported IQ-scores on clients' files. For numerous participants, their last psychological assessment was more than 2 years ago. This raises the question as to whether the periodic psychological assessment was still valid and therefore, whether the reported IQ-scores reflect current intellectual functioning. Fifth, the theoretical starting point of this thesis was a theory derived from mainstream psychology (i.e., SDT). This theory has been used in this set of studies to explore whether people with mild to borderline ID experience autonomy support, need satisfaction, and autonomous motivation in a similar way to people without ID. An important advantage of this approach is that it avoids unnecessary dividing lines and conceptual boundaries between people with and without ID. Such an approach, however, has the risk that, people with ID have to fit into concepts that are not derived from themselves.

Scientific implications

The present thesis has several general scientific implications. First, the studies presented in this thesis adapted and validated three urgently needed self-report SDT-questionnaires in people with mild to borderline ID. This is important because there was a lack of psychometrically sound instruments to measure autonomy support, need satisfaction, and autonomous motivation in this population. Second, the studies in this thesis provide support for the universality claim of SDT, by showing that the SDT-tenets are also applicable to people with mild to borderline ID. It should be mentioned, however, that the findings did not support all propositions. For example, contrary to our expectations, only the satisfaction of the need for relatedness was found to be related to autonomous motivation. Future research is required to further investigate these unexpected outcomes. A starting point might be to qualitatively explore how people with mild to borderline ID would define autonomous motivation and how they think it can be facilitated. Third, although MI is considered to be a promising method for increasing motivation among people with mild to borderline ID, research was needed to show how to employ MI within this population. This thesis identified how professionals could adapt MI for use with people with mild to borderline ID. Based on these outcomes, future research should further investigate the effectiveness of the use of MI for people with mild to borderline ID. Fourth, the present thesis illustrates that a motivational pretreatment intervention can facilitate autonomous motivation for engaging with, in this case, an addiction treatment in people with mild to borderline ID. That is an important and useful outcome because autonomous motivation is related to a range of positive outcomes in the general, non-disabled population such as greater client involvement and retention in addiction treatment program and greater life satisfaction and well-being. By facilitating autonomous motivation for engaging in treatment,

treatments within the ID field might become more effective while also upholding both affordable and qualitative good treatments. Future research should examine whether autonomous motivation can be facilitated in other domains than substance abuse.

Implications for practice and policy

Finally, the findings from the studies presented in this thesis also have implications for practice and policy. First, they provided support for a theoretical framework to advocate for the importance of client-oriented support. It fits in well with previous research indicating that focusing on the wishes and perceptions of people with mild to borderline ID can contribute to enhanced support, health and subjective well-being. Second, in order to systematically follow developments and to formulate recommendations regarding individuals with mild to borderline ID, it is recommended that the SDT-constructs autonomy support, need satisfaction, and autonomous motivation are frequently mapped for individuals with mild to borderline ID. This might be part of an evaluation system such as Routine Outcome Monitoring (ROM). However, as not all ID-services work with ROM, the assessment of an autonomy supportive environment, need satisfaction, and autonomous motivation might also be included as part of the Basic Minimal Dataset intellectual disability (in Dutch: Basis Minimale Dataset (MDS) verstandelijke beperking) and as part of instruments measuring the perceptions of satisfaction with services and support by people with ID (also referred to as client experience tools, in Dutch cliëntervaringsinstrumenten). Third, the studies presented in this thesis showed that it is possible to facilitate autonomous motivation of people with mild to borderline ID. Support staff have an important role in this respect by creating an autonomy-supportive environment. This can be done by minimizing control and pressure to impose their own agenda while eliciting the client's perspective, providing choices, supporting self-initiatives, and offering pertinent information. Building a trusting relationship between support staff and people with ID is imperative in this respect, as well as connecting to the requests, needs, and wishes of people with ID (i.e., holding a client-oriented approach focusing on the autonomy of the client). Fourth, because the implementation of SDT and MI reliably changed the type of motivation of people with mild to borderline ID, it might be interesting for ID-services to offer courses to their employees in the use of SDT and MI in their daily work. Such training courses should include a combination of in-service training (classroom/workshop) and coaching on the job. It should be noted that this should not merely include the recommended adaptations of the MI-techniques described in Chapter 6, but should also cover issues regarding important characteristics of support staff, such as honesty, trust, and caring. Conducting a pre-training assessment to determine how familiar support staff are already with SDT might be interesting. This assessment can be used to direct the content of the training course to fit the specific needs of the participants.

General conclusion

The results of this thesis are important because they provide valuable insights into how to support people with mild to borderline ID in such a way that optimal subjective well-being and mental health can be achieved. In other words, autonomy-supportive support staff who are able to provide their clients with feelings of autonomy, relatedness, and competence, will increase their clients' subjective well-being and reduce mental ill-being, which is, among others, a central aim of support. Hence, SDT shows potential as a guide towards enhancing subjective well-being and thus quality of life of people with mild to borderline ID.

Samenvatting

Het doel van dit proefschrift was om de toepasbaarheid van de Zelf-Determinatie Theorie (ZDT) bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid te onderzoeken. De ZDT als theoretisch denkkader zou bij kunnen dragen aan het verbeteren van ondersteuning, gezondheid en subjectief welbevinden. Binnen de ZDT worden drie psychologische basisbehoeften centraal gesteld, namelijk autonomie, verbondenheid en competentie. Een sociale omgeving die hierin voorziet, leidt tot welbevinden en autonome motivatie voor het uitvoeren van activiteiten. De samenhangen tussen de ZDT-concepten autonomie ondersteuning, behoeftebevrediging en autonome motivatie waren niet eerder onderzocht bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid. Daarnaast ontbrak het aan valide en betrouwbare meetinstrumenten om deze concepten te meten in deze groep. De studies binnen dit proefschrift voorzien daarin in een belangrijke lacune.

Omdat het onderwerp zelfdeterminatie alle mensen aangaat met een verstandelijke beperking, zou dit proefschrift zich idealiter richten op alle niveaus van een verstandelijke beperking. Echter, de ZDT-concepten zijn uiterst subjectief en bij mensen met een matige tot zeer ernstige verstandelijke beperking zijn proxy rapportages en observatieschalen nodig om de ZDT-concepten in kaart te brengen. Dit proefschrift heeft zich daarom als een eerste stap beperkt tot mensen met een lichte verstandelijke beperking of zwakbegaafdheid (IQ 50 – 85).

Algemene inleiding

De algemene inleiding (**Hoofdstuk 1**) geeft een korte verkenning van bestaande theoretische concepten van zelfdeterminatie. Zelfdeterminatie kan omschreven worden als de attitudes en capaciteiten die nodig zijn voor personen om zelfbepalend te zijn in hun eigen leven en om keuzes te maken ten aanzien van het eigen handelen zonder beïnvloeding of inmenging van buitenaf. Er is dus sprake van zelfdeterminatie als mensen weten wat ze willen en als ze weten hoe dit bereikt kan worden. Zij kiezen zelf, stellen doelen en handelen vervolgens om deze doelen te bereiken. Recentelijk is een aanpassing van deze definitie voorgesteld in de zogenoemde Causal Agency Theory (CAT) waarbij zelfdeterminatie wordt omschreven als een dispositionele eigenschap om zelfbepalend te zijn in hoe een persoon vorm geeft aan zijn of haar leven. Drie kenmerken zijn essentieel met betrekking zelfdeterminatie: handelen uit vrije wil (d.w.z. het maken van bewuste keuzes op basis van persoonlijke voorkeuren), doelgericht handelen (d.w.z. zelfregulerend handelen ten dienste van een bepaald doel), en geloof hebben in controle over het handelen (d.w.z. het hebben van een gevoel van persoonlijke empowerment). Deze essentiële kenmerken worden beïnvloed door de psychologische basisbehoeften aan autonomie, verbondenheid en competentie zoals beschreven in de ZDT van Deci en Ryan. Een sociale omgeving die ondersteuning en kansen biedt voor zelfbepalend handelen (zelfdeterminatie), zorgt er volgens CAT voor dat een individu zelfbepalend wordt waardoor de behoeften aan autonomie, verbondenheid en competentie worden bevredigd. CAT sluit daarom goed aan bij ZDT door autonomie,

verbondenheid en competentie te zien als psychologische basisbehoeften waaraan moet worden voldaan om optimale zelfdeterminatie te ontwikkelen. Bevrediging van deze psychologische basisbehoeften bevordert subjectief welbevinden en is tevens belangrijk om te handelen uit vrije wil, doelgericht te handelen en geloof te hebben in controle over het handelen.

De ZDT vormt een veelomvattend denkkader voor het bestuderen van menselijke motivatie en persoonlijkheid. Binnen de ZDT staat de assumptie centraal dat een sociale omgeving die de drie psychologische basisbehoeften aan autonomie, verbondenheid en competentie ondersteunt belangrijk is. De bevrediging van deze drie basisbehoeften bevordert onder andere zelfdeterminatie, autonome motivatie voor activiteiten en een verhoogd subjectief welbevinden. Niet-gesteunde, of zelfs gefrustreerde, psychologische basisbehoeften dragen daarentegen bij aan een depressie, maar ook aan extrinsieke vormen van motivatie, zoals externe motivatie of geïntrojecteerde motivatie, of zelfs het verlies van motivatie. Tot nu toe heeft onderzoek naar de toepasbaarheid van de ZDT zich vooral gericht op populaties zonder een verstandelijke beperking; onderzoek bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid zijn onderbelicht gebleven. Daarom werd in dit proefschrift de toepasbaarheid van de ZDT onderzocht bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid. Onderzoek naar de toepasbaarheid van deze theorie bij mensen met een verstandelijke beperking sluit aan bij de Conventie van de Rechten van Mensen met een Beperking van de Verenigde Naties (UNCRC) waarbij benadrukt wordt dat mensen, onafhankelijk van het niveau van cognitief functioneren, als gelijkwaardig beschouwd moeten worden.

In de hoofdstukken 2 tot en met 7 worden de resultaten van drie studies gepresenteerd. De eerste studie betrof een grootschalig onderzoek ($N = 186$) bestaande uit twee delen. In het eerste deel zijn drie zelfrapportage vragenlijsten aangepast en gevalideerd op het gebied van autonomie ondersteuning (Hoofdstuk 2), behoeftebevrediging (Hoofdstuk 3) en autonome motivatie (Hoofdstuk 4) voor mensen met een lichte verstandelijke beperking of zwakbegaafdheid. In het tweede deel zijn deze vragenlijsten gebruikt om de relaties tussen enerzijds de ZDT-concepten autonomie ondersteuning, behoeftebevrediging en autonome motivatie en anderzijds subjectief welbevinden te onderzoeken binnen een populatie met mensen met een lichte verstandelijke beperking of zwakbegaafdheid (Hoofdstuk 5). De tweede studie (Hoofdstuk 6) betrof een kwalitatieve studie waarbij onderzocht is welke aanpassingen nodig zijn om Motiverende Gespreksvoering (MG) toe te passen bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid. In deze studie is gekozen voor MG als interventie omdat het een methode is die veel gelijkenissen heeft met ZDT. De derde studie (Hoofdstuk 7) betrof de evaluatie van een op de ZDT gebaseerde interventie om autonome motivatie te stimuleren bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid en verslavingsproblematiek door middel van zes gecontroleerde $n=1$ studies.

Studie 1: Aanpassing en validering van zelfrapportage ZDT-vragenlijsten en toetsing van ZDT assumpties

In Hoofdstukken 2, 3 en 4 wordt de aanpassing en validering van zelfrapportage vragenlijsten voor mensen met een lichte verstandelijke beperking of zwakbegaafdheid beschreven, die autonomie ondersteuning (Hoofdstuk 2), behoeftebevrediging (Hoofdstuk 3) en autonome motivatie (Hoofdstuk 4) meten. Op basis van een at random geselecteerde steekproef namen 186 mensen met een lichte verstandelijke beperking of zwakbegaafdheid deel aan dit onderzoek vanuit 4 zorgorganisaties in het zuiden van Nederland. Alle respondenten (110 mannen, 76 vrouwen) waren ouder dan 18 jaar ($M = 40.3$, $SD = 14.9$, range = 18.1 – 84.8) en ontvingen minimaal eens per week ondersteuning door begeleiders voor de duur van tenminste 3 maanden. De ondersteuning richtte zich voornamelijk op het verbeteren van vaardigheden, zoals huishoudelijke taken, omgaan met geld en zelfstandig reizen. Het gemiddelde IQ op basis van dossiergegevens betrof 67; 109 respondenten hadden een lichte verstandelijke beperking en 77 respondenten functioneerden op zwakbegaafd niveau. Zevenenzestig respondenten (36%) woonden zelfstandig in de wijk (al dan niet met partner), en 107 respondenten (58%) ontvingen 24-uurs begeleiding in de wijk ($N = 84$, 46%) dan wel op een instellingsterrein ($N = 23$, 12%). De andere twaalf respondenten (6%) woonden bij hun familie.

Hoofdstuk 2 richtte zich op de constructvaliditeit en de betrouwbaarheid van de Health Care Climate Questionnaire – Intellectual Disability (HCCQ-ID). Deze vragenlijst stelt de mate vast waarin mensen met een verstandelijke beperking hun begeleiding als autonomie-ondersteunend ervaren. Net als bij de originele HCCQ liet de HCCQ-ID de verwachte 1-factor structuur zien. Zowel de interne consistentie ($\alpha = 0,93$) als de test-hertest betrouwbaarheid ($r = 0,85$) waren goed. De resultaten van de studie beschreven in Hoofdstuk 2 boden eerste aanwijzingen voor de constructvaliditeit en betrouwbaarheid van de HCCQ-ID voor mensen met een lichte verstandelijke beperking of zwakbegaafdheid.

De meeste respondenten waren tevreden tot zeer tevreden met de mate waarin begeleiding autonomie-ondersteunend is. Dit komt overeen met studies bij normaalbegaafde populaties, onder andere mensen met psychiatrische problematiek en mensen met gezondheidsproblemen zoals ernstige obesitas. De hoge scores kunnen impliceren dat respondenten daadwerkelijk tevreden waren met de ervaren autonomie ondersteuning, maar onze resultaten kunnen ook impliceren dat mensen met een lichte verstandelijke beperking of zwakbegaafdheid hun begeleiding niet willen, kunnen of durven bekritisieren vanwege hun soms langdurige afhankelijkheidsrelatie. Bovendien differentieert de HCCQ-ID mogelijk niet goed tussen verschillende mate van ervaren autonomie ondersteuning. Het verdient de aanbeveling om in vervolgonderzoek zowel neutraal geformuleerde items als items gericht op het tegenovergestelde van autonomie ondersteuning (controle) toe te voegen om het onderscheidend vermogen van de HCCQ-ID te optimaliseren.

In **Hoofdstuk 3** worden de resultaten gepresenteerd van een validatieonderzoek naar de Basic Psychological Need Satisfaction and Frustration Scale – Intellectual Disability (BPNSFS-ID) om de bevrediging en frustratie van de psychologische basisbehoeften aan autonomie, verbondenheid en competentie te operationaliseren. De resultaten lieten een adequate factor structuur zien van de BPNSFS-ID, bestaande uit zowel bevrediging als frustratie van de drie basisbehoeften. Deze uitkomst komt overeen met recente studies bij mensen zonder een verstandelijke beperking en bevestigt het theoretische uitgangspunt dat behoeftebevrediging en behoeftefrustratie het beste gezien kunnen worden als onafhankelijke concepten met verschillende antecedenten die andere uitkomsten voorspellen. De constructvaliditeit van de vragenlijst werd bovendien ondersteund met sterke, significante Pearson correlaties, variërend tussen $r = 0,60$ en $r = 0,71$. Ook de interne consistentie ($\alpha = 0,92$) en een test-hertest betrouwbaarheid ($r = 0,81$ voor de samengestelde subschaal autonomie, $r = 0,69$ voor de samengestelde subschaal verbondenheid en $r = 0,85$ voor de samengestelde subschaal competentie) waren goed. De BPNSFS-ID bleek een valide en betrouwbare vragenlijst te zijn om de bevrediging en de frustratie van de psychologische basisbehoeften van mensen met een lichte verstandelijke beperking of zwakbegaafdheid in kaart te brengen.

In **Hoofdstuk 4** is de assumptie getoetst of de vier subtypen van extrinsieke motivatie (te weten: externe motivatie, geïntrojecteerde motivatie, geïdentificeerde motivatie en geïntegreerde motivatie) ook bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid kunnen worden onderscheiden. In de studie werd gebruik gemaakt van een aangepaste versie van de Self-Regulation Questionnaire (SRQ), toegespitst op twee verschillende domeinen: beweging en ondersteuning. De resultaten ondersteunden het onderscheid tussen de vier subtypen van extrinsieke motivatie in beide domeinen. Daarnaast lieten de correlatie coëfficiënten zien dat aan elkaar aangrenzende subtypen meer gerelateerd zijn aan elkaar dan de niet-aangrenzende subtypen. Dat wil zeggen, de hoge correlatie coëfficiënten tussen externe motivatie en geïntrojecteerde motivatie (samen gecontroleerde motivatie) en tussen geïdentificeerde motivatie en geïntegreerde motivatie (samen autonome motivatie) lijken het onderscheid dat gemaakt kan worden tussen gecontroleerde motivatie en autonome motivatie te ondersteunen. Daarnaast liet de studie zien dat de Cronbach's alfa's en de test-hertest betrouwbaarheid adequaat zijn. De resultaten van de studie bieden dus eerste aanwijzingen dat de vier subtypen van extrinsieke motivatie onderscheiden kunnen worden bij zowel mensen met als zonder een verstandelijke beperking. Bovendien ondersteunt de studie, gezien de hoge correlatiecoëfficiënten tussen externe motivatie en geïntrojecteerde motivatie (samen gecontroleerde motivatie) en tussen geïdentificeerde motivatie en geïntegreerde motivatie (samen autonome motivatie), de aanname dat de verschillende subtypen van extrinsieke motivatie geclusterd kunnen worden in slechts twee subtypen

(zelfdeterminatie en niet-zelfdeterminatie). De betrouwbaarheid van de SRQ kan verbeterd worden in verder onderzoek, bijvoorbeeld door items toe te voegen aan de subschalen die in de huidige vorm uit slechts twee items bestaan.

Na validering van de drie ZDT-vragenlijsten (beschreven in Hoofdstukken 2, 3 en 4) werden de assumpties van de ZDT getoetst bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid in **Hoofdstuk 5**. De relaties tussen autonomie ondersteuning, behoeftebevrediging, autonome motivatie voor ondersteuning en subjectief welbevinden werden getoetst door middel van Structural Equation Modelling (SEM). De resultaten lieten zien dat autonomie ondersteuning door begeleiders positief samenhangt met autonome motivatie voor ondersteuning en met bevrediging van de basisbehoeften autonomie, verbondenheid en competentie. Daarnaast bleken autonome motivatie voor ondersteuning en behoeftebevrediging samen te hangen met een hoger subjectief welbevinden. Autonome motivatie en behoeftebevrediging medieerden bovendien de relatie tussen autonomie ondersteuning en welbevinden. Tot slot, bevrediging van de behoeften aan autonomie en verbondenheid hing negatief samen met gecontroleerde motivatie, terwijl bevrediging van de behoefte aan verbondenheid positief samenhangt met autonome motivatie. Als welbevinden vervangen wordt door depressie als uitkomstmaat, dan blijven de directe en indirecte relaties tussen de ZDT-concepten, ondanks dat ze omgekeerd zijn, vrijwel gelijk. De relatie tussen autonomie en competentie enerzijds en depressie anderzijds was negatief significant; de relatie tussen depressie en de andere ZDT-concepten was niet significant. Daarnaast was autonome motivatie geen mediërende variabele in de relatie tussen depressie enerzijds en autonomie ondersteuning en de bevrediging van de basisbehoefte aan verbondenheid anderzijds.

De studie liet zien dat autonomie ondersteuning, autonome motivatie en de behoeften aan autonomie, competentie en verbondenheid samenhangen met subjectief welbevinden. Als subjectief welbevinden wordt vervangen door depressie als uitkomstmaat, zijn de resultaten, alhoewel tegenovergesteld, vergelijkbaar. Daarmee ondersteunen de resultaten van deze studie de aanname dat de ZDT universeel toepasbaar is. Er dient echter opgemerkt te worden dat in deze studie gebruik werd gemaakt van een cross-sectioneel, niet-experimenteel onderzoeksdesign, waardoor het niet mogelijk is directe causale interpretaties te trekken op basis van de uitkomsten.

Studie 2: Aanpassing van Motiverende Gespreksvoering (MG) voor gebruik bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid

Motiverende Gespreksvoering (MG) is een methode om autonome motivatie te stimuleren en wordt ook bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid gezien als een veelbelovende methode om motivatie te verbeteren. Aangezien MG veel gelijkenissen heeft met de uitgangspunten van de ZDT, is er binnen dit proefschrift voor gekozen om MG als methode te verkiezen boven andere

methoden. Om MG toe te kunnen passen bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid is het echter belangrijk om te weten of aanpassingen nodig zijn voor het gebruik van MG bij deze groep. Het doel van de studie uit **Hoofdstuk 6** was om aanpassingen in kaart te brengen opdat professionals MG kunnen gebruiken bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid. Er zijn semi-gestructureerde interviews en focusgroepen gehouden met cliënten, ouders en professionals ($N = 26$). Dit resulteerde in diverse aanbevelingen: aanpassen aan taalniveau, aanpassen aan cognitieve mogelijkheden en rekening houden met sociale wenselijkheid van de antwoorden. Daarnaast werden enkele voorwaarden genoemd die gesteld worden aan professionals om MG toe te passen: betrouwbaarheid, betrokkenheid, acceptatie, empathie en eerlijkheid. Het dient opgemerkt te worden dat deze aanbevelingen ook voor optimale communicatie met mensen met een verstandelijke beperking in zijn algemeenheid van belang zijn.

Studie 3: Het stimuleren van autonome motivatie en het bevredigen van de basisbehoeften in de klinische praktijk

In Hoofdstuk 6 wordt beschreven hoe professionals MG aan kunnen passen voor toepassing bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid. In navolging hierop staat in **Hoofdstuk 7** een interventiestudie centraal, waarin een aantal hypothesen getoetst werden op basis van de voorgaande studies. We onderzochten of door middel van een interventie, 'Sterker dan de kick', autonome motivatie gestimuleerd kon worden om middelenmisbruik te veranderen op basis van een gevoel van vrije keuze en vrije wil. Deelnemers waren ouder dan 18 jaar, hadden een lichte verstandelijke beperking of functioneerden op zwakbegaafd niveau (IQ score tussen 50 en 85), misbruikten middelen, ontvingen geen andere behandelingen voor dit middelenmisbruik en waren (nog) niet autonoom gemotiveerd om het middelenmisbruik te veranderen. In zes gecontroleerde $n=1$ studies werd de dagelijkse motivatie (gemeten met de SRQ, Hoofdstuk 4) om middelenmisbruik (cannabis, alcohol, wiet) te veranderen in kaart gebracht. De interventie 'Sterker dan de kick' werd gegeven door een ervaren psycholoog en bestond uit tien individuele sessies. Respondenten vulden de SRQ twee tot drie keer per week in gedurende de voormeting, de interventie en tijdens de follow-up 1 maand later. Daarnaast werd de behoeftebevrediging en behoeftefrustratie (gemeten met de BPNSFS-ID, Hoofdstuk 3) eenmalig gemeten tijdens de voormeting, na afloop van de interventie en tijdens de follow-up 1 maand later. De aanbevolen aanpassingen uit Hoofdstuk 6 om MG te gebruiken bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid werden geïncorporeerd in de interventie.

Bij vijf van de zes respondenten (één viel uit) veranderde het type motivatie van meer gecontroleerde typen motivatie (externe motivatie en geïntrojecteerde motivatie) tijdens de voormeting naar meer autonome typen motivatie na afronding van de interventie. Bovendien rapporteerden de respondenten na afloop van de interventie een toename in algemene behoeftebevrediging, in de bevrediging van de behoefte aan

autonomie in het bijzonder, en een significante afname in algemene behoeftefrustratie. Op basis daarvan kan de conclusie getrokken worden dat het toepassen van de uitgangspunten van ZDT en MG in de interventie 'Sterker dan de kick' het type motivatie heeft veranderd. Bovendien ondersteunden deze experimentele effecten, in aanvulling op cross-sectionele resultaten beschreven in Hoofdstuk 5, de toepasbaarheid van de ZDT bij mensen met een verstandelijke beperking.

Algemene discussie

Tot slot, in **Hoofdstuk 8**, werden de bevindingen van dit proefschrift samengevat, geïntegreerd en besproken. Daarbij zijn een aantal sterktes en zwaktes van de studies in ogenschouw genomen. In dit proefschrift is gebruik gemaakt van verschillende designs (cross-sectioneel, kwalitatief en gecontroleerde n=1 studies) en verschillende methodes (zelfrapportage vragenlijsten, semi-gestructureerde interviews en focusgroepen). Tot op heden ontbrak het aan valide en betrouwbare meetinstrumenten om autonomie ondersteuning, behoeftebevrediging en autonome motivatie te meten bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid. Daarom richtte een aantal studies uit dit proefschrift (Hoofdstukken 2, 3 en 4) zich op het aanpassen en valideren van bestaande vragenlijsten die gebruikt worden bij de normaalbegaafde populatie voor gebruik bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid op basis van een adequate steekproef. De resultaten leverden bewijs op voor de validiteit en betrouwbaarheid van de instrumenten, die dientengevolge gebruikt werden bij het toetsen van de ZDT-assumpties (Hoofdstuk 5) en in de interventiestudie (Hoofdstuk 7).

Naast deze sterkte punten, kenden de studies beschreven in het proefschrift ook een aantal beperkingen. Ten eerste, vanwege het cross-sectionele design van de studies beschreven in hoofdstukken 2 tot en met 5 is het aantal oorzaak-gevolg conclusies beperkt tot voorzichtige conclusies omtrent het effect van 'Sterker dan de Kick'. Ten tweede, de reikwijdte van de doelgroep in dit proefschrift (mensen met een lichte verstandelijke beperking of zwakbegaafdheid) maakt generaliseren op basis van de resultaten naar andere groepen met een verstandelijke beperking hoogst onzeker, zoals mensen met een matige of (zeer) ernstige verstandelijke beperking. Ten derde, de interventiestudie richtte zich op het in kaart brengen van dagelijkse motivatie om middelenmisbruik (cannabis, alcohol of wiet) te veranderen. Hoewel dit niet het doel van de interventie was, zou het interessant geweest zijn om in kaart te brengen of autonome motivatie om middelenmisbruik te veranderen ook daadwerkelijk resulteerde in een afname van middelengebruik. Ten vierde, het vaststellen van het niveau van functioneren van respondenten was gebaseerd op de IQ-scores in de dossiers van de deelnemende cliënten. Voor meerdere respondenten was de IQ-bepaling meer dan twee jaar geleden uitgevoerd. Dit roept de vraag op of het psychologisch onderzoek nog valide was, en dus of de gerapporteerde IQ-score het huidige cognitieve functioneren representeerde. Ten vijfde, het theoretische denkkader van de ZDT is ontwikkeld zonder studie te maken van het begrip zelfdeterminatie zoals mensen met een

verstandelijke beperking dit beleven. Een belangrijk voordeel van het onderzoeken van de toepasbaarheid van de ZDT voor mensen met een lichte verstandelijke beperking of zwakbegaafdheid is dat het onnodige (conceptuele) grenzen voorkomt tussen mensen met en zonder verstandelijke beperking. Echter, dit brengt het risico met zich mee dat mensen met een verstandelijke beperking 'moeten' passen binnen concepten die niet gebaseerd zijn op eigen ervaringen.

Wetenschappelijke implicaties

Dit proefschrift heeft een aantal algemene wetenschappelijke implicaties. Ten eerste zijn er drie zelfrapportage ZDT-vragenlijsten aangepast en gevalideerd voor de groep mensen met lichte verstandelijke beperkingen of zwakbegaafdheid. Dit is een belangrijke stap in verdere verfijning van de ZDT omdat het ontbreekt aan psychometrisch goed onderbouwde instrumenten om autonomie ondersteuning, behoeftebevrediging en autonome motivatie bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid in kaart te brengen. Ten tweede ondersteunen de resultaten uit dit proefschrift de universaliteitsclaim van de ZDT door aan te tonen dat de ZDT-assumpties ook van toepassing zijn bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid. Hierbij dient evenwel opgemerkt te worden dat de resultaten niet alle assumpties van de ZDT ondersteunden. Zo hing bijvoorbeeld alleen de behoefte aan verbondenheid samen met autonome motivatie. Verder onderzoek is nodig om deze onverwachte uitkomsten nader te onderzoeken. Een mogelijk manier om dit te onderzoeken zou kunnen zijn door gebruik te maken van kwalitatieve onderzoeksmethoden. Dit zou bijvoorbeeld kunnen door met mensen met een lichte verstandelijke beperking of zwakbegaafdheid in gesprek te gaan over de vraag hoe zij autonome motivatie zouden definiëren en hoe zij denken dat dit gestimuleerd zou kunnen worden. Door dit met mensen met een lichte verstandelijke beperking of zwakbegaafdheid te bespreken, krijgen we meer inzicht in de vraag wat autonome motivatie voor deze doelgroep betekent en hoe dit gestimuleerd kan worden. Ten derde zijn er in dit proefschrift een aantal aanbevolen aanpassingen in kaart gebracht om MG, een veelbelovende methode om de motivatie van mensen met een lichte verstandelijke beperking of zwakbegaafdheid te bevorderen, daadwerkelijk toe te passen bij deze doelgroep. Op basis van deze uitkomsten kan toekomstig onderzoek zich verder richten op de effectiviteit van MG als interventie bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid. Ten vierde laat dit proefschrift zien dat een interventie, 'Sterker dan de kick', autonome motivatie kan stimuleren bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid en verslavingsproblematiek. Dat is een belangrijke en bruikbare uitkomst omdat autonome motivatie bij de algemene populatie zonder een verstandelijke beperking samen blijkt te hangen met positieve resultaten als een grotere betrokkenheid van de cliënt, deelname aan een interventie en een verhoogd welbevinden. Toekomstig onderzoek moet uitwijzen of autonome motivatie ook gestimuleerd kan worden binnen andere domeinen dan middelenmisbruik.

Implicaties voor praktijk en beleid

De uitkomsten van dit proefschrift hebben ook implicaties voor praktijk en beleid. Ten eerste ondersteunen de uitkomsten het belang van het centraal stellen van het cliëntperspectief binnen de ondersteuning die zij krijgen. Het sluit daarmee aan bij eerdere onderzoeken waaruit blijkt dat uitgaan van de hulpvragen, wensen en beleving van mensen met een lichte verstandelijke beperking of zwakbegaafdheid bij zou kunnen dragen aan een betere ondersteuning, betere gezondheid en subjectief welbevinden van deze groep. Ten tweede, om systematisch ontwikkelingen te volgen en aanbevelingen te doen, is het aan te bevelen om de ZDT-constructen autonomie ondersteuning, behoeftebevrediging en autonome motivatie regelmatig in kaart te brengen voor mensen met een lichte verstandelijke beperking of zwakbegaafdheid. Dit zou kunnen door de vragenlijsten onderdeel uit te laten maken van evaluatiesystemen, zoals Routine Outcome Monitoring (ROM). Wanneer er sprake is van langdurige zorg zonder behandeling maken zorgorganisaties echter geen gebruik van ROM. Het in kaart brengen van ZDT assumpties zou daarom ook onderdeel kunnen zijn van een Minimale Dataset (MDS) verstandelijke beperking en van cliëntervaringsinstrumenten. Ten derde, dit proefschrift liet zien dat het mogelijk is om autonome motivatie te stimuleren. Begeleiders hebben hierin een belangrijke taak door een autonomie-ondersteunende omgeving te creëren waarin zij controle en druk zoveel mogelijk beperken. Daarnaast is het belangrijk dat begeleiding luistert naar het verhaal van de cliënt, keuzes aanbiedt, initiatieven van de cliënt ondersteunt en relevante informatie aanlevert om keuzes te maken. Het opbouwen van een vertrouwensrelatie tussen begeleiders en mensen met een verstandelijke beperking is hierbij van belang, net als het aansluiten op behoeftes en wensen van mensen met een verstandelijke beperking. Ten vierde, aangezien het toepassen van ZDT en MG in de interventie 'Sterker dan de kick' het type motivatie heeft veranderd bij mensen met een lichte verstandelijke beperking of zwakbegaafdheid, zou het voor organisaties die zorg bieden aan mensen met een verstandelijke beperking interessant kunnen zijn om cursussen aan te bieden aan hun medewerkers in het gebruik van ZDT en MG binnen het dagelijkse werk. Om daadwerkelijke gedragsveranderingen te realiseren, kunnen dergelijke cursussen bestaan uit een combinatie van in-service training (in een klaslokaal / workshop) en coaching on the job. Deze cursussen kunnen zich richten op MG en de aanbevolen aanpassingen ten aanzien van MG beschreven in Hoofdstuk 6, maar het is evident dat ook andere onderwerpen zoals attitude en kenmerken van handelen (bijvoorbeeld eerlijkheid, vertrouwen en zorgzaamheid), ook aan bod moeten komen. Mogelijk kan een meting voorafgaand aan de cursus in kaart brengen hoe bekend begeleiders op dat moment al zijn met ZDT, en kunnen specifieke behoeftes van de deelnemers mede de inhoud van de cursus vormgeven.

Algemene conclusie

De resultaten van dit proefschrift geven belangrijke inzichten in hoe de ondersteuning van mensen met een lichte verstandelijke beperking of zwakbegaafdheid kan worden vormgegeven opdat optimaal subjectief welbevinden bereikt kan worden. Autonomie ondersteunende begeleiders die in staat zijn om hun cliënten te stimuleren autonoom te voelen, in verbondenheid en met voldoende competenties, verhogen het subjectief welbevinden van hun cliënten. De ZDT biedt een kader om het subjectief welbevinden, en daarmee de kwaliteit van leven, van mensen met een lichte verstandelijke beperking of zwakbegaafdheid te verbeteren.

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Curriculum Vitae

Noud Frielink was born on July 2, 1987 in Nijmegen, the Netherlands. He graduated from pre-university education at the Pax Christi College in Druten in 2005. Afterwards, he studied Pedagogical and Educational Science at the Radboud University, in Nijmegen, from 2005 until 2009. In 2009 he graduated cum laude with a master degree in Pedagogy (specialized in Learning and Development). During his study, he worked as a staff member with people with profound intellectual and multiple disabilities at De Winckelsteegh (Pluryn). After obtaining his master's degree he started working as a child psychologist at Mytyschool Roosendaal. In addition, he started working as a research assistant at the lectureship Support for People with an Intellectual Disability of the HAN University of Applied Sciences and as a teacher at the courses *Klinische Vaardigheden* and *Casuïstiek* of the department Pedagogy: Learning and Development at the Radboud University. In March 2011, he started as a trainer for the addiction module at STEVIG (previous Dichterbij Specialized Care); in September 2011 this merged into an appointment as researcher at Dichterbij Kennis@. As of September 2011 he also started as a science practitioner at Dichterbij Innovation and Science from where he started his PhD research at Tranzo, Tilburg University. His supervisors were Professor P. J. C. M. Embregts and Professor C. Schuengel. The results of this research are presented in this thesis. Currently, he is affiliated as a postdoctoral researcher at the Collaborative Centre Living with an Intellectual Disability at Tranzo, Tilburg University.

Curriculum Vitae

Noud Frielink werd op 2 juli 1987 in Nijmegen geboren. In 2005 behaalde hij zijn Atheneum diploma aan het Pax Christi College te Druten waarna hij van 2005 tot 2009 Pedagogische Wetenschappen en Onderwijskunde (PWO) heeft gestudeerd aan de Radboud Universiteit in Nijmegen. In 2009 studeerde hij daar cum laude af binnen de specialisatie Orthopedagogiek: Leren en Ontwikkeling. Tijdens zijn studie heeft hij als begeleider gewerkt bij De Winckelsteegh (Pluryn) op een woongroep voor mensen met een ernstige meervoudige beperking. Na zijn afstuderen is hij als orthopedagoog op de Mytyschool Roosendaal gaan werken. Daarnaast is hij gaan werken als onderzoeksmedewerker bij het lectoraat Zorg voor Mensen met een Verstandelijke Beperking van de Hogeschool van Arnhem en Nijmegen en was hij als docent verbonden aan de vakgroep Orthopedagogiek: Leren en Ontwikkeling van de Radboud Universiteit bij de vakken *Klinische Vaardigheden* en *Casuïstiek*. In maart 2011 is hij als trainer van verslavingsmodule bij STEVIG (voormalig Dichterbij Specialistische Zorg) gestart; in september 2011 liep dit over in een aanstelling als onderzoeker bij Dichterbij Kennisn@. Per september 2011 is hij tevens vanuit Dichterbij Behandelinnovatie en Wetenschap als science practitioner verbonden aan Tranzo (Tilburg University) waar hij onder begeleiding van prof. dr. P. J. C. M. Embregts en prof. dr. C. Schuengel zijn promotieonderzoek heeft uitgevoerd. De resultaten van dit onderzoek staan beschreven in dit proefschrift. Momenteel werkt hij als postdoc onderzoeker bij de Academische Werkplaats Leven met een Verstandelijke Beperking bij Tranzo, Tilburg University.

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