Job satisfaction of people with intellectual disabilities: the role of basic psychological need fulfillment and workplace participation

Alma Akkerman, Sabina Kef & Herman P. Meininger

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ABSTRACT

Purpose: Knowledge on what contributes to job satisfaction of people with intellectual disabilities is limited. Using self-determination theory, we investigated whether fulfillment of basic psychological needs (i.e., autonomy, relatedness, competence) affected job satisfaction, and explored associations between workplace participation, need fulfillment and job satisfaction.

Method: A total of 117 persons with intellectual disabilities, recruited from a Dutch care organization, were interviewed on need fulfillment at work and job satisfaction. Data on workplace participation was obtained from staff. Questionnaires were based on well-established instruments.

Results: Basic psychological need fulfillment predicted higher levels of job satisfaction. Level of workplace participation was not associated with need fulfillment or job satisfaction.

Conclusions: Allowing workers with intellectual disabilities to act with a sense of volition, feel effective, able to meet challenges, and connected to others is essential and contributes to job satisfaction. It is needed to pay attention to this, both in selection and design of workplaces and in support style.

Introduction

Many people with intellectual disabilities are involved in work, in either integrated or sheltered employment settings [1]. It is desirable that their work allows them to flourish and that it can make a positive contribution to well-being. In order to accomplish this, and to provide them with adequate support, information is needed on what constitutes a good job for people with intellectual disabilities. Several studies on employment of people with intellectual disabilities have focused on the distinction between integrated and sheltered employment settings (e.g., [2–5]). Research findings point to positive outcomes for people with intellectual disabilities in integrated employment settings, particularly in terms of for instance opportunities for personal growth, autonomy, financial outcomes, job satisfaction, and quality of life [6–8]. Yet, some studies have different results (e.g., [2]) and concerns have been raised about integrated employment as well, for instance regarding lack of reciprocal or supportive social relationships, isolation, and hostility, pointing to lack of social inclusion [7–10].

To enhance understanding on how positive outcomes can be achieved for workers with intellectual disabilities, it is important to look beyond the workplace as a homogeneous independent variable, and take account of underlying issues indicative of social inclusion. Moreover, it is essential to acknowledge the perspective of people with intellectual disabilities themselves and the interaction between the person and the environment [7,11]. This may provide valuable information for employers and employment workers that can help optimize employment situations, in such a way that it allows workers with intellectual disabilities to develop their full potential, and feel satisfied with their jobs.

In this study, we will therefore focus on the extent to which employment settings fulfill people’s needs, in relation to their level of job satisfaction. Meeting a persons’ needs, and enhanced job satisfaction in an indicator for work related well-being, that has been associated with overall well-being and life satisfaction [12–14], as well as behaviors that may affect organizational functioning, such as absenteeism, voluntary turnover, counterproductive behavior and job performance [13,15,16]. Studies among employees without disabilities point out that employees will experience more satisfaction when the work environment meets their needs (e.g., [17–19]) and suggest that a work environment that contributes to need fulfillment is necessary to develop employee potential to its’ fullest [20,21]. It is assumed that this also applies to
workers with disabilities, as they have the same needs and want similar things in their work as do nondisabled people [22,23]. Nevertheless, in intellectual disabilities research few studies have actually focused on these issues (e.g., [23–25]) and the main focus in employment support traditionally seems to be on skills and abilities [23,26].

The importance of paying attention to the fulfillment of the needs and job satisfaction of workers with intellectual disabilities, in both research and practice, has been emphasized previously [6,11,23,24,27,28]. This study will contribute to the above by applying a research model based on self-determination theory (SDT; [29]). Specifically, the study will describe how job satisfaction of people with intellectual disabilities is associated with the fulfillment of basic psychological needs as defined in SDT. Furthermore, considering the specific employment situation of people with intellectual disabilities, this study will examine the role of participation in the workplace in relation to job satisfaction and need fulfillment.

Self-determination is a prominent construct in positive psychology, the application of which to people with disabilities has received considerable attention [30]. Considerable progress has been made with regard to efforts to promote self-determination of youth with disabilities, and the importance of self-determination for them within the domain of education has been well established [30,31]. However, efforts focusing on promoting self-determination of adults with disabilities are limited. There is a need for research focusing on self-determination of adults with intellectual disabilities, taking account of the context they live or work in [30]. SDT represents a meta-theory of human motivation, that is, relevant within the context of employment of people with intellectual disabilities. The theory explicitly takes into account the dynamic interaction between the person and the environment [29], and also fits within a broader positive psychological view on intellectual disabilities, building on individuals' strengths and positive experiences to promote the good life [32,33]. According to SDT, effective functioning, healthy development and well-being of persons depends on the fulfillment of basic psychological needs [29,34]. These needs, i.e., autonomy, competence, and relatedness, are defined as "innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being" ([29], p. 0.229).

The need for autonomy refers to the experience of a sense of volition and self-endorsement of behavior [29]. Autonomy can be realized when a person with intellectual disabilities has the opportunity to make personal choices at work, but also when following others’ requests (e.g., supervisor, coworker, mentor), as long as these are fully endorsed. This can be stimulated by providing choice rather than control, a meaningful rationale for executing the request, and acknowledging a persons’ perspective and feelings [35,36].

The need for relatedness refers to the desire to feel connected to significant others [29]. This is more likely to be achieved for workers with intellectual disabilities who feel part of a team and who can share their work-related and personal difficulties, than for those who experience loneliness and have no confidants at work [36].

The need for competence refers to the experience of a sense of effectiveness in interacting with one’s environment [29]. This can be achieved when work provides an optimal challenge, and tasks are optimally discrepant from one’s skill level, and can be strengthened by providing positive feedback [35]. SDT assumes that fulfillment of these needs is necessary for well-being, regardless of differences in the extent to which people value or desire these needs [29,37].

Social or structural aspects of the environment play an essential role with respect to the degree to which a persons’ basic psychological needs can be fulfilled. Studies within the context of work found that for instance work climate and job characteristics are associated with fulfillment of basic psychological needs of people without disabilities [20,21,38,39]. Furthermore, in line with the assumption that fulfillment of basic psychological needs is considered essential for individual growth and wellness, whereas thwarting of the needs is assumed to lead to ill-being and non-optimal functioning [34], basic psychological need fulfillment has been associated with various aspects of employee well-being and ill-being, including job satisfaction (e.g., [17–20,39,40]).

As the assumptions of the SDT are supposed to apply to every individual, either with or without (intellectual) disability [35], it is reasonable to infer that work environments and interventions that are designed to allow satisfaction of the needs for autonomy, competence and relatedness would also lead to more positive outcomes (i.e., enhanced job satisfaction) for people with intellectual disabilities. Within intellectual disabilities research few studies applied SDT as a theoretical framework. Farrell, Crocker, McDonough, and Sedgwick [41] used SDT to study motivation of special Olympians and Frielink, Schuengel, Kroon, and Embregts [42] applied SDT to study the effects of a motivational intervention for substance-abusing people with intellectual disabilities. These studies provide initial evidence for the applicability of SDT among this group. Within the work context of people with intellectual disabilities basic psychological needs have, to our knowledge, not been studied before. A qualitative study by Akkerman, Janssen, Kef, and Meininger [43] however, points out that when people with intellectual disabilities were asked for aspects affecting their job satisfaction, topics were brought forward reflecting basic psychological needs: the experience of having control over their own actions, social fit and perceived sense of belonging, and the opportunities to use skills and feel capable. More research is needed to enhance our understanding of the association between satisfaction of the basic psychological needs for autonomy, relatedness and competence, as defined within SDT, and job satisfaction within the work context of people with intellectual disabilities. This study will contribute to this.

To further enhance our understanding of basic psychological needs at work and job satisfaction of people with intellectual disabilities, this study included variables that may be particularly relevant for people with intellectual disabilities. First, research indicates that several individual characteristics of people with intellectual disabilities may be associated with job satisfaction [6]. Therefore, the following characteristics were added as control variables to the model: age, disability level, and work skills (task competence and social work behavior). Second, regarding job satisfaction of people with intellectual disabilities several studies have addressed the notion of inclusion, interpreting this in terms of physical integration, and hence investigating the differences in job satisfaction between people with intellectual disabilities in integrated and sheltered employment. Results of these studies typically point to higher levels of job satisfaction in integrated employment, although not all studies support these findings [6]. Considering the importance of the issue, and previous research results the distinction between integrated and sheltered employment will be added as a control variable to this study. However, it is recognized that a focus on physical integration provides only limited information on inclusive employment, and is insufficient to move practice forward [11]. This study will therefore extend previous research by including another element associated with inclusive employment, that is, the level of participation in the workplace.
Workplace participation can be understood as the extent to which a person participates in regular activities at the workplace. These activities do not only involve the task, but foremost are related to social/relational aspects of an organization (e.g., [44]) and may be reflected in workplace culture (i.e., the set of shared meanings, expectations, and behavioral norms specific to the workplace [45]). Participation in the workplace enhances feelings of being accepted and valued, increases the possibilities for receiving information, and has been associated with employment success (e.g., performance, tenure) of employees with and without disabilities and with job satisfaction of employees without disabilities [44,46–48]. Research on workplace participation of people with intellectual disabilities is scarce [45,48]. To our knowledge, the association between workplace participation, satisfaction of basic psychological needs and job satisfaction of people with intellectual disabilities has not been studied before. Considering the above it may however be expected that participation affects basic psychological need fulfillment and job satisfaction of workers with intellectual disabilities. In order to enhance our understanding of the need fulfillment and job satisfaction, workplace participation will therefore be added as a variable to the research model.

**This study**

The present study aims to provide insight into the factors associated with job satisfaction of people with intellectual disabilities, using SDT as a theoretical framework. The main objective of this study is to investigate whether fulfillment of the basic psychological needs (i.e., autonomy, relatedness, competence) affects job satisfaction. In addition, this study explores the associations between workplace participation, fulfillment of basic psychological needs and job satisfaction. It is predicted that (1) fulfillment of the basic psychological needs for autonomy, relatedness and competence will be associated with higher job satisfaction, and (2) that higher levels of workplace participation will be associated with enhanced basic psychological need fulfillment and with higher job satisfaction.

**Method**

**Participants**

Participants were recruited from a Dutch organization providing support to people with intellectual disabilities. The organization provided employment support in sheltered employment, by means of work activities in several day centers, and in integrated employment settings (individual and group placements). Every fifth client from the organization’s alphabetically ordered register, that received employment support, and met the inclusion criteria, was contacted. Eligible participants had to be between 18 and 67 years old; had moderate to borderline intellectual disability (IQ 35–85) as a primary diagnosis; had sufficient communication ability in Dutch, with at least some verbal expression; and worked at least two months in the present employment setting. Exclusion criteria were severe visual or hearing deficits, and having no current work activities (staying at home or having recreational day care). Potential participants were approached through their mentors, who would screen for eligibility based on the inclusion and exclusion criteria, and would hand them the letter inviting them to participate. Letters were accompanied by brochures in which the research project and information on confidentiality and anonymity was described in simple terms, and that informed potential participants on the voluntary nature of participation and their right to withdraw at any time. The mentor would clarify the information if necessary, to ensure informed consent. A reminder was sent when needed. The study was executed in compliance with a research design that had been approved by the client advisory board of the service organization (D-13 171).

Of the 428 people approached, 145 persons were willing to participate, 205 indicated they did not want to participate, and 78 persons did not respond. Of those willing to participate, 28 were excluded for reasons of lack of permission from their legal representative, no show or preliminary abortion of the interview, or not meeting inclusion criteria. This resulted in a total of 117 participants for whom full data sets were obtained.

Ages of the participants ranged from 18 to 66, with a mean of 36.81. In all, 57 participants were male (49%) and 60 female (51%). Most participants (66%) had mild intellectual disability (IQ 50–70), 21% had a moderate intellectual disability (IQ range 35–50), 13% borderline intellectual functioning (IQ range 70–85). 27% of the participants worked in integrated employment (e.g., cleaning, shop assistance, hospitality, gardening, manufacturing), 73% worked in day center (which will be referred to as sheltered employment). A total of 27 daycentres were included in the study, which varied in the amount of support, degree of community integration and activities provided (e.g., manufacturing, gardening, hospitality, painting, shop assistance, animal care, cleaning). Due to their disability, and the resulting low productivity and/or high support needs, all participants had been declared ‘arbeidsongeschikt’ according to Dutch legislation. As was noted by Van Hal [49, p0.10], it is difficult to find a suitable international term to translate this status “that literally can be translated as ‘unfit for work’, and can be understood as ‘not able to earn an income in the regular labor market’.” As such participants were all reliant on government benefits for their income. Their (unpaid) work took place as part of their ‘day care’, and as such they were working in either a day center or at a regular company (which is referred to as integrated employment).

**Measures**

To assess job satisfaction a 5-item job satisfaction scale, developed by Judge, Locke, Durham, and Kluger [50] was used. This scale was based on the Brayfield and Rothe [51] job satisfaction scale, and has proven to be a reliable measure in other studies (e.g., [52]). The scale provides an overall, global measure of job satisfaction, contains a limited number of items and uses simple words and phrases. The scale comprises both positively and negatively worded items (e.g., “I find real enjoyment in my work”, “I consider my job rather unpleasant”). Adoptions, to improve comprehension by people with intellectual disabilities, consisted of addition of visual aids as a means of clarifying the response scale, and the choice for interview instead of self-report, with the possibility to elaborate on answers. Cronbach’s $\alpha$ of the scale was 0.77 in this study.

Fulfilment of basic psychological needs was assessed using an adapted version the Work-related Basic Need Satisfaction Scale (W-BNS; [53]). Like the job satisfaction scale, this scale was also adapted to improve comprehension by people with intellectual disabilities, by addition of visual aids, the choice for interview instead of self-report, allowing for elaboration, and simplification of items when necessary. Before using it in this study the instrument was completed by seven persons with moderate to mild intellectual disabilities. These persons were able to comprehend the questions. Based on their suggestions a few minor adaptations were made to improve clarity. The scale consisted of 18 items, on fulfillment or frustration of the needs for autonomy.
(6 items, e.g., “In my job, I feel forced to do things I do not want to do”, Cronbach’s $\alpha = 0.60$), relatedness (6 items, e.g., “At work, I feel part of a group”, Cronbach’s $\alpha = 0.57$), and competence (6 items, e.g., “I am good at the things I do in my job”, Cronbach’s $\alpha = 0.59$). A composite score of general need satisfaction was provided, by grouping the three needs, in line with previous research and SDT’s assumption that the three needs are positively related (e.g., [19,38]). Internal consistency of the overall scale was sufficient in this study (Cronbach’s $\alpha = 0.72$).

To assess level of workplace participation, the Workplace Culture Survey (WCS) [51] was used. The WCS distinguishes 31 elements of workplace culture, for each of which it should be indicated whether the specific element is present or absent in the work setting (e.g., “Do workers eat lunch, or other meal, at the same time?”), “Is there any equipment that workers share the use of?” “Are there particular social customs workers follow, such as taking turns making coffee?”), and, following this, whether the individual participates in the elements that are present (e.g., Does the employee eat lunch (or other meal) with coworkers?). The level of participation was established by calculating the proportion of elements that were present that the individual also participated in. The WCS was found to have adequate construct and concurrent validity, as well as inter-rater reliability [51], and has successfully been used in previous studies [55,56].

Data on the control variables employment type (which refers to integrated and sheltered employment), IQ-level, and age, were obtained from the client records of the participating organization. IQ-level consists of three levels were (moderate intellectual disability, mild intellectual disability, and borderline intellectual functioning), and was determined by a behavioral scientist.

Data on the control variable work skills were obtained with two subscales (i.e., task competence and social work behavior) from the Generic Work Behavior Questionnaire [57], an 18-item questionnaire, assessing skills and behavior in four work domains (task competence, initiative, social work behavior, and dependability). The GWBQ had a semantically differential format: each item contained a pair of opposing behavioral statements, which were scored on a five-point scale. The supervisor report version was used, which was found to be very reliable [57]. Cronbach’s alpha was 0.76 for task competence and 0.73 for social work behavior.

Procedure

Participants were visited at their workplace or at home, by trained interviewers. All interviews started with three test-items, to check for understanding, and let the respondent set at ease and practice. Several measures were taken in order to increase comprehension, as recommended for interviewing people with intellectual disabilities [58]. Simple words were used and ambiguous or complex phrasings were avoided. Interviewers would read the questions to the respondents, and additionally present the question on a printed card. All answers were on the same 5-point scale (totally agree – totally disagree), and were displayed on five separate cards, in different shades of green and red. Cards with the answers were laid out on the table and the respondent was asked to place the question card below the appropriate answer card. Respondents would be asked to elaborate on their answers, to give the interviewer additional information on their views and an indication on how the question was understood. Whenever necessary, questions could be rephrased, according to a prescribed manner, set out in a protocol. When a scoreable answer was not possible, the questionnaire allowed for registrations of missing or uncodeable answers. As this study was part of a larger research project, additional interview questions which did not relate to basic psychological needs and job satisfaction (not reported in this article) were also asked. The average length of the interviews was 75 minutes. The actual interviews were preceded by pilot interviews, to eliminate errors in the questionnaire and scoresheet.

Data on workplace participation and work skills was obtained through the job coach/support staff/mentor at work, who was familiar with the activities that generally take place in the work context, and with the participants’ functioning within the work context. Data was collected by means of a questionnaire, that could be filled out on paper or online, in a maximum of 15 minutes.

Data analysis

The data were analyzed using IBM SPSS statistics version 21. All variables were checked for outliers (Z $\geq 3.29$ or $\leq -3.29$), which were winsorized to the nearest non-outlier [59]. This was needed for four variables, for one or two cases. Pearson’s correlations were used to investigate the associations between basic psychological needs, workplace participation, and job satisfaction. This was followed by a multiple regression analysis, in which job satisfaction scores were included as the dependent variable, basic psychological needs and variables that needed to be controlled for as independent variables. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity, and homoscedasticity, and after verifying the lack of multicollinearity among explanatory variables, by using the tolerance index and the VIF. For descriptive purposes, correlations are provided for the subscales of basic psychological needs (i.e., autonomy, relatedness, competence). In line with previous research (e.g., [19,38]) the composite score of general need fulfillment was used for the regression analysis.

Results

Descriptives and correlations

Table 1 presents mean scores and standard deviations on job satisfaction, basic psychological needs, workplace participation, and the included control variables, as well as correlation coefficients for all study variables. Workers with intellectual disabilities had a mean score of 4.33 (SD = 0.78) on job satisfaction, and of 84.07 (SD = 11.98) on level of workplace participation. Mean score on the overall scale for fulfillment of basic psychological needs was 4.17 (SD = 0.47), on the need for autonomy 4.10 (SD = 0.66), on the need for relatedness 3.98 (SD = 0.74), and on the need for competence 4.43 (SD = 0.52).

Higher levels of job satisfaction were significantly associated with older age ($r = 0.26$, $p = 0.006$), and with overall basic psychological need fulfillment ($r = 0.62$, $p < 0.001$), as well as the individual needs for autonomy ($r = 0.55$, $p < 0.001$), relatedness ($r = 0.41$, $p < 0.001$), and competence ($r = 0.41$, $p < 0.001$ $r = 0.62$, $p < 0.001$). Using Cohen’s [60] benchmarks, effect sizes can be considered insignificant, small, medium, or large [61]. According to these guidelines basic psychological needs were correlated with job satisfaction with large effect sizes, and age with medium effect size. Small, yet insignificant effect sizes were found for task competence and social work behavior.

There was no difference in job satisfaction levels of participants in integrated and sheltered employment as determined by one-way ANOVA ($F(1,114) = 0.06$, $p = 0.805$). Analysis of variance also indicated no significant differences between men and women ($F(1,114) = 0.55$, $p = 0.459$), and different IQ-levels ($F(2,112) = 1.782$, $p = 0.173$) with respect to job satisfaction. Using Cohen’s [60]
Table 1. Means and standard deviations for workplace participation, basic psychological need fulfillment and job satisfaction.

<table>
<thead>
<tr>
<th>Control variables</th>
<th>Mean (SD)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>7a</th>
<th>7b</th>
<th>7c</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>36.81 (12.47)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2. IQ level</td>
<td>1.92 (0.58)</td>
<td>–</td>
<td>–</td>
<td>0.08</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>3. Task competence</td>
<td>3.66 (0.70)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.11</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>4. Social work behavior</td>
<td>3.85 (0.80)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.04</td>
<td>0.45***</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>5. Sheltered/integrated</td>
<td>0.26 (0.44)</td>
<td>–</td>
<td>0.03</td>
<td>0.12</td>
<td>0.19*</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>6. Participation</td>
<td>84.07 (11.98)</td>
<td>0.07</td>
<td>–</td>
<td>0.11</td>
<td>0.01</td>
<td>0.31**</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>7. Needs</td>
<td>4.17 (0.47)</td>
<td>0.21*</td>
<td>–</td>
<td>0.06</td>
<td>–</td>
<td>0.06</td>
<td>0.06</td>
<td>0.11</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>7a. Autonomy</td>
<td>4.10 (0.66)</td>
<td>0.28**</td>
<td>0.03</td>
<td>–</td>
<td>0.04</td>
<td>0.21*</td>
<td>0.12</td>
<td>0.08</td>
<td>0.78***</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>7b. Relatedness</td>
<td>3.98 (0.74)</td>
<td>–</td>
<td>0.13</td>
<td>0.07</td>
<td>0.13</td>
<td>0.04</td>
<td>0.18</td>
<td>0.77***</td>
<td>0.36***</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>7c. Competence</td>
<td>4.43 (0.52)</td>
<td>0.21*</td>
<td>–</td>
<td>0.10</td>
<td>0.00</td>
<td>0.01</td>
<td>0.02</td>
<td>0.10</td>
<td>0.62***</td>
<td>0.35***</td>
<td>0.22*</td>
</tr>
<tr>
<td>8. Job satisfaction</td>
<td>4.33 (0.78)</td>
<td>0.26**</td>
<td>–</td>
<td>0.10</td>
<td>–</td>
<td>0.10</td>
<td>0.02</td>
<td>0.08</td>
<td>0.62***</td>
<td>0.55***</td>
<td>0.41***</td>
</tr>
</tbody>
</table>

N ranges from 109 to 117 due to missing data.

* p < 0.05.
** p < 0.01.
*** p < 0.001.

guidelines the effect size for employment type (integrated/sheltered; d = 0.05) and gender (d = 0.14) was insignificant, and for IQ-level was small (d = 0.32).

Contrary to expectations job satisfaction and basic psychological need satisfaction showed no significant associations with workplace participation. Level of workplace participation did show significant associations with social work behavior (r = 0.31, p = 0.001). Also, there were significant differences between workers in integrated and sheltered employment, as was determined by one-way ANOVA (F(1,107) = 7.18, p = 0.014, indicating that participants in sheltered employment had higher levels of participation (M = 85.78, SD = 10.46) than participants in integrated employment (M = 79.54, SD = 14.54).

**Regression analysis**

Table 2 summarizes the findings from the multiple regression analysis. The model explained 36% of the variance in job satisfaction (R² = 0.36, F(3, 101) = 18.59, p = 0.000). The analysis shows that workplace participation did not significantly predict job satisfaction (β = -0.01, p = 0.900) and neither did age (β = 0.16, p = 0.055), however fulfillment of basic psychological needs was a significant predictor of higher job satisfaction (β = 0.55, p < 0.001). The effect size was large (Cohen’s f² = 0.55).

**Discussion**

This study aimed to extend the knowledge on need fulfillment and job satisfaction of people with intellectual disabilities. Using SDT as a framework, the association between fulfillment of the basic psychological needs (i.e., autonomy, competence and relatedness), and job satisfaction of people with intellectual disabilities was examined. The present findings showed that fulfillment of basic psychological needs was strongly associated with higher levels of job satisfaction. This indicates that a workplace in which people with intellectual disabilities feel that they can make their own decisions at work and act with a sense of volition (i.e., need for autonomy), feel connected to others at work (i.e., need for relatedness), and feel effective and able to manage challenges (i.e., need for competence), will contribute to people’s feelings of satisfaction about the job. These results are in line with findings among non-disabled employees, that point to the significance of basic psychological need fulfillment for well-being of employees and their job satisfaction in particular (e.g., [17–19]).

In addition, the study explored the associations between participation in the workplace and both fulfillment of basic psychological needs and job satisfaction. Contrary to the expectations, in the present study no significant associations with workplace participation were found. Positive effects of workplace participation on job satisfaction have been suggested in literature (e.g., [44,54]), however, our results suggest that the level to which employees with intellectual disabilities participate in regular activities and behaviors of the workplace is not related to the extent to which their needs for autonomy, relatedness and competence are met, and neither does it predict satisfaction with the job.

A number of explanations for these findings are. First of all, Hagner et al., [45] noted that inclusion levels of employees do not necessarily need to reach 100%, neither for employees with or without disabilities. Some nonconformities may be a positive sign of individuality, fit a persons’ desires and capabilities, and be a voluntary choice. In this regard, participation of participants in this study appeared to be quite high, with an average level of 84%. In comparison, their study reported levels of 83% and Killary and Pernice [56] of 77% for individuals with (intellectual) disabilities in integrated employment settings, and 87% for their coworkers without disabilities. It is conceivable that the effect of workplace participation on basic psychological need fulfillment and job satisfaction only becomes apparent when deviations are greater, or when inclusion fails. Effect of (lack of) workplace participation may also only be noticeable when a person is not participating in elements that are pivotal to the overall culture, or that are personally valued, and when lack of participation is not by personal choice. This may point to the need for a more personalized approach to workplace participation.

Also, in contrast to previous studies, the present study did not find significant differences in job satisfaction for participants in integrated and sheltered employment. This could possibly be explained by differences in instruments used, characteristics of participants or of the employment situations involved. Sheltered and supported employment settings tend to show great variations among countries [62].

Although not a main objective, it is interesting to note that this study found significant differences in level of workplace participation for participants in integrated and sheltered employment. Hagner et al. [45] reported barriers to inclusion in workplace participation...
culture, some of which may also provide an explanation for the findings in this study, such as having different work schedules than coworkers, part-time work, and lack of access to flexible transportation. Furthermore, Kulkarni and Lengnick-Hall [48] noted in their study on socialization of people with disabilities in workplace culture that presence of similar others in the organization (other persons with disabilities) was seen as important in creating an inclusionary context. More research is needed in order to find effective strategies for enhancing workplace participation of people with intellectual disabilities in integrated employment.

**Limitations**

Some limitations of this study need to be pointed out. First, participants in this study, although varying in IQ-levels, all had major work limitations, and the majority of the participants were in sheltered employment (i.e., daycentres). Results might not be fully generalizable to the entire population of people with intellectual disabilities. We suggest, particularly considering the developments stimulating integrated employment, to conduct additional research, including more people with intellectual disabilities who have mild work limitations, and participate in integrated employment.

Second, this study used the WCS to assess workplace participation, which assesses participation by examining workplace culture. Workplace culture has mostly been researched in integrated employment settings (e.g., [55,56,63]), where people with intellectual disabilities can be more or less included among their non-disabled coworkers. In this study, it was presumed that workplace participation is also relevant in settings exclusively for people with intellectual disabilities (i.e., sheltered employment), where there is also a workplace culture, in which people can participate to a greater or lesser extent. Nevertheless, it is conceivable that the chosen instrument did not adequately reflect relevant cultural elements for this setting, or for the Dutch situation to which it was applied.

Third, the instrument used to assess basic psychological need fulfillment (W-BNS, [53]) has been developed and validated for employees without disabilities. At the time of data collection an instrument particularly suitable for people with intellectual disabilities was not available. Some adaptations were made in order to enhance applicability for the participants in this study. Nonetheless, questions may have been difficult, particularly some reversed worded questions. Also, in this study a composite score for basic psychological needs was used in the regression analysis, in line with previous research (e.g., [19]). It may be interesting though for future research to investigate whether the needs for autonomy, relatedness and competence have distinct effects on job satisfaction.

Fourth, for the measurement of both basic psychological needs and job satisfaction subjective measures were used. Common method variance may have inflated the strength of the associations. It is therefore recommended that future research includes other (e.g., objective or proxy) measures of basic psychological needs and job satisfaction. Fifth, the model in this study explained a reasonable amount of variance (36%). This means that 64% of variance remained unexplained. It is recommended that future research includes additional factors. In particular, in line with previous research (e.g., [64,65]), it is advised to pay attention to previous work experiences and to expectations that people with intellectual disabilities hold towards themselves and their work situation. These variables may also be relevant for attitudes towards and satisfaction with integrated versus sheltered employment settings. Finally, as this study is cross-sectional in nature, caution is needed with respect to conclusions on the directions of the relationships.

**Implications**

This study points out that in order to enhance job satisfaction, meeting the basic psychological needs of people with intellectual disabilities is of great importance. This study hereby contributes to enhanced insight into antecedents of job satisfaction for people with intellectual disabilities. It also provides further evidence for the applicability of SDT for people with intellectual disabilities, and initial evidence for its applicability to the work context of people with intellectual disabilities. Further research is needed within the work context, as well as in other contexts to further investigate the merits of SDT for intellectual disabilities research. This may include research on basic psychological needs, as well as other components of SDT, such as autonomous motivation. It should be recommended that future research also pays attention to the development of psychometrically sound instruments for the measurement of basic psychological needs of people with intellectual disabilities in various contexts.

For employment support services, focusing on fulfillment of the needs for autonomy, relatedness and competence as a means for enhancing job satisfaction, allows one to work on employment settings that allow people with intellectual disabilities to flourish. This implies selecting or developing work contexts that are supportive of workers’ needs, by paying attention to for instance a persons’ skills and abilities, in order to provide an optimal challenge, to possibilities to take initiative and make choices, and possibilities to develop meaningful social relations. Yet, this also implies awareness of the supportive style that is applied. Research indicates that a supportive style that is autonomy supportive rather than controlling is important for intrinsic motivation, and particularly fulfillment of the needs for autonomy and competence. This may include the use of non-pressureing language, positive feedback, taking the workers’ perspective, supporting exploration and self-initiation, and encouraging workers to develop and implement solutions to their own problems. In contrast, the use of pressuring language (you should, you have to), rewards, punishments, pressure, and imposed goals, are unsupportive of these needs and undermine intrinsic motivation [35]. More research is needed to enhance understanding of the effects of supportive style on need satisfaction and job satisfaction of people with intellectual disabilities.

The findings with respect to participation in the workplace and integrated employment should not be considered as an endorsement of sheltered work over integrated work. Integrated employment and workplace participation are essential in order to allow people with intellectual disabilities to pursue meaningful work opportunities of their choice, to become active, empowered societal and organizational members, and to enhance their quality of life [27,47,48]. Yet, in line with previous studies (e.g., [10,11]) the current findings suggest that in order to further improve employment situations of people with intellectual disabilities, it might be useful to look beyond objective indicators (e.g., physical presence) of inclusion or quality of life, and focus on subjective experiences, such as job satisfaction, fulfillment of needs and a sense of belonging.

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