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Review of Effective Interventions for Socially Inappropriate Masturbation in Persons with Cognitive Disabilities

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Abstract Surveys of the sexual behaviors of persons with cognitive disabilities report as a main problem unacceptably displayed autoerotic behaviors that are appropriate in private, but inappropriate or illegal in public situations. Public or distractingly excessive masturbation is socially unacceptable and has been addressed with several successful interventions different in nature. This review of the literature investigates factors that lead to necessary intervention, identifies associations of different effective treatment approaches with types of cognitive disabilities, and examines the evolution of documented interventions from the late 1960s to the early 2000s. Data suggest that theoretical advances toward more humane, supportive and self-regulative interventions are more likely to help persons with milder cognitive disabilities. Self-regulation, or differentiated control over the public aspect of masturbatory behaviors is less likely to be accomplished in cases with more severe cognitive and social skill deficits. Ethical and legal questions of different treatment approaches are discussed.

Keywords Sexual behaviors · Autoerotic behaviors · Masturbation · Cognitive disabilities · Self-regulative interventions

'''Sexual expression is not a problem for people with cognitive disabilities—but for those who work with them', stated the director of a large German residential institution'' [1, p. 7]. It is not questioned if sexual drives get expressed, but how the environment reacts to the actual expression. Problems arising from expressing sexuality are not a direct consequence of cognitive disabilities. They result from the everyday dependence of persons with cognitive disabilities on others; and from attitudes of parents, educators and caretakers [2] regarding their own ideologies

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about sexuality of persons with cognitive disabilities, and the importance they attach to sexuality in those persons' lives.

Surveys of the sexual behaviors of persons with cognitive disabilities, from the 1970s through the 2000s alike [3–6], report as a main problem *unacceptably* displayed autoerotic behaviors that are appropriate in private, but inappropriate or illegal in public situations. In 1971, Gordon wrote a paper titled ''Missing in Special Education: Sex'' [7]. In his guidelines for education on this topic [8], he mentions as the first two of eight most important points of focus: (1) the acknowledgement that masturbation is normal, and (2) putting in mind that genital sex is to be in private. Thus, the aim would not be to stop masturbation, but to approve where and when it is done appropriately. The National Autistic Society of the UK [9] summarizes problematic socio-sexual aspects of masturbatory behavior in three points: (1) masturbation is public, (2) masturbation is excessive; making genital area sore, and/or interferes with other responsibilities, and (3) inability to masturbate to satisfaction (the person either being unable to coordinate movement to achieve satisfaction, or unable to cope with the intensity of feeling prior to orgasm), causing acute frustration, and/or resulting in preoccupation with the act.

A comparative study with 200 children and adolescents with cognitive deficits associated lower verbal IQ with increased sexual acting-out (including public masturbation), likely to be related to deficits in the cognitive functions of impulse control and judgment [10]. Other possible contributing factors that may be difficult to communicate for persons with cognitive disabilities are described as coping with ill-fitting clothing [11], an organic or health problem (e.g., tight foreskin, urinary tract infection), interest in the resulting behavior (e.g., upset) of the social environment [9]—Ludlow [12] points out the inadvertent reinforcement of inappropriate behaviors ''with attention, a powerful social reinforcer'' (pp. 16–17)—, or attitudes/behaviors among caretakers that inadvertently encourage masturbatory behaviors, like inappropriate clothing, physical touching that could be misinterpreted, stories of sexual prowess of colleagues etc. [13].

Throughout history, society has reacted in different ways to sexual expressions of people with cognitive disabilities. The eugenics movement (around 1880–1940) believed that persons with mental retardation were destined to become sensualists and criminals, and this led to unconsented sterilizations to protect society [14]. In the 1940s/1950s, the sexuality of persons with cognitive disabilities was treated quite illogically from today's point of view: attempts to heterosexual communication were severely punished, and some ''inappropriate'' sexual activities were tolerated as deviant but characteristic, thus, normal for this population [15]. Masturbation, even in private, was either tolerated or punished [14]. In the 1960s, civil rights activism and the philosophy of normalization led to desinstitutionalization and training in social skills. Masturbation was regarded as an important means of sexual release [8]. However, there were doubts about the successfulness of behavior modification programs for socially inappropriate masturbation, as Wagner [16] stated: ''The programme was begun with considerable trepidation since it was questionable that any reinforcement could compete with orgasm'' (p. 62). The 1970s' propaganda accepted the fact that people with cognitive disabilities were sexual beings and needed help to express their sexual impulses appropriately, safely, and enjoyably: sex education curricula and adequate materials (e.g., low-reading-level books, anatomically correct dolls) were designed [17]. A special goal was to help parents reduce anxieties about their disabled children's sexuality, suggesting that sex education

would not stimulate inappropriate sexual activity, and dealing with masturbation openly and in a positive way could result in ''giving their children 'permission' to be sexual while teaching them the appropriate ways of expressing it'' [14, p. 103]. Cook et al. [18] encouraged the use of less restrictive treatment alternatives for inappropriate masturbation (e.g., lemon juice versus electric shock as aversive stimulus). The 1980s put weight on abuse prevention and, in connection with this, on teaching a sense of ownership of one's own body [11]. In the 1990s, the emphasis was set on searching for more humane and wise techniques for handling inappropriate autoerotic behaviors, with a focus on teaching people with cognitive disabilities self-regulation of their sexuality [19], including efforts to help those who cannot reach a climax because of ineffective masturbation techniques [14]. In 2000, the topic of masturbation is given the highest shift in importance (20% upward; becoming first priority from not even being included in the top 10 earlier) in a repeated questionnaire of Wish et al. [20] by Griffiths and Lunsky [21], where parents, educators, and institutional or community based clinicians of persons with developmental disabilities evaluate the relevance of items in socio-sexual assessment and education.

As Kempton and Kahn [14] state, the ''work toward the former goals [is] never completely ending'' (p. 108). Although the development of attitudes toward the sexuality and sexual expressions, including masturbation, of persons with cognitive disabilities is well outlined in the literature, it is not clear how successful actual treatment approaches have been for differentially controlling masturbatory behaviors: eliminating socially inappropriate elements while allowing for autoerotic sexual expression in acceptable ways. The purpose of the present review of empirical case studies is to summarize and analyze effective interventions to reduce socially inappropriate masturbation in persons with cognitive disabilities, from the earliest documented cases with this objective in the late 1960s to the early 2000s. The study investigates similarities and differences in the interventions and identifies issues that are still problematic and need attention, despite the common factor that all studies to be included have to be successful in decreasing inappropriate masturbatory behaviors. This focus was chosen in order to clarify areas where—in spite of progress in theoretical evaluation and effectiveness of treatment—our work is indeed not yet finished, as Kempton and Kahn [14] suggest. The following questions guide the investigation: (a) How do the studies define socially inappropriate autoerotic behavior that needs intervention? (b) What contributing factors are identified to displaying those behaviors? (c) What interventions are effectively implemented for what types of cognitive disabilities? and (d) Is there an observable evolution over time in the interventions for socially inappropriate masturbation?

Method

Data Collection

The search strategy consisted of the following four techniques: (a) Two electronic databases (PsycINFO; ERIC) were searched for relevant articles first in October 2004, updated in August 2005, with the following descriptors used interchangeably in various combinations: masturbation, self-pleasuring, auto-erotic behavior, sexual behavior, sex, sex education, intellectual/cognitive disability/-ies, disabled, retarded, autism, autistic, appropriate/inappropriate sexual behavior, socially

appropriate/inappropriate, socially acceptable/unacceptable. (b) A hand search of earlier, not electronically available issues of the journal Sexuality and Disability was conducted. (c) An ancestral search was performed using the references of the identified articles from steps (a) and (b), followed by an ancestral search of the references of the newly identified articles. (d) A topical bibliography of the SIECUS Report Supplement: Sexuality and Disability (volume 29, Number 3, Feb/March 2001) was reviewed for relevant articles. The search resulted in 88 articles, only 35 of which explicitly targeted socially inappropriate masturbation as a behavior to reduce.

Inclusion Criteria

The following criteria were used to identify articles with sufficient data for inclusion in this review: (a) the study had to be a published journal article, (b) it had to be empirical (i.e., data-based in terms of the description of behavior and intervention; no mere description of sexual knowledge or attitudes), (c) target behavior had to be socially inappropriate (i.e., public or overtly excessive, interfering with other responsibilities) masturbation (self-stimulation of the genital area); and if the study targeted more than one inappropriate sexual behavior including masturbation, the data for masturbation and relevant intervention had to be presented distinctly, (d) target participants of intervention had to be persons with cognitive disabilities (anticipated difficulties with mental understanding and interpreting social rules/norms); no physical or sensory impairments (different limitations: don't share the same kind of problem of understanding), (e) no age or gender criteria were applied, (f) the study needed to evaluate the effectiveness of the intervention and had to be successful in substantially reducing or eliminating target behavior, (g) because no former review of the topic could be identified, there was no limitation set for publication date, and (h) the study had to be written in English, German, French or Hungarian. Of the originally identified 35 articles, 17 met the criteria for inclusion in this review.

Coding Categories

All included studies were reviewed in terms of the following categories: (1) *participants* (a) number of participants, (b) living situation (in terms of supervision), (c) age, (d) gender, (e) type of disability; (2) causes for *intervention* (f) identified problem behavior, (g) anticipated contributing factors to displaying the behavior, (h) description or definition of appropriate/inappropriate autoerotic behavior; and (3) *intervention* (J) type of intervention, (k) design/measures, (l) results of the intervention. Because the author is not a native English speaker, data of the included studies in English (exception: [22] were coded separately by the author and by an assistant, and a working table was created with the agreed-on items. Inter coder agreement was virtually complete.

Results

The reviewed articles [16, 18, 22–36] dealt successfully with socially inappropriate masturbation, substantially reducing (at least by 88% compared to baseline) or virtually eliminating the behavior in persons with cognitive disabilities. With the

exception of two cases [28: no data; 29: termination of supportive intervention], the results were maintained over at least a 6-month follow-up period (see Table 4). In 14 of 17 cases [exceptions: 16, 22, 23], the participants of intervention were males, and 11 of these 14 studies focused on a single subject. Only 4 of the 17 studies targeted several individuals with cognitive disabilities, 2 of them [23: $n = 7$; 31: $n = 10 + 2 \times 10$ control] describing a group intervention (the latter one with true experimental group design with two different control groups); and 2 [34: approx. 500 cases of bilateral orchidectomy; 36: $n = 41$] describing repeated single-subject interventions. The age of the participants ranged from 7–8 years to 29 years, with a mean of 16 years. Thus, the majority of the studies targeted single adolescent males.

Several types of cognitive disabilities were represented in the studies (see Table 3), only 2 of them [34, 36] lacked explicit descriptions of the type or severity of disability (last two entries in Table 3). Both of these studies dealt with several participants, thus, with a diversity of cognitive disabilities. In terms of the living (supervision) situation of the participants, problematic inappropriate autoerotic behaviors were displayed in both community-based and in institution-based settings. In several cases [18, 22, 26, 29, 33, 36], the direct reason for intervention was the goal of preserving the more independent lives of the participants and keeping them from being moved into an institutional setting because the community would not further tolerate the breaking of the (written or unwritten) socio-sexual rules.

Definitions of Socially Inappropriate Autoerotic Behavior

Masturbatory behaviors, the focus of this review, were displayed by the target participants in several ways that were interpreted as socially inappropriate. Table 1 gives an overview of the frequency of factors mentioned in the studies. The basic problem in all but one [30] of the studies was the public aspect of the participants' masturbation. The second most frequent problem was identified as overt excessiveness of the behavior [24, 25, 30, 32, 35]. The only non-public case [30] relates to

Table 1 Definitions of socially inappropriate autoerotic behavior

Reasons why autoerotic behavior is viewed to be inappropriate[a]	Frequency[b]
Public aspect (not performed in private; inappropriate context)	16
Excessive occurrence (preoccupation with masturbation, limiting other age-appropriate pursuits/academic success, or productive interaction with teacher in class/socializing with peers)	5
Differentiation between *inappropriate* and deviant sexual behavior (inappropriate: only possible expression of sexuality in a given environmental context; consequently occurring [due to lack of satisfactory privacy, or of information/concept about "normalcy"] surface phenomenon in unacceptable social situations that require more attention than can be normally supplied)	3
Distraction/disturbance to others (e.g., in the classroom)	2
Embarrassing to parents in public places/at home with visitors; "undesirable" sexual behavior	2
In the light of the normalization principle: what is unacceptable in the behavior of normal people should not be tolerated in the behavior of people with disabilities, either	1

[a] By author(s) of studies included in the literature review

[b] Number of included studies (total $n = 17$) that mention the given reason

this category, referring to a subject preoccupied with ineffective masturbation that distracted him from pursuing other activities. Two categories accentuate the distraction or embarrassment of others in the participants' surroundings [16, 18, 22, 34]. Several articles emphasize as important fact that inappropriate sexual behavior does not equal deviant behavior. As authors note [31, 33, 36], inappropriate behaviors occur as a normal consequence of the participants' limited insight into, or not being informed about, accepted ways of sexual expression.

Hypothesized Contributing Factors to Displaying Inappropriate Autoerotic Behavior

In fact, the situation of not being informed about, or trained in, appropriate socio-sexual skills is the most frequently hypothesized underlying reason for displaying inappropriate autoerotic behaviors. Researchers hypothesized contributing factors to displaying inappropriate autoerotic behaviors based on their actual case studies, identified more than one factor in all cases, and addressed the hypothesized factors with the implemented interventions. Table 2 summarizes the factors the authors of the reviewed studies considered as possibly leading to problematic behavior. Authors put more weight on the factor of limited access to appropriate information [16, 23, 24, 26, 28, 29, 31, 33, 36] than on the limited cognitive abilities themselves that all target participants shared [23, 24, 31, 33, 35, 36]. It is emphasized that overprotection of the participants [16, 29] or the discomfort of the caretakers to face the sexual nature of the persons with cognitive disabilities [29, 28] can also lead to limited insights of these persons into socio-sexual rules, in addition to the cognitive and social deficits resulting from their disabilities. However, not only ignorance, overtolerance as well leads to unclear conceptions about what is appropriate

Table 2 Hypothesized contributing factors to displaying inappropriate autoerotic behavior

Stated reasons[a]	Frequency[b]
Limited access to appropriate information/training in socio-sexual skills; overprotection; discomfort of caretaker to face sexuality of person with disability	9
Limited cognitive abilities of insight/understanding/interpreting social rules and decision making—or the treatment procedure itself (!); physically mature, but not emotionally or cognitively (a normal stage of adolescence: extended in time)	6
Limitations in social functioning, social immaturity, less likely to imitate peers	4
Lack of appropriate opportunities to express sexuality, or of a sexual partner	3
Anxiety or stress	3
Organic/physical-anatomical/medical causes; interference of drug effects	3
Preoccupation with sex because of being unoccupied (understimulation)	2
No real consequences of inappropriate behavior (overtolerance)	2
No satisfactory privacy in residential setting	1
Low bodily awareness/awareness of own sexual responsiveness	1
''It felt nice'', subject stated as reason for his masturbation behavior	1

[a] By author(s) of studies included in the literature review

[b] Number of included studies (total $n = 17$) that mention the given reason

behavior and what is not [29, 36]. Also, some authors [24, 36] pointed out that understimulation—the participants' being unoccupied may—lead to sexual self-stimulatory behaviors. Being under pressure, or anxiety are also possible contributors to displaying such behaviors [16, 22, 32]. Another important factor mentioned is independent from cognitive functioning but also needs to be checked for when evaluating masturbatory behavior: organic or medical causes [22, 32] can also stimulate touching of the genital area, and the effects of medication that many persons with cognitive disabilities are on may interfere with sexual drives as well. Kaeser and O'Neill [30] suspect that the drug Mellaril might have lowered the sexual response level of their patient as a side effect, leading to greater (and more excessive) efforts needed for effective sexual self-stimulation, which, inappropriately, distracted the subject from other activities.

Types of Disability and Effective Interventions for Inappropriate Masturbation

Table 3 shows the types of disabilities that characterized the participants of the reviewed studies, and the interventions that were successfully applied to reduce their inappropriate masturbation. The last two entries [34, 36], as mentioned earlier, are studies with multiple participants, not explicitly stating the type or severity of disability of their patients. Several authors [16, 18, 25–27, 33] state that they have tried other interventions unsuccessfully before effectively implementing the described interventions that were included in this review.

Table 3 Types of disability and effective interventions for inappropriate masturbation

Disability	Intervention	Masturbation	
		In public	In private
MR			
Profound	Task analyzed masturbation instruction	*Decreased*	*Increased*
Severe	Facial screening; sex education program[a]	Decreased	n.d.
	Contingent lemon juice (into mouth)	Eliminated	n.d.
	Overcorrection [37]; tokens	Eliminated	n.d.
	Social restitution; DRO; sex education prog.[a]	Eliminated	n.d
Moderate	Token economy with response cost; DRO	Decreased	n.d
	Sex education program [38]	Decreased	Decreased
(+ Blind)	Sex education program[b]; anatomic dolls	Decreased	Maintained
Mild	Reframing; token economy w/ response cost	Eliminated	n.d.
	Cognitive-behavioral group therapy[c]	Decreased	Maintained
	Cognitive-behavioral (self-controlling)	Eliminated	Maintained
Multiple (cerebral defect)	Play therapy (role playing; with playmate)	Eliminated	n.d.
LD (IQ 90)	Operant conditioning; DRO; more activities	Eliminated	n.d.
Down syndrome	More activities; visits by foster grandparent	Eliminated	n.d.
Autism	Testosterone-suppressing drug (consented)	Eliminated	n.d.
DD/ID (n.d. on severity)	Orchidectomy; drugs suppressing sex drive	*Impotence*	*Impotence*
	BRM[d] (cognitive-behavioral strategies)	Decreased	n.d.

Note. n.d. = no data. MR = mental retardation. LD = learning disability. DD/ID = cognitive/ cognitive disability

[a] Demetral [39]

[b] Zelman and Tyser [40]

[c] Discussion; modeling and role playing; interactions with non-group-members, with feedback

[d] Behavior Risk Management

Table 3 presents data of four degrees of severity of mental retardation (profound [mental age 1.5, 29 years old: 30], severe [IQ 29–35: 18, 25–27], moderate [IQ 36–54: 23, 28] and mild [IQ 55–70: Lutzer, 29, 31, 32, 35]). The case of profound mental retardation [30] represents an exception in terms of actually encouraging (appropriate) masturbation instead of suppressing the target behavior, because the subject was frustrated from using ineffective techniques. All other cases dealt with suppressing inappropriate masturbatory behaviors.

All interventions for persons with severe mental retardation used some form of contingent aversive stimulus control, either on physical (facial screening [27], lemon juice into mouth [18], or physical exercise as overcorrection procedure [25]) or on social level (social restitution, defined as direct personal apology to six persons [26]). Interventions for persons with moderate or mild mental retardation tended to use more supportive methods with positive reinforcement and/or cognitive elements of explicit sex education programs, stressing a self-controlling cognitive component in cases of mild mental retardation (e.g., 32: discussion; self-regulated imagery [policeman] and distraction [children's putty] techniques). The presented cases of mild learning disability (with IQ 90; 16) and Down syndrome [24] also used techniques similar to those implemented for moderate/mild mental retardation.

As Table 3 indicates, only some of these supportive approaches for moderate to mild cognitive disabilities were able to report successful differential control of masturbatory behaviors: eliminating socially inappropriate elements while confirming maintenance of autoerotic sexual expression in acceptable ways. Withers and Gaskell [32] encouraged their 11-year-old participant to achieve maximum enjoyment from masturbation in appropriate settings and mentioned that the child later reported ''guilt free and enjoyable private masturbation'' (p. 60). In most of the presented cases, however, it is not clear if masturbation itself was differentially or completely suppressed unless the intervention (surgical or drugs) resulted in general impotence. Bennett et al. [23] reported that their participants decreased their masturbation in private, too, after addressing the topic in the frame of a sex education program.

The only presented case of autism [33], a syndrome typically concomitant with poor social judgment, used an intrusive but consented suppressive intervention with Leuprolide, a testosterone-suppressing antiandrogen drug, after failure of behavioral and educational programs, restrictions in community-based activities, and other, less effective forms of medication. Although this latter sole case study may not be typical for autism, the data in Table 3 project some relationships between types of interventions and types of cognitive disabilities.

This relationship is strengthened by the fact that all interventions with cases of severe mental retardation have tried other, less intrusive interventions unsuccessfully before effectively implementing the described aversive stimulus control procedures (facial screening with a terrycloth bib after failure of DRO, verbal reprimand, overcorrection, extinction, and time out [27]; lemon juice into mouth after ineffective ignorance of the behavior, or ''no'' + hand spanking [18]; added physical exercise as overcorrection after low success rates with token and praise reinforcement [25]; added social restitution after low success rates with DRO only [26]). Other cases with unsuccessful previous trials included the studies by Realmuto and Ruble [33; discussed above] and Wagner [16] with a case of LD, only stating that prior to operant conditioning with DRO, several former interventions failed that were not further specified.

Evolution of Interventions for Socially Inappropriate Masturbation

Sequencing the studies along their publication dates, Table 4 presents an overview of the timely evolution of interventions for inappropriate masturbation. It stands out that interventions involving forms of aversive stimulus control [entries No. 4, 5, 7, 8: 18, 25, 26, 27] form a group around the late 1970s/early 1980s.

It is noteworthy that intrusive suppressive interventions such as drugs suppressing sex drive, or bilateral orchidectomy (surgical removal of the testes) for non-medical reasons were in use in the 1990s (entries No. 14, 15: 33, 34]. The survey of Carlson et al. [34] reported the use of sterilization surgery and antiandrogen drugs suppressing sexual drive in Australia between 1988–1994. The authors collected data on approximately 500 cases of bilateral orchidectomy in young men under 19 years of age, 40% of the participants were less than 9 years old. Medical records did not contain exact data about the degree of cognitive disability of the patients, exact causes for the intervention, or about informed consent, but contacted service agencies indicated cases where families with children or adolescents with cognitive

Table 4 Evolution of interventions for socially inappropriate masturbation

	Year	Intervention	Masturbation		Maintenance
			In public	In private	
1	1968	Operant conditioning; DRO; more activities	Eliminated	n.d.	Yes
2	1972[a]	Sex education program [38]	Decreased	Decreased	Yes
3	1972[b]	More activities; visits by foster grandparent	Eliminated	n.d.	Yes
4	1977	Overcorrection [37]; tokens	Eliminated	n.d.	Yes
5	1978	Contingent lemon juice (into mouth)	Eliminated	n.d.	Yes
6	1979	Play therapy (role playing; with playmate)	Eliminated	n.d.	Yes
7	1980	Social restitution; DRO; sex education prog.[g]	Eliminated	n.d.	Yes
8	1981[c]	Facial screening; sex education program[g]	Decreased	n.d.	Yes
9	1981[d]	Sex education program[h]; anatomic dolls	Decreased	Maintained	n.d.
10	1983	Reframing; token economy w/ response cost	Eliminated	n.d.	No
11	1987	Task analyzed masturbation instruction	*Decreased*	*Increased*	Yes
12	1995	Cognitive-behavioral group therapy	Decreased	Maintained	Yes
13	1998	Cognitive-behavioral (self-controlling)[i]	Eliminated	Maintained	Yes
14	1999	Testosterone-suppressing drug (consented)	Eliminated	n.d.	Yes
15	2000[e]	Orchidectomy; drugs suppressing sex drive	*Impotence*	*Impotence*	Yes
16	2000[f]	Token economy with response cost; DRO	Decreased	n.d.	Yes
17	2002	BRM[j] (cognitive-behavioral strategies)	Decreased	n.d.	Yes

Note. n.d. = no data.

[a] Bennett et al.

[b] Menolascino

[c] Barmann and Murray

[d] Smigielski and Steinmann

[e] Carison et al.

[f] LeBlanc et al.

[g] Demetral [39]

[h] Zelman and Tyser [40]

[i] Discussion; imagery/distraction techniques; positive reinforcement

[j] Behavior Risk Management

disabilities decided to use sterilization surgery or drugs to control sexual behaviors of the participants.

Effective adaptations of sex education programs (entries No. 2, 7, 8, 9) were reported in studies from 23 (Bennett et al.), 26 (Polvinale and Lutzker) and [27, 28] (Barmann and Murray; Smigielski and Steinmann). Supportive interventions using positive reinforcement and/or cognitive [discussion, explicitly stating problem behavior and acceptable alternatives: see sex education programs, and 31, 32, 36], self-regulative components are spread out continuously over the time frame of the reported successful interventions and do not form an outstanding group. Thus, data in Table 4 show weaker overall relationships between publication date and implemented interventions than those derived from the comparison of interventions for different types of cognitive disabilities (Table 3).

Discussion

This study examines successfully implemented interventions for socially inappropriate masturbation in persons with cognitive disabilities. Successfulness of the interventions was an inclusion criterion for this review, according to the purpose to identify issues that are still problematic and need attention, despite advances in the field in the last four decades. Baer et al. [41] in their seminal paper on contemporary ABA, define successfulness of a behavioral intervention as producing large enough effects for practical value. So, the question of how much a behavior needs to be changed is best answered by those who must deal with the behavior. Intervention was most crucial in the cases where inappropriate masturbatory behaviors threatened to limit the quality of life of people with cognitive disabilities by a considered [re]institutionalization [18, 22, 26, 29, 33, 36]. The more independent lifestyles of the participants in the community could be preserved in all cases; quantitatively, all reviewed studies reduced the inappropriate aspects of masturbation at least by 88% compared to baseline, or virtually eliminated the problem behavior (although leaving related ethical or legal issues to discuss). In most cases, the experimental designs of the studies used multiple baselines across settings to monitor the effectiveness of the interventions; because of ethical considerations, none of them implemented withdrawal or reversal on purpose. In Lutzer's [29] study, the intervention had to be terminated after a successful period, which unfortunately produced a reversal effect and relapse to inappropriate behaviors.

Definitions of Socially Inappropriate Autoerotic Behavior

All reviewed studies but one [34] acknowledge masturbation itself as an appropriate way of sexual expression: the interventions target and intend to reduce socially inappropriate aspects of the behavior only. Realmuto and Ruble [33] use a testosterone-suppressing drug that may strongly influence the subject's capability of masturbation in private as well, however, this intervention happened after the failure of several other approaches and with the consent of the subject. The survey of Carlson et al. [34] of the use of sterilization surgery and antiandrogen drugs suppressing sexual drive in Australia is more problematic. Medical records did not contain exact data about the degree of cognitive disability of the patients or causes

for the intervention, but reports of experts suggest that this number of cases may exceed statistics for diseases or physical accidents in this population that result in the need for surgical intervention. In the United States, Maurer [42] reports 656 castrations in a single institution between 1969–1989 with the aim to stop the men masturbating. Records did not contain data about informed consent in any of these cases, but having it is very questionable, especially with the Australian children under 9 years of age. This practice would not be congruent with officially stated views on appropriate sexual expression of persons with cognitive disabilities. The New South Wales Department of Family and Community Services in Australia [43] states in their policy document on the operation of community living programs for persons with disabilities that ''a person with a disability has the right ... to be informed about their sexuality ... [in order] to be aware of appropriate social sexual behavior ... [and] should be free to pursue an intimate relationship in privacy (including sexual intimacy if they so desire)'' (p. 15).

Hypothesized Contributing Factors to Displaying Inappropriate Autoerotic Behavior

It needs to be pointed out that the authors of the reviewed studies hypothesize contributing factors based on their case studies, but experimental functional assessment for an analysis of causation is virtually absent in the literature of the topic. Despite this deficit, it has to be acknowledged that the elaborated case-based hypotheses do depict correlation and are successfully matched with effective treatment designs in the studies. It is important to note that besides developmental cognitive limitations, exterior factors can also contribute to displaying inappropriate autoerotic behaviors. The living situation of persons with cognitive disabilities influences their chances to observe and imitate appropriate socio-sexual behaviors. In general, highly suggestible institutionalized youth in atypical real-life settings have more problems with sexual behaviors than non-institutionalized peers whose behaviors are shaped and reinforced by the community [44, 45]. Robinson [46] stated that community based participants knew more before a sex education program involving social skills than institutionalized participants did. Attitudes of caretakers toward sexual expressions of people with cognitive disabilities represent another problematic area. Dependence upon parents and caretakers remains strong as children with disabilities become adolescents. Parents often handle their children as perpetual minors even after they reach puberty. The sexuality of persons with cognitive disabilities is frequently either ignored or perceived as a problem, which prevents them from developing into sexually mature adults [45, 47, 57]. This, exactly, is the case in the study of Lutzer [29] where a young man in his twenties with mild mental retardation is denied opportunities to express his masculinity in his home settings, so he is sexually acting out in his day activity workshop. A reframing of the connotation of his behaviors on the side of the staff and rewards in a token economy system that increase his masculine identity help control his inappropriate public masturbation. But as the program is terminated after 2 years and the attitudes of his environment resemble the old situation, his behavior relapses to the old ways of coping with the situation as well (see Table 4).

Ludlow [12] points out that inappropriate sexual expression is often a sign that interpersonal needs are not being met. Excessive sexual self-stimulation may be the only way to fight boredom and obtain sensory stimulation in restricted environments.

Sexual activity (sex play) is often the only spontaneous cooperative mutual behavior observed and the only interresident interaction apart from aggression [4]. Menolascino [24] describes a case where the excessive public masturbation of a 10-year-old boy with Down syndrome was virtually eliminated within 2 weeks through simply establishing a full-day school program, the initiation of group recreational activities, and regular visits of a foster grandparent (see Table 4). Powers' [13] statements are also consistent with these results. He finds that consequences of an institutional personality are still manifest on the threshold of the 21st century in residential treatment facilities, and that establishing supportive human relationships help overcome sexual acting out (excessive or public masturbation, exhibitionism, obsessive sex play).

Types of Disability and Effective Interventions for Inappropriate Masturbation

Successful interventions tend to be less intrusive or aversive and more supportive or self-regulative, applied for less severe, moderate to mild degrees of cognitive disabilities (see Table 3). This association is even stronger if we consider that several authors [16, 18, 25–27, 33] have tried other interventions unsuccessfully before effectively implementing the described approaches for their cases. Some supportive approaches with positive reinforcement still depend on external control or physical assistance (e.g., token economy), in contrast with cognitive techniques like discussion alone or embedded in a sex education program, or methods designed to promote self-restraint like imagery or distraction techniques [e.g., the self-chosen picture of the policeman, and children's putty; 32]. Thus, interventions tend to be less and less intrusive/aversive for those who don't need it to be so because of *stronger abilities* of cognitive cooperation.

Evolution of Interventions for Socially Inappropriate Masturbation

As discussed in the introduction to this paper, views on, and interventions for, socially inappropriate masturbation were refined and became more humane and less intrusive as society recognized more and more the sexuality and sexual rights of persons with cognitive disabilities. However, the analysis of successful interventions in this study reveals that on the level of implementation, the types of applied approaches are stronger associated with the severity of the actual cognitive disabilities or the abilities of cognitive cooperation of the participants than with an advance or evolution in time on the level of exterior views and attitudes of experts and/or caretakers. This finding suggests a lack of less intrusive/aversive successful intervention techniques for persons with more severe deficits of cognitive functioning. The question is if interventions for this population remain intrusive/aversive but, because of theoretical advances, such approaches won't get published any more—or, after the era of aversive stimulus control, there are no successful approaches in use at all.

Implications

All reviewed interventions for socially inappropriate masturbation for persons with cognitive disabilities were effective, but different in nature, and they implicate

different ethical interpretations. The intervention probably suggesting most positive connotations is the study of Withers and Gaskell [32], where the applied cognitive-behavioral techniques with an 11-year-old male subject attained virtually complete elimination of inappropriate public masturbation and maintenance of the results through self-regulation, while the subject reported continued enjoyable masturbation in private. The most problematic intervention successfully suppressing inappropriate masturbation is the surgical removal of the testes [34] that results in impotence, so it basically terminates the capability to masturbate in private as well. In addition, as the authors report, this intrusive intervention leads to generalized decrease in bone density, increasing the risk of fractures.

The overrepresentation of adolescent males in the case studies of problematic autoerotic behaviors appears already in early findings [48, 57]. Puberty, sexual maturation, creates a stressful situation when caretakers confront issues dealing with sexual urges and desires of adolescents with cognitive disabilities. In the study presented by Withers and Gaskell [32], the 11-year-old male participant had a history of public sexual self-stimulation since he was a toddler, but his parents sought professional help only at that age because they were concerned about his approaching puberty. Hammar et al. [48] report that anxiety and concerns around puberty result in anticipation of problematic behaviors: teachers of adolescents with mental retardation tended to interpret any wriggling, scratching or clothes tugging as masturbation. According to the same survey, parents were more uncomfortable about coping with the problem of sex education with the retarded males than with the females, stating that the onset of menarche made some preparations unavoidable, while facing the issue tended to be pushed out in time with the males.

Technically, pushing out the issue in time may lead to established problem behaviors, calling for interventions to deal with an already existing problem, while early-programmed sex education could be preventive. As Griffiths and Lunsky [21] state, ''a lack of education regarding sexually appropriate and responsible behaviour represents a critical vulnerability for the development of sexually inappropriate behaviour'' (p. 21). However, the social skills units of sex education programs for people with cognitive disabilities are more likely to promote protective behaviors against sexual exploitation, or dating skills, rather than social aspects of appropriate sexual expressions like masturbation [49]. Authors criticize the limited range of subject areas in available sex education programs and urge that all areas of sexuality—knowledge, attitudes, and behaviors—be addressed [17, 47].

Another problem is that the vast majority of sex education programs and curricula for these populations is developed without evaluation of their actual effectiveness. Some authors claim to have evaluated their program (according to McCabe [47]), but there are very few published data. It is agreed on in the literature that effectiveness of programs and curricula must be systematically assessed in order to create a match among types of students and selected appropriate materials [47, 49–51].

Sex education programs are underrepresented in the intervention studies included in this review (4 of 17 cases). In two instances [26, 27] they are added to complement aversive stimuli, in order to facilitate the distinction of the public aspect as inappropriate component of the masturbatory behavior of participants with severe mental retardation. But it is not stated if the programs, as intended, helped to avoid a total suppressive effect of aversive conditioning. Smigielski and Steinmann [28] indicate maintenance of acceptable masturbation after a sex education program with

a blind adolescent with moderate mental retardation. Bennett et al. [23] could not reach a *differentiated* decrease of public and private masturbation in their participants with moderate to mild mental retardation (see Table 4).

Ludlow's [12] concern about differentiated reduction of public versus private masturbatory behaviors is consistent with the findings of the present review of interventions: ''the distinction between public and private is a crucial one, but may be difficult to make'' (p. 17). Teaching self-restraint is another concern of several authors that the author of this review shares. Pattullo [52] argues already in the 1970s that just as it is aimed to teach individuals with cognitive disabilities how to feed, toilet and clothe themselves, they need to be taught where to masturbate and how to do it safely, (i.e., how to manage this *independent act* of self-fulfillment). Sex education should focus on teaching people self-regulation of their sexuality [19], and even if some students with cognitive disabilities may not become totally independent, educators must provide all the necessary tools for as much independence as possible [53].

Consent of the participants is an issue, too, especially with more intrusive/aversive interventions. Realmuto and Ruble [33] give a good example of how to involve the patient in the decision-making, pointing out consequences of the problem behavior and of a success in changing it. McClennen [11] emphasizes the need to involve persons with cognitive disabilities in decisions regarding their bodies, giving them a sense of ownership of one's own body, if we aim for self-regulation of certain life skills. This attitude would involve a different generic approach even with trivial actions like wiping somebody's nose: caretakers should not just act but ask for permission before performing any tasks involving touching the bodies of students with disabilities.

It remains a technical question for what degrees of cognitive disabilities, and how for different degrees, would it really be possible to reach self-regulation and differentiation in controlling socially inappropriate masturbatory behaviors. It also remains an ethical question if complete suppression of masturbation through more intrusive/aversive interventions (if other techniques don't work) is a legitimate approach, or where a line could be drawn to decide if inappropriate masturbatory behaviors really need to be eliminated even if this would possibly result in a complete suppression of masturbation for a given subject.

Some legal questions arise as well when teaching self-regulation of autoerotic behaviors is considered. As Lutzer [29] states, ''a problem behavior is part of a sequence of acts between several people'' (p. 180). Thus, circumstances of intimate interactions while teaching steps toward self-restraint need to be regulated. Among the reviewed studies, two cases stand out that call for cautiousness and proper legal regulation. The cognitive-behavioral approach of Withers and Gaskell [32] involves a discussion strategy that basically consists of one-on-one talk about sex with a child. The authors express their concern about the circumstance that the content of these talks is kept in secret as the therapist interacts privately with the child: a minor with cognitive disabilities, and that these talks intentionally involve encouraging the child to enjoy masturbation in private. Nevertheless, this intervention was very successful in teaching both self-restraint and differentiated reduction of masturbatory behaviors. Kaeser and O'Neill [30] use hands-on instruction (task-analyzed masturbation) to teach their subject with profound mental retardation how to reach a sexual climax effectively, replacing the patient's former ineffective and self-injurious techniques. Ludlow [12] points out that this type of interventions make staff vulnerable to

accusations of sexual harassment, so special caution has to be taken, a policy should be prepared for a typical scenario of such therapy, and a witness should be present while the therapist is working with a subject. Kaeser and O'Neill [30] did use an observer to witness each therapy session.

In spite of these difficulties, an attempt should be made to change inappropriate autoerotic behaviors. Overtolerance is not an attitude that serves normalization of the lifestyles of persons with cognitive disabilities in society, in the community. By allowing socially inappropriate behaviors, caretakers communicate that such behavior is acceptable [11]. Tolerating on the side of persons with disabilities what is unacceptable in the behavior of people in general, confirms and extends the label of deviancy [29] and perpetuates social isolation.

The United Nations [54] Declaration on the Rights of Mentally Retarded Persons states that individuals with cognitive disabilities have a right ''to such education, training, rehabilitation and guidance as will enable [them] to develop [their] ability and maximum potential'' (p. 141). Surveys of reactions to sex education programs indicate that parents fear such programs would overstimulate their children with disabilities and would make inappropriate sexual behaviors even worse [45, 48]. Demetral [55]—developer of a sex education program [39]—tested a program with institutionalized persons with cognitive disabilities between 14 years and 36 years of age, with an IQ below 70. He concludes that the participants did not act more inappropriately than prior to the intervention and some areas of socio-sexual behavior even improved. As he emphasizes, it is ignorance, not knowledge that stimulates the inappropriate behavior.

Whitehouse and McCabe [49] complement this statement by urging that in addition to transmission of factual knowledge (that most programs for people with cognitive disabilities focus on), sex education should also teach positive attitudes toward one's own body and sexuality. Gordon [8] stresses that an important message of sex education has to be that sex is enjoyable. A lifetime of intensive clinical touching during medical treatment or therapeutic interventions, which many individuals with cognitive disabilities endure, produces a negative image of one's body [12]. In these terms, an activity such as masturbation may actually represent an adaptive rather than a maladaptive behavior, allowing a person with cognitive disabilities to establish a measure of self-sufficiency and to experience his or her body as pleasurable rather than painful or frustrating [56]. Thus, appropriately performed sexual self-stimulation can represent an important contribution to growth in ego functioning. To ensure that people with cognitive disabilities can experience these positive aspects of life that their sexuality is able to add to their perceptions, more specific empirical research is needed to identify intervention strategies that successfully teach discrimination between the (in)appropriateness of public and private realizations of masturbation; especially for lower levels of cognitive functioning, interventions should differentially control masturbatory behaviors.

Conclusions

Based on the analysis of the literature, the following guidelines can be established for handling socially inappropriate autoerotic behaviors in persons with cognitive disabilities: (1) Give information about/training in appropriate socio-sexual skills, (2)

Do not overtolerate inappropriate autoerotic behaviors, and do not overprotect individuals with cognitive disabilities, preserving a status of perpetual minors, (3) Do not anticipate, or overreact to, problematic autoerotic behaviors around puberty, (4) Rule out organic or medical causes for touching of the genital area, and the effects of medication possibly interfering with sexual drives when evaluating (what seems to be) masturbatory behavior, (5) Properly meet personal and interpersonal needs of persons with cognitive disabilities, (6) Teach positive attitudes toward one's own body and sexuality, (7) Aim for self-regulation and differentiation in controlling socially inappropriate masturbatory behaviors, (8) Try to use more supportive methods with positive reinforcement and/or elements of explicit sex education programs also with cases of more severe mental retardation (as opposed to aversive stimulus control), (9) Avoid unconsented, intrusive interventions such as drugs suppressing sex drive, or bilateral orchidectomy (surgical removal of the testes) for non-medical reasons, (10) Regulate legal circumstances of intimate interactions while teaching steps toward self-restraint in order to ensure ethical treatment, and protection of all therapy participants.

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