

Development and psychometric properties of an instrument for the Assessment of Sexual Behaviour and Knowledge of people with Intellectual Disability

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ABSTRACT

Background. This paper presents psychometric properties of an instrument for the Assessment of Sexual Behaviour and Knowledge of people with Intellectual Disability (ASBKID), other-reported by professionals who are in daily contact with them. Methods and procedures. Assessments of 236 individuals with intellectual disability were from 100 professionals. Results. Confirmatory factor analysis revealed a four-factor structure: concern about the user's inappropriate or uninhibited sexual behaviour; perception of the user's knowledge about privacy and social norms; perception of the user's knowledge about sexuality; and concerns about the user's sexuality. A multi-group CFA was also conducted in men and women, confirming the adequacy of this four-factor structure by gender. The reliability of the factors ranged from 0.74 to 0.92. Conclusions. The psychometric results obtained support the use of the ASBKID as a valid and reliable measure for the assessment of sexual behaviour and knowledge in both men and women with intellectual disability.

Key words: intellectual disability, sexual behaviour, sexual health, sexual education, psychometric properties

1 INTRODUCTION

Current knowledge about sexuality in people with intellectual disabilities (ID) is limited, perhaps due to stereotypes that considered immature due to their limitations in intellectual functioning or adaptive behaviour (APA, 2013), unable to make decisions about their sexuality because they require support and supervision (Swango-Wilson, 2009; Whittle & Butler, 2018), or uncontrollable due to their lack of impulse control (Franco et al., 2012). The literature shows that many people with ID are interested, in talking about sexuality more or receiving information about contraception methods (Azzopardi-Lane & Callus, 2015; Frawley & Wilson, 2016; Kijak, 2013).

This group has the same sexual desires and needs as people without disabilities (Borawska-Charko et al., 2017). According to the American Psychiatric Association (2013), most people with ID have mild or moderate impairment, so that their preserved abilities allow them to have satisfying sexual relationships throughout adulthood. Several studies conclude that a high percentage of individuals with ID report having had some type of sexual experience, with masturbation being the most frequent sexual practice (Bernert & Ogletree, 2013; Gil-Llario et al., 2018; Medina-Rico et al., 2018).

Unfortunately, their knowledge is limited, and the knowledge they do have may not always be adequate (McDaniels & Fleming, 2016). Although theoretically a high percentage report having information about contraception methods, we do not know what kind of information they have and whether it is accurate (Gil-Llario et al., 2018). This group has great difficulty accessing sexual information, and what they do get is often not adapted to their reality or personal needs (Kijak, 2013; Schaafsma et al., 2015).

Although the percentage of people with ID who are receiving affective-sexual education varies across countries and cultures (González et al., 2018), this education often consists primarily of transmitting purely theoretical information and, to a lesser degree, controlling their sexual urges to avoid arousing interest in any aspect of sexuality. This reality can lead to inappropriate or maladaptive behaviours such as having sex in public, not using a condom, or being abused sexually (Eastgate, 2008; Gil-Llario, Morell-Mengual et al., 2019; Mitra et al., 2016). The point is that much of this behaviour is not due to their limitations in intellectual functioning, but rather to a lack of specific knowledge (Franco et al., 2012).

In recent years, there has been an increased interest in the study of his sexual needs as a result of the progressive normalization and the achievement of certain sexual rights. People with ID often have difficulty expressing their needs, and the assessments made by their caregivers may

be biased by the roles they play. In order to obtain valid and reliable knowledge about the needs of this group, it seems necessary to jointly analyse the information from these three sources: the people with intellectual disabilities themselves, the professionals who work with them and the parents (Gil-Llario, Elipe-Miravet et al., 2019; Pownall et al., 2012; Stein et al., 2018). Unfortunately, we do not have valid and reliable psychometric instruments from these different informants.

As far as the users themselves are concerned, in the past 20 years some self-report questionnaires have been published to evaluate general knowledge, such as the Assessment of Sexual Knowledge (Galea et al., 2004) or the General Sexual Knowledge Questionnaire (Talbot & Langdon, 2006); or assess more specific knowledge related sexual abuse, such as the Detection of Sexual Abuse Risk Screening Scale DSARss (Gil-Llario, Ballester-Arnal et al., 2019). In some cases, these self-report measures are hampered by this group's own limitations (APA, 2013) because some people with ID do not have sufficient verbal skills (Brownlie et al., 2007; Martinello, 2015; McGuire & Bayley, 2011). In addition, sexuality is an issue that produces shame, and some people do not want to talk about it openly (Kijak, 2013; Turner & Crane, 2016).

Instruments assessing the sexuality of people with ID through parental input are even more scarce. After reviewing the literature from recent years, we found only one recent sexual behaviour assessment instrument designed for parents, the ESBK-PA by Gil-Llario, Elipe-Miravet et al. (2019). This questionnaire consists of 32 items that evaluate three dimensions of sexual behaviour. The first subscale assesses understanding of privacy and social norms; the second subscale assesses their perception of their child's knowledge about sexuality; and the third subscale assesses concern about inappropriate sexual behaviour.

As for the third source of information, namely professionals, a comprehensive review of the specialized literature allows us to verify that existing questionnaires only focus on generically assessing attitudes towards sexuality, without focusing on their knowledge or sexual needs (Bazzo et al., 2007; Evans et al., 2009; Pebdani, 2016). Research has generally been carried out from a qualitative perspective through focus groups or interviews, without using standardized instruments (Löfgren-Mårtenson et al., 2015; McConkey & Leavey, 2013). This is a particularly important shortcoming because the professionals who are with them daily in occupational centres are probably the external observers most qualified to identify and assess their needs. Conversely, parents often do not receive specific sex education and may underestimate or overestimate specific behaviours arguing the society imperative stereotypes (Isler et al., 2009; Powell et al., 2019; Pownall et al., 2012). In contrast, professionals are in a position to assess their needs more objectively, first, because of the training they have received, and second, because

they can contrast a user's sexual behaviour with that of the other users of the centre (Gil-Llario et al., 2018).

For these reasons, it is necessary to have valid and reliable evaluation instruments for professionals to collect information about different aspects of sexuality in people with ID, making it possible to perform quantitative analyses of the different areas and move away from the traditional interview format. In order to fill these gaps, in this paper we present the construction and validation of another-reported questionnaire to be filled out by professionals for the assessment of sexuality in people with mild ID.

2 MATERIAL AND METHODS

2.1 Participants

Psychologists from 20 occupational centres located in Spain participated in this study. A total of 100 professionals, 5 from each centre, evaluated 2–3 users of their centre by completing a total of 246 questionnaires. The users of the centres presented slight intellectual disability (136 men and 110 women). The age range was between 18 and 65 years ($M = 37.58$; $SD = 10.44$). With regard to their place of residence, 81.3% lived with relatives, 8.9% lived in a nursing home or hospital, 6.9% lived in a community setting, and 2.8% lived independently. Regarding the age of diagnosis, the highest percentage occurring between the ages of 3 and 4 (24.57%). Table 1 presents the demographic characteristics.

2.2 Instruments

2.2.1 Demographics

Professionals responded to items designed to elicit information about persons with ID, such as their intellectual level, age at diagnosis or residence type.

2.2.2 ESBK-PA

Evaluation of Sexual behaviour and knowledge of people with mild and moderate intellectual disability by parents (Gil-Llario, Elipe-Miravet et al., 2019). It consists of 32 items, grouped into three factors, that assess the perception that parents of people with ID have about their children's sexuality. The first subscale (PRIV-NOR) assesses aspects related to privacy search behaviours and the understanding of rules about what is right to do in public or in private situations. The second subscale (KNOW-SEX) includes items related to reproductive process knowledge, contraceptives and STIs. Finally, the third subscale (BEHAV-UNINHIB) incorporates inappropriate behaviours in public and inappropriate verbal expressions. The items have a dichotomous 'Yes' or 'No' response

format. Its elaboration started from a bank of 42 items, which were reduced to 32 after a filtration process. Exploratory factor analysis (EFA) suggested to retain a three-factor model. The scale has adequate psychometric properties, with Cronbach's alpha values of .73 for the PRIV-NOR subscale, .87 for KNOW-SEX and 0.70 for BEHAV-UNINHIB. This scale is designed for the parents of the people with ID.

2.2.3 ASBKID

Assessment of Sexual Behaviour and Knowledge of people with Intellectual Disability. This is a 24-item other-reported instrument to be completed by professionals working with people with ID in occupational settings. The main components are concern about the user's inappropriate or uninhibited sexual behaviour (e.g. 'do you know if s/he has ever masturbated in public?'); perception of the user's knowledge about privacy and social norms (e.g. 'do you think s/he is aware of social norms about not letting others touch one's private body parts?'); perception of the user's knowledge about sexuality (e.g. 'do you think s/he understands the human reproduction process?'); and concerns about the user's sexuality (e.g. 'are you worried that s/he won't find a partner?'). The items have a dichotomous 'Yes' or 'No' response format.

2.3 Procedure

To design this questionnaire, a group of experts in neurodevelopmental disorders and sexuality produced a set of statements supported by an exhaustive review of various studies that collect different aspects of sexuality in people with ID (Azzopardi-Lane & Callus, 2015; Frawley & Wilson, 2016; Gil-Llario et al., 2018; Gil-Llario, Morell-Mengual et al., 2019; Kijak, 2013). Later, two independent psychologists with extensive experience in the area of intellectual disability reviewed this preliminary 32-item version. The review criteria were semantic understanding, syntactic correction and appropriateness of the statements for the construct being evaluated. The experts rated each item with a score from 0 to 5. The items that showed formulation errors were eliminated, some items were rewritten using alternative expressions, and items with similar content were regrouped. The corrected version was administered to a small pilot group.

The final version of the questionnaire was completed by psychologists from 20 centres that belonged to the caregiving network for people with ID. In Spain, occupational centres are places with the aim of improving the resident's development, their labour insertion and to achieve a social integration. Residents do their task in workshops to acquire basic work habits, benefiting from programmes and therapies. The main goal is the therapy through work.

Each professional evaluated 2 or 3 people. In order to participate in the study, the professionals had to meet the following inclusion criteria: (a) have daily contact with and a high degree of personal knowledge about the users they were going to report on and (b) have at least 2 years of experience working in the occupational centre. In addition to these inclusion criteria, all the professionals had received specialized training in sexual-affective education and were urged to corroborate their ratings with those of other colleagues in the centre if they had doubts or did not know an answer. The professionals who participated pledged not to share any information, guaranteeing the confidentiality of the answers. Professionals only reported some specific data, such as gender or age of diagnosis, which did not allow the person mentioned in the evaluation to be identified. Legal guardians from the ID people were informed about the aim of this study, accepting that a professional from the occupational centres registered information about their relative sexual knowledge's, as well as other relevant information, always respecting the anonymity of that information. The study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Board of the University of Valencia approved the study.

2.4 Statistical analyses

To identify the internal structure, an exploratory factor analysis was performed using the statistical software MPlus 7.4. Subsequently, a confirmatory factor analysis was carried out with the same software to verify the fit of the factorial model and find out if there was structural invariance by sex (multi-group CFA). Although it is suggested that EFA and CFA should be carried out in different samples (Izquierdo et al., 2014), two articles similar to ours have used both techniques over the same data (Dardas & Ahmad, 2014a, 2014b). Moreover, a recent meta-analysis about scales development (Koyuncu and Kiliç, 2019) shows how a 27% of the articles analysed used both EFA and CFA over the same sample. Finally, some experts agree that carrying out both analyses over the same sample is not problematic, only if the sample is not big enough (Worthington & Whittaker, 2006). Therefore, following these precedents and suggestions we decided to perform both EFA and CFA over our data.

The analysis of the goodness of fit of the factorial model was performed with the following indices: chi-square (χ^2), relative chi-square (χ^2/df), general significance of the model (p), root mean square error of approximation (RMSEA), fit indices (CFI and TLI), modification indices (MI) and the expected parameter change (EPC). An excellent fit was achieved when the χ^2 value was not significant ($p > .05$), the χ^2/df value was between 1 and 2, the CFI and TLI were $\geq .95$, and the RMSEA was $\leq .05$ (Bagozzi & Yi, 2011). Using less restrictive criteria, χ^2/df values between 2 and 3, CFI and TLI values $\geq .90$, and RMSEA values $\leq .08$ could also be considered acceptable (Hooper

et al., 2008). Finally, we explored the mean score on the items and the four factors, as well as different reliability indices, namely the ordinal Cronbach's alpha, the ordinal omega coefficient and the correlation of each item with its factor. Convergent validity was also explored by correlating the ASBKID factor score (Pearson's r) with another scale that assessed equivalent dimensions from the parents' perspective, like other similar studies that analyse the psychometric properties in scales designed for people with intellectual disabilities (Gomez et al., 2015).

3 RESULTS

3.1 Exploratory factor analysis

To determine the structure, we first performed an exploratory factor analysis (EFA) using Geomin rotation, which is the most appropriate method when items saturate in several factors at the same time (Finch, 2011; Schmitt & Sass, 2011). The Weighted Least Squares Mean and Variance Adjusted (WLSMV) estimator was used to perform this analysis, because it is the most suitable for small sample sizes and categorical variables (Muthén & Muthén, 2010). Results show that a 4-factor structure best fits the data (Table 1), because models with 3 or fewer factors obtain CFI and TLI values below .90, and models with 5 or more components have factors in which no items have a factor loading above 0.3, minimum acceptable value to belong to a factor (Worthington & Whittaker, 2006) (Table 2).

3.2 Confirmatory factor analysis

To verify the structure, a confirmatory factor analysis (CFA) was performed, using again the WLSMV estimator. The first model tested (M1) exactly replicated the factor structure derived from the EFA, with four correlated first-order factors. The fit indexes obtained were very poor (CFI = .781, TLI = .761, and RMSEA = 0.066). For this reason, a second model (M2) was tested. Following the MI and the E.P.C indications, item 17 (Do you know where s/he learned what s/he knows about sexuality?) was eliminated because it did not reach statistical significance in any of the four factors. In addition, some items were moved to another factor to obtain a better fit from a theoretical point of view, also following the MI and the EPC. Specifically, item 1 was moved to Factor 2, item 6 was moved to Factor 3, and item 28 was moved to Factor 4. Although this second model improved the fit somewhat compared to the first model tested, the fit indexes continued to be low (CFI = .860, TLI = .846 and RMSEA = 0.055).

These limitations led to the development of a third second-order model (M3) with one common factor encompassing all 4 factors and explaining the shared variance. As a previous step, the items that were not significant in M2 were eliminated: 14 (Do you think s/he learned what

s/he knows about sexuality from his/her parents?) and 24 (Have you ever been concerned about his/her physical sexual responses?). Although a significant improvement in the fit indexes was expected, this was not the case (CFI = .840, TLI = .823 and RMSEA = 0.063). In addition, Factor 4 did not reach statistical significance within the second-order factor. Therefore, this option was discarded, and work with a first-order model continued.

The fourth model (M4) tested all the variables used in M3, but without the second-order factor. The result was a model with good fit indices ($\chi^2/df = 1.64$; RMSEA = 0.053), although the CFI and TLI were slightly below the cut-off values (.886 and .874, respectively). Therefore, the decision was made to test a new model following the MI and EPC, with the aim of improving the model.

Finally, a fifth model (M5) was analysed, in which item 25 (Has s/he shown any sexual behaviour that was inappropriate but s/he had trouble understanding why?) from Factor 4 was removed because it presented some theoretical inconsistencies with the rest of the items, and item 15 (Do you think s/he learned what s/he knows about sexuality in school activities?) was removed because it did not correlate with the rest of the items that made up the factor. In addition, items 7, 9, 10, 11, 12, 13 and 23 from Factor 2 were moved to Factor 3, where they matched better theoretically and statistically, according to the E.P.C. Moreover, following the M.I., a series of constrictions were carried out to improve the model fit. Specifically, the residual covariances of item 3 were correlated with item 1, and those of item 5 were correlated with item 1. As Table 3 shows, the significance value of the chi-square statistic is significant ($p = .001$). As for the rest of the goodness-of-fit indexes, the value corresponding to the relative chi-square (χ^2/df) was 1.32, with acceptable values being less than 3 and perfect values lying between 1 and 2. The CFI and TLI reached values of 0.952 and 0.946, respectively, with the CFI being excellent and the TLI lying very close to the cut-off point to consider an excellent model fit. Finally, the RMSEA was below the value of .05 required by the strictest criteria to consider a model parsimonious. The resulting model can be seen in Figure 1.

The first factor is composed of 5 items (items 18, 29, 20, 21 and 22) that refer to inappropriate or uninhibited behaviour, and so it is called 'BEH-UNINHIB: concern about inappropriate or uninhibited sexual behaviour by the user'. It includes a series of statements about performing sexual behaviour in public (items 18, 21 and 22), inappropriately touching other people (item 19) and talking about sexuality in a rude or insistent way (item 20).

The second factor integrates 5 items (items 1, 2, 3, 4 and 5) that collect information about the degree of awareness of social norms for privacy and intimacy, and so it is called 'PRIV-NOR: perception of user's knowledge about privacy and social norms'.

The third factor is composed of 10 items (items 6, 7, 8, 9, 10, 11, 12, 13, 16 and 23). It includes various statements related to affective-sexual education and the sources of information through which it was obtained, as well as the quantity and quality of knowledge about various topics related to sexual health, such as STDs or contraception methods. Therefore, this factor was called 'KNOW-SEX: perception of user's knowledge about sexuality'. It integrates various items related to the process of sex education (items 6, 7 and 16), hygiene and sexual health (items 8 and 12), different types of relationships (item 9), the reproduction process and physiological responses (10, 11 and 23) and socially acceptable behaviours (item 13).

The fourth and final factor is composed of items 26, 27, 28 and 29. This factor was re-named 'CONCERN: concerns about the user's sexuality' because it groups together items related to various concerns professionals have about the user engaging in inappropriate behaviours (items 26 and 27), experiencing loneliness (item 28) and risking sexual abuse (item 29).

With regard to the evaluation of the invariance of the scale, the results are at the limit of the minimum acceptability values (see Table 3). Regarding the RMSEA values for the evaluation of the three types of invariance, all the models analysed present values that are equal to or below the cut-off point (0.06) established for acceptability (Hu & Bentler, 1999). In addition, the chi-square tests are significant and do not vary across the three models. The only values that would be below the accepted limit (0.90), but very close to it, would be the CFI and TLI statistics. Although the statistic indices are close to the acceptability cut-off point, we conclude that our scale is gender invariant for the factor structure, factor loadings and item intercepts, which is remarkable given our small sample size.

3.3 Descriptive data and reliability

The results show that 61% of men and 66.3% of women have received any sex education, either from the psychologist or from other people at the occupational centre. However, of the total sample, 8.8% of men and 13.7% of women do not have any knowledge about sexuality. As Table 4 shows, the mean scores on the items on the scale range from 0.45 to 0.99, in most cases in the lower half of the score range. Regarding internal consistency, Cronbach's ordinal alpha of the factors (recommended for the estimation of the reliability of dichotomous items) exceeds the criterion of .70 (Hunsley & Mash, 2008). Specifically, values range from .74 to .92 ($\alpha_{\text{factor 1}} = .92$; $\alpha_{\text{factor 2}} = .92$; $\alpha_{\text{factor 3}} = .89$; and $\alpha_{\text{factor 4}} = .74$). Moreover, the reliability evaluated through

the omega ordinal coefficient reaches values very similar to those reported for Cronbach's α , specifically between .74 and .93.

3.4 Convergent validity

To assess convergent validity, Pearson's correlations between the ASBKID and ESBK-PA were analysed. These two analogous instruments, although with slightly different factorial structures, are made up of very similar items and assess similar aspects, but the ASBKID collects information from the perspective of professionals and the ESBK-PA from the perspective of parents.

The results obtained (Table 5) reveal a negative correlation between Factor 2 of the ASBKID and Factor 1 of the ESBK-PA ($r = -.363$; $p = .031$). Both factors evaluate the perception of knowledge about privacy and social norms. In addition, the factors that provide information about the estimation of knowledge about sexuality (Factor 3 on the ASBKID and Factor 2 on the ESBK-PA) correlate negatively ($r = -.379$), although the relationship is not statistically significant ($p = .074$).

4 DISCUSSION

The sexual development of people with ID varies greatly in terms of the degree of support they need, their autonomy, etc. Adjusting the educational response to each case requires an objective assessment, and this can only be achieved when all three sources of information are addressed, that is the users themselves, family members and professionals. Of these three protagonists, the professionals are in a position to offer the most reliable information. Therefore, it is a priority to have evaluation instruments that provide a comprehensive view of the different facets of sexuality.

Given the lack of instruments designed for this group, the objective of this study was to develop a tool for the Evaluation of Knowledge and Sexual Behaviour of people with mild ID (ASBKID), other-reported by professionals, and analyse its psychometric properties. In terms of its structure, the exploratory factorial analysis grouped the items into four factors with eigenvalues greater than 2.5. The four subscales of the questionnaire include aspects that the scientific literature on people with ID has traditionally evaluated, such as risk of sexual abuse (Byrne, 2018; McGilloway et al., 2020; Smit et al., 2019), knowledge of sexual hygiene or prevention of STDs (Borawska-Charko et al., 2017; Schaafsma et al., 2017). This structure was verified and corrected through confirmatory factor analysis, and so it can be stated that the final version of the ASBKID has good construct validity.

The first factor, BEH-UNINHIB, evaluates one of the aspects that is of most concern in the affective-sexual education, that is the presence of inappropriate sexual behaviour. This factor explores whether, in the professional's opinion, the person is able to control his/her sexual behaviour by adapting it to what is socially accepted. In this regard, numerous studies indicate that a high percentage of people with ID have masturbated in inappropriate places (Lunsky et al., 2007; Medina-Rico et al., 2018; Pryde & Jahoda, 2018). According to Borawska-Charko et al. (2017), these inappropriate behaviours are fostered by the existence of a repressive context that has refused to provide private spaces in which to carry out these practices, along with the lack of adequate affective-sexual education. There are also many people with ID who engage in sexual behaviour that invades other people's space, such as kissing or touching someone's intimate areas without permission (Griffiths & Fedoroff, 2014).

The second factor, PRIV-NOR, collects various items related to privacy and the related rules. Several studies show the need to collect information in this area because it is a significant precursor of the risk of sexual abuse (Gil-Llario, Ballester-Arnal et al., 2019; Liou, 2014). In general, people with ID are four times more likely to be sexually abused than people without disabilities (Mitra et al., 2011). This greater vulnerability is not only attributable to deficits in intellectual due to the degree of severity of their disability, but also to extrinsic risk factors linked to the type of affective-sexual education received (Fisher et al., 2008).

The third factor, KNOW-SEX, evaluates the professional's perception of the person's sexual knowledge. This dimension is important because, although people with ID have the same sexual needs as people without disabilities (Borawska-Charko et al., 2017), they have little knowledge, and the knowledge they do have has been acquired through unreliable sources of information (Kijak, 2013). Various studies determine that these people will explore their sexuality in any case, regardless of whether or not affective-sexual education is provided. However, when adapted education is provided, the likelihood that their sexual behaviours will be more adjusted and healthy increases significantly (Hayashi et al., 2011; Schaafsma et al., 2015).

The fourth factor, CONCERN, lists some concerns that professionals may have about the experience of sexuality in these people. The professionals who work with these people on a daily basis know the specific reality of each user; therefore, they can foresee the appearance of certain poorly adjusted behaviours (Hermsen et al., 2014). According to Gil-Llario, Elipe-Miravet et al. (2019), these concerns are based on objective information about the person, and they present greater guarantees of veracity than when they are mentioned by family members.

This factor structure is equivalent for both men and women because factor invariance analyses indicate acceptance values very close to those established by the scientific literature (Chen, 2007). It is especially remarkable that the values are acceptable even though the groups are small. As Putnick and Bornstein (2016) point out, sample size affects the assessment of invariance, so that in groups of around 100 people, as in this case, statisticians can reject models even if they are appropriate (Chen et al., 2008). However, the fit statistics were acceptable when assessing invariance, and so it can be stated that both the strength of the item-factor correlations and the distribution of the items in the factors are equivalent in men and women.

The psychometric properties of the various items are adequate because item-factor correlations with values greater than 0.30 are obtained (Nunnally & Bernstein, 1995), except on item 8. All the subscales are composed of more than three items, with this being the minimum number of items to specify the latent factors (Raubenheimer, 2004). With regard to reliability, the four factors present adequate internal consistency, with values above 0.70. These results, along with the values of the omega coefficients, indicate that the ASBKID is a reliable measure for the other-reported evaluation of different facets of sexuality.

In terms of evidence of convergent validity, the analyses conducted show a significant correlation between the ASBKID and ESBK-PA factors that assess the perception of knowledge about privacy and social norms. There is also a negative correlation, close to significance, between the factors that provide information about the estimation of knowledge about sexuality. Although these are analogous instruments, it is clear that the perspective of professionals is substantially different from the one shown by parents, so that these two instruments offer different and yet complementary information. This procedure for analysing the convergent validity has already been used in other studies that develop questionnaires for people with intellectual disabilities (Gomez et al., 2015). Some studies determine that the information is less biased and has greater guarantees of veracity when it is provided by a professional (Gil-Llario, Morell-Mengual et al., 2019). However, parents can also provide useful and retrospective information, referring to situations that have occurred in the most intimate family environment or prior to the user's entry into the occupational centre (Pownall et al., 2012; Stein et al., 2018).

Our instrument fills the necessity in this field of study, and provides a useful evaluation tool, which collects information about different aspects of the sexuality. However, this information should be complemented with information from the parents, using the ESBK-PA (Gil-Llario, Elipe-Miravet et al., 2019), and the information from the own ID people (coming soon). This is the only way to make an accurate psychosexual profile, analysing the level of congruence or discrepancy between the three different parts.

It is important to note that this study has the limitations commonly reported in studies using other-assessments, such as misinformation or lack of interest. Although the inclusion criteria guarantee that the selected professionals have a good knowledge of the evaluated users, there may be a small bit of unknown information, and it might be necessary to consult another professional at the centre. In this regard, we have made numerous efforts to prevent problematic responses stemming from misinformation or lack of motivation: a) participation was voluntary; b) the number of questionnaires to be answered and the time required for their completion did not detract from each professional's established tasks; c) the professionals had to have daily contact with the users and a high level of knowledge about them; and d) the professionals had to rely on documentary information or information provided by other professionals from the centre when they did not know the answer or when there were doubts. It should be noted that the information obtained (e.g. being a possible victim of sexual abuses) constitutes a professional opinion that must be corroborated with specific self-report instruments and other documentary sources.

Another important limitation is that we have used the same data for carrying out both EFA and CFA. As already stated, this is not the most desirable option. Nevertheless, given the small size of our sample, the difficulties in obtaining larger samples in this group and following the recommendations of some authors for these cases, we have chosen to perform both analyses, in order to confirm our model. We understand that this is a significant limitation, so for the future, further investigations should be done, in order to corroborate the results we have found here.

5 CONCLUSIONS AND IMPLICATIONS

ASBKID is a valid and reliable tool to assess the sexual behaviour and knowledge of people with mild or moderate ID. The information provided can help caregivers of occupational centres to improve the information about the sex health of the users, besides identify the areas that need to be developed in the design of interventions that involve individualized support. (Schwartz & Robertson, 2019). In this sense, two people with a similar degree of disability may present differential sexual behaviours and characteristics, derived from the education received and the circumstances in which their sexual life has developed (e.g. occasions to learn the difference between public and private) (Brown & McCann, 2018). Although psychosexual development occurs automatically and sequentially (Kijak, 2013), affective-sexual education is important to achieve the experience of a free sexuality, which is adapted to personal preferences.

Although this instrument has proved their effective in evaluating people with mild ID, a future line of research would be to corroborate the factorial structure and the psychometric properties in people with moderate or severe ID, as well as people who suffer from autism spectrum disorder. It is also important, and currently we are working on it, to design a questionnaire that evaluates the same dimensions, but from the point of view of people with ID themselves.

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APPENDICES

		Yes	No
1	Do you think s/he is aware of the social norms about undressing in private?		
2	Do you think s/he is aware of the social norms about not touching one's private body parts in public?		
3	Do you think s/he is aware of social norms about closing the door when using the bathroom?		
4	Do you think s/he is aware of social norms about not letting others touch one's private body parts?		
5	Do you think s/he is aware of social norms about knocking on closed doors?		
6	Do you know if s/he has received any sex education, either from you or from others at the centre?		
7	Do you think s/he has any knowledge about sexuality?		
8	Do you think s/he has knowledge about sexual hygiene?		
9	Do you think s/he is aware of the different types of relationships where sexuality is involved (dating, marriage...)?		
10	Do you think s/he understands the human reproduction process?		
11	Do you think s/he understands the concept of contraception?		
12	Do you think s/he has knowledge about sexually transmitted diseases?		
13	Do you think s/he understands what is acceptable and unacceptable behaviour in relation to a person one is emotionally interested in?		
14	Do you think s/he learned what s/he knows about sexuality from his/her friends?		
15	Do you know if s/he has touched his/her private parts in public?		
16	Do you know if s/he has touched another person inappropriately? (e.g., attempts at kissing or fondling, touching another person's private parts)		
17	Does s/he talk about sexual activities in a very different way from other users? (more insistent or in a rougher way)		
18	Do you know if s/he has ever masturbated in public?		
19	Do you know if s/he has ever undressed in public?		
20	Do you think s/he is aware of his/her body changes in response to stimuli that excite him/her?		
21	Are you concerned that his/her sexual behaviour might be misinterpreted?		
22	Are you concerned that s/he has misconceptions about sex (knowledge/attitudes)?		
23	Are you worried that s/he won't find a partner?		
24	Are you worried that s/he might be sexually abused?		

Table 1. Sociodemographic characteristics

	<i>Total (n=246) % or M (SD)</i>
Gender	
Man	55.3%
Women	44.7%
Age	
Average age	37.58 (10.44)
Between 18-29 years old	30.5%
Between 30-39 years old	26.8%
Between 40-49 years old	29.3%
Older than 50 years old	13.4%
Residence type	
With relatives (with parents, siblings, guardians...)	81.3%
Nursing home/hospital setting (nursing home, congregate care, hospital setting...)	8.9%
Community living (shared apartment with complete or partial supervision)	6.9%
Independent living (alone or with others with no supervision)	2.8%
Age of intellectual disability diagnosis	
From birth	22.5%
Between 1 and 2 years old	19.4%
Between 3 and 4 years old	25.7%
Between 5 and 8 years old	16.2%
Between 9 and 18 years old	12.1%
More than 18 years old	4.1%

Table 2. EFA with rotated components matrix and eigenvalue for 4-factor model

Items	F1	F2	F3	F4
1. Do you think s/he is aware of the social norms about undressing in private?*			0.928	
2. Do you think s/he is aware of the social norms about not touching one's private body parts in public?*		0.590		
3. Do you think s/he is aware of social norms about closing the door when using the bathroom?*		0.497		
4. Do you think s/he is aware of social norms about not letting others touch one's private body parts?*		0.565		
5. Do you think s/he is aware of social norms about knocking on closed doors?*		0.495		
6. Do you know if s/he has received any sex education, either from you or from other people at the centre?*		0.504		
7. Do you think s/he has any knowledge about sexuality?*		0.851		
8. Do you think s/he has any knowledge about sexual hygiene?*			0.437	
9. Do you believe s/he is aware of the different types of relationships where sexuality is involved (dating, marriage...)?*		0.822		
10. Do you think s/he understands the human reproduction process?*		0.877		
11. Do you think s/he understands the concept of contraception methods?*		0.992		
12. Do you think s/he has knowledge about sexually transmitted diseases?*		0.891		
13. Do you think s/he understands what is and is not acceptable behaviour towards a person one is emotionally interested in?*		0.644		
14. Do you think s/he learned what s/he knows about sexuality from his/her parents?			0.360	
15. Do you think s/he learned what s/he knows about sexuality from school activities?			0.650	
16. Do you think s/he learned what s/he knows about sexuality from his/her friends?*			0.437	
17. Do you know where s/he learned what s/he knows about sexuality?				0.596
18. Do you know if s/he has touched his/her private parts in public?*	0.790			
19. Do you know if s/he has touched another person inappropriately? (e.g. attempts to kiss or caress, touching another person's private parts)*	0.715			
20. Does s/he talk about sexual activities in a very different way from other users? (more insistent or in a rougher way)*	0.630			
21. Do you know if s/he has ever masturbated in public?*	0.900			
22. Do you know if s/he has ever undressed in public?*	0.753			
23. Do you think s/he is aware of his/her body changes in response to stimuli that excite him/her?*		0.735		
24. Has s/he ever seemed concerned about these bodily reactions?			0.575	
25. Has s/he shown any type of sexual behaviour that was not appropriate, but s/he didn't understand why it wasn't?				0.566
26. Are you concerned that his/her sexual behaviour might be misinterpreted?*				0.642
27. Are you worried that s/he has the wrong ideas about sex (knowledge/attitudes)?*				0.760
28. Are you worried that s/he won't find a partner?*			0.464	
29. Are you worried that s/he might be a victim of sexual abuse?*				0.457
Eigenvalue	9.63	4.73	3.20	2.72

Note: The ASBKID has a different version for men and women. The contents of the items are equivalent in both versions, but the exact wording could change. The items on this table belong to the men's version.

Note: RMSEA = 0.36 (IC = 0.024 - 0.045); CFI = 0.948; TLI = 0.930; Chi = 412.093 (321 df) (p<.001)

Note: *items que forman parte de la versión final de la ASBKID

Table 3. Goodness of fit indexes for the CFA and the multi-group CFA

	χ^2	df	p	χ^2/df	CFI	TLI	RMSEA (90%)
Tested models							
Model 1	792.138	398	.001	1.99	.781	.761	0.066 (0.060 - 0.073)
Model 2	576.865	344	.001	1.68	.860	.846	0.055 (0.047 - 0.063)
Model 3	560.929	295	.001	1.90	.840	.823	0.063 (0.055 - 0.071)
Model 4	481.199	293	.001	1.64	.886	.874	0.053 (0.045 - 0.062)
Model 5	323.526	246	.001	1.32	.952	.946	0.037 (0.025 - 0.048)
Multi-group CFA for gender							
Configural invariance	729.820	520	.001	1.40	.895	.889	0.060 (0.049 - 0.070)
Metric invariance	705.148	514	.001	1.37	.905	.898	0.057 (0.047 - 0.068)
Scalar invariance	721.356	511	.001	1.41	.895	.887	0.060 (0.050 - 0.070)

Note: χ^2 : chi-square; df: degrees of freedom; p: general model significance; χ^2/df : normed chi-square; CFI: Comparative Fit Index; TLI: Tucker-Lewis index; RMSEA: Root Mean Square Error of Approximation

Table 4. Descriptive Statistics and Reliability Indexes for Items and Factors of the ESBK-PR

	Range	M (SD)	No (%) ^a	No (%) ^b	Skewness	Kurtosis	Reliability indexes		
							α	Ω	I-S r
ASBKID-Factor 1	0-5	4.53 (0.93)			2.653	7.79	0.92	0.93	NA
Item 18	0-1	0.94 (0.24)	93.1%	94.9%	-3.70	11.83	NA	NA	.741
Item 19	0-1	0.77 (0.42)	73%	82.1%	-1.31	-0.30	NA	NA	.795
Item 20	0-1	0.88 (0.32)	86.7%	90%	-2.38	3.71	NA	NA	.622
Item 21	0-1	0.98 (0.15)	96.5%	99%	-6.29	37.95	NA	NA	.674
Item 22	0-1	0.96 (0.20)	94.8%	97%	-4.61	19.41	NA	NA	.642
ASBKID-Factor 2	0-5	4.73 (0.73)			3.48	13.87	0.92	0.91	NA
Item 1	0-1	0.99 (0.09)	0.8%	1%	-10.51	109.464	NA	NA	.488
Item 2	0-1	0.98 (0.15)	3.3%	1%	-6.51	40.75	NA	NA	.694
Item 3	0-1	0.94 (0.23)	8.2%	2.9%	-3.81	12.60	NA	NA	.750
Item 4	0-1	0.94 (0.24)	5.8%	6.9%	-3.62	11.20	NA	NA	.642
Item 5	0-1	0.88 (0.32)	15.6%	6.9%	-2.41	3.86	NA	NA	.769
ASBKID-Factor 3	0-10	7.12 (2.58)			-0.60	-0.75	0.89	0.90	NA
Item 6	0-1	0.63 (0.48)	39%	33.7%	-0.56	-1.71	NA	NA	.445
Item 7	0-1	0.89 (0.31)	8.8%	13.4%	-2.53	4.43	NA	NA	.569
Item 8	0-1	0.95 (0.21)	5.3%	4%	-4.34	16.97	NA	NA	.159
Item 9	0-1	0.78 (0.42)	21.9%	22.6%	-1.35	-0.19	NA	NA	.683
Item 10	0-1	0.69 (0.46)	29.2%	32.2%	-0.85	-1.30	NA	NA	.759
Item 11	0-1	0.60 (0.49)	40.2%	38.8%	-0.41	-1.85	NA	NA	.819
Item 12	0-1	0.45 (0.50)	52.5%	59%	0.22	-1.97	NA	NA	.763
Item 13	0-1	0.74 (0.44)	29.7%	24.1%	-1.09	-0.83	NA	NA	.555
Item 16	0-1	0.48 (0.50)	48%	56.9%	0.08	-2.01	NA	NA	.483
Item 23	0-1	0.82 (0.38)	9.8%	28.8%	-1.71	0.92	NA	NA	.632
ASBKID-Factor 4	0-4	2.97 (1.22)			0.41	-0.43	0.74	0.74	NA
Item 26	0-1	0.78 (0.41)	76.2%	79.4%	0.56	-0.50	NA	NA	.772
Item 27	0-1	0.67 (0.47)	66.4%	66.7%	0.21	-0.31	NA	NA	.743
Item 28	0-1	0.89 (0.32)	86.7%	91.2%	0.94	0.15	NA	NA	.667
Item 29	0-1	0.63 (0.48)	71.3%	53.9%	0.37	-1.01	NA	NA	.754

Note. NA: not applicable; I-S r = corrected item-scale correlation

^aPercentage of professionals who answer negatively to the different items in men

^bPercentage of professionals who answer negatively to the different items in women

Table 5. Correlation indexes between the ASBKID factors and other measures

	ESBK-PA-Factor 1	ESBK-PA-Factor 2	ESBK-PA-Factor 3
ASBKID-Factor 1	$r = -.124$ ($p = .292$)	$r = .177$ ($p = .235$)	$r = -.110$ ($p = .215$)
ASBKID-Factor 2	$r = -.363$ ($p = .031$)	$r = -.070$ ($p = .376$)	$r = -.060$ ($p = .316$)
ASBKID-Factor 3	$r = -.197$ ($p = .217$)	$r = -.379$ ($p = .074$)	$r = .090$ ($p = .307$)
ASBKID-Factor 4	$r = -.148$ ($p = .230$)	$r = .197$ ($p = .183$)	$r = -.066$ ($p = .300$)

Note: $p < .05$