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Theories on the Etiology of Deviant Sexual Interests: A Systematic Review

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Abstract

Not much is known about the etiology, or development, of deviant sexual interests. The aim of this systematic review was to provide a broad overview of current theories on the etiology of sexual deviance. We conducted a systematic search of the databases PubMed and APA PsycInfo (EBSCO). Studies were included when they discussed a theory regarding the etiology or development of sexual deviance. Included studies were assessed on quality criteria for good theories. Common etiological themes were extracted using thematic analysis. We included 47 theories explaining sexual deviance in general as well as various specific deviant sexual interests, such as pedophilia and sadism/masochism. Few theories ($k = 7$) were of acceptable quality as suggested by our systematic assessment of quality criteria for good theories (QUACGOT). These theories indicated that deviant sexual interests may develop as the result of an interplay of various factors: excitation transfer between emotions and sexual arousal, conditioning, problems with "normative" sexuality, and social learning. Neurobiological findings could not be included as no acceptable quality neurobiological theories could be retrieved. The important roles of excitation transfer and conditioning designate that

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dynamic, changeable processes take part in the etiology of sexual deviance. These same processes could potentially be deployed to diminish unwanted deviant sexual interests.

Keywords
sexual deviance, etiology, systematic review, excitation transfer, conditioning

Introduction

There is no uniform definition of what constitutes sexual deviance[1] or normalcy. Many scholars agree on extreme examples of sexual deviance, such as sexual interest in children or violent rape. It varies whether less extreme examples, such as sexual interest in latex suits or pain, are seen as sexual deviance or, for instance, as "unusual" sexual interests (Joyal et al., 2015; Smid & Wever, 2019). Such "unusual" sexual interests actually are pretty common. Up to half of Canadian (Joyal & Carpentier, 2017) and Czech (Bártová et al., 2021) representative population samples reported having at least one deviant sexual interest.

A broad definition of sexual deviance includes sexual interest in behavior that in most countries is illegal (e.g., rape, exhibitionism) as well as sexual interest in harmless but unusual behaviors (e.g., fetishism, defecation). There are good reasons to apply a broad definition of sexual deviance. One reason is the high correlations between deviant sexual interests. Having one deviant sexual interest increases the likelihood of having another (Bártová et al., 2021; Brown et al., 2020; Dawson et al., 2016; Joyal & Carpentier, 2017; Schippers et al., 2021; Wilpert, 2018). Another reason is the indication that in itself "harmless" deviant sexual interests may also lead to nonconsensual, coercive sexual behavior (Baur et al., 2016; Paquette & Brouillette-Alarie, 2020; Williams et al., 2009). In a large ($N = 5990$) Finnish population-based twin study, people who reported any deviant sexual behavior were over three times more likely to report that they had committed sexually coercive behavior (21%) than people without deviant sexual behavior (6%) (Baur et al., 2016). Having multiple deviant sexual interests was related to an even higher risk of sexually coercive behavior. In 99 BDSM[2] practitioners from Germany, having a BDSM identity (as opposed to nonpractitioners) significantly predicted *non*consensual aggressive sexual behavior (Bondü & Birke, 2020). Likewise, performing sadomasochistic acts (Martin et al., 2016) and interest in sexual dominance (Renaud & Byers, 2005) have been found to be related to self-reported use of sexual coercion (see also the commentary of Baur et al., 2017). The evidence is not overwhelming nor unequivocal and scholars warn against unnecessary stigmatization (Joyal, 2017). However, it is apparent that various deviant sexual interests coexist and deviant sexual interests *may* be related to nonconsensual, coercive sexual behavior.

Is Sexual Deviance Problematic?

Not all deviant sexual interests are acted out and the mere sexual *interest* in something without accompanying behavior can never be illegal. Having such interests however increases the probability of corresponding behavior. Correlations between various deviant sexual interests and actual deviant sexual behavior are moderate to high, ranging from $r = .40$ to $r = .70$ (Bártová et al., 2021; Bondü & Birke, 2020; Seto et al., 2021; Williams et al., 2009). Deviant sexual behavior is not necessarily problematic, as long as it concerns legal acts with people who were capable to voluntarily consent. Mild torture, for example, may be appropriate with a consenting adult during BDSM play.

Sexual deviance can become problematic when it negatively affects quality of life, for instance when it traverses fulfilling sexuality with a romantic partner, or when societal disregard causes distress and social isolation (Bezreh et al., 2012; A. L. Lawrence & Willis, 2021; Waldura et al., 2016). Furthermore, sexual deviance is a risk factor for sexual (re)offenses. A subset of sexual offenses is committed because someone has sexual interest in an Illegal stimulus and acts accordingly. That is consistently shown in samples of people who have sexually offended against children or adults, with contact or noncontact offenses, and in various settings and with various levels of recidivism risk (Brankley et al., 2021; Etzler et al., 2020; Hanson et al., 2007; Helmus et al., 2021). It is assumed that risk factors relating to disinhibition predict recidivism with nonsexual offenses, while sexual deviance predicts recidivism with sexual offenses (Brouillette-Alarie et al., 2018; Brouillette-Alarie & Proulx, 2019; Etzler et al., 2020; McPhail et al., 2018).

Improving Treatment

Sexual deviance is thus a relevant factor to address in certain treatment settings, that is, when it is experienced as a burden or when it acts a risk factor for sexual offending. Treatment of sexual offending behavior is more effective when deviant sexual arousal is explicitly addressed (Gannon et al., 2019; McGrath et al., 2010; McPhail & Olver, 2020; Smid, 2021). However, techniques to directly address sexual deviance, such as (re)conditioning techniques, are not standard in Europe (Smid, 2021), are not applied in a substantial part of the treatments in Northern America and Canada (McGrath et al., 2010), and seem "to have lost favor" in some "Western jurisdictions" (Gannon et al., 2019, p. 13). In order to improve treatment of sexual deviance, it is imperative to have a theory on the etiology of sexual deviance.

A theory specifies how certain variables relate to each other. It explains behavior that is known and predicts future behavior. It does so in a way that is generalizable beyond the individual level. This definition of theory follows those from authors reporting on an expert group and an evaluation of literature regarding behavior change (resp. Davis et al., 2015; Kwasnicka et al., 2016), and an evaluation of literature regarding operations management (Wacker, 1998). Theory formation is a necessary framework for

collecting empirical evidence, which in turn is necessary to know what works best in treatment of unwanted deviant sexual interests.

Etiology is as an explanation of the origin or the causes of sexual deviance, or the developmental pathway to sexual deviance (Oxford University Press, 2021). In illustration, psychoanalytic theories on the etiology of sexual deviance would lead to very different treatment approaches (for instance focused on resolvement of childhood trauma) than biological theories (e.g., medication) or behavioral theories (e.g., skills training).

Existing Theories

Sexual motivation is often approached using an incentive motivational model (Ågmo & Laan, 2022; Both et al., 2007; Toates, 2014). In this model, sexual motivation is seen as an emotional response to a sexually relevant stimulus that provides potential reward. Processing emotionally significant stimuli causes activation of the emotion systems in the brain and prepares for behavioral action (LeDoux, 2012). Sexual arousal is tightly coupled with general sympathetic arousal, which allows overflow between sexual motivation and other emotional arousal (Ågmo & Laan, 2022). While the incentive motivational model is commonly adopted in the field of general sexology, its application to sexual deviance is less clear.

Relatively many theories exist that explain the etiology of sexual offending, each including sexual deviance as an important developmental factor for sexual offenses (e.g., Huppin et al., 2019; Seto, 2019; Ward & Beech, 2006). Yet, not much is known about the etiology of sexual deviance itself. Several scholars have concluded from the literature that very few theories explain the etiology of sexual deviance (Apostolou & Khalil, 2019; L. A. Craig & Bartels, 2021; Schmidt & Imhoff, 2021). No dominant, unified theory exists in either of the related fields of sexology, forensic psychiatry, psychology, nor across various cultures.

Current Aim

The present study focuses on the first step of theory formation by providing a systematic review of theories on the etiology of sexual deviance. In a broad approach we included any form of deviant sexual interest in both illegal and legal behaviors, as well as any theory explaining how sexual deviance develops. The theories should not just explain how a sexual interest *remains* deviant, but specifically how an inappropriate, nonnormative sexual stimulus *becomes* sexually arousing in the first place. We composed criteria to assess the quality of the included theories, to be able to emphasize good quality theories. Given their relatively extensive covering in the literature, we additionally and specifically searched for theories on the etiology of pedophilia and BDSM. As no uniform definition exists of what exactly constitutes "deviant" and "normative" sexual interest, additional to the main aim we provided a scoping review of

the definition of sexual deviance. This was done by reviewing the definitions of sexual deviance from the included theories. Finally, the empirical support for the current findings was shortly discussed.

Method

Transparency and Openness

The guidelines for Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) were followed while drafting this manuscript (Page et al., 2021). All the data and the codebook are available in the tables and online supplement of this paper and in the open access online repository DataverseNL (https://doi.org/10.34894/ILFUQC). This study was not preregistered.

Systematic Search

We conducted a systematic search of the databases PubMed and APA PsycInfo (EBSCO). The search terms were built upon three core concepts. First, words reflecting sexual behavior: "psychosexual development" or "psychosexual behavior" or "sexual" or "sexuality". Second and additional, words reflecting deviance: "deviance" or "deviant" or "paraphilia" or "paraphilic" or "bdsm" or "sadis*" or "masochis*" or "sadomasochis*" or "fetish*" or "domination" or "submissi*" or "pedophil*" or "paedophil*". Third and additional, words reflecting etiology: "etiology" or "etiological" or "development" or "developmental" or "theory" or "theoretical". Much research to sexual deviance has been conducted in recent decades and because we aimed for a topical overview, only theories after the year 2000 were included, except when they were cited in empirical papers or review papers post-2000 (see Inclusion/Exclusion Criteria). Only studies in English or Dutch were included. The final inclusion date was May 12, 2023. The first author scanned all titles and abstracts on their eligibility for this systematic review based on the inclusion and exclusion criteria (see below). Full texts were collected of all eligible studies, which were again assessed on the inclusion and exclusion criteria by the first author. The third author independently repeated this process to rate a random 10% ($k = 230$) of the screened studies. There was "almost perfect" agreement on the included and excluded studies (Cohen's kappa $\kappa = .89$) (Landis & Koch, 1977). Any differences ($k = 1$) were subsequently resolved by consensus.

Inclusion/Exclusion Criteria

Studies were included when they reported a *theory* to explain the *etiology* or *development* of *sexual deviance*, following the definitions described in the introduction. Papers were excluded when they concerned: (a) nondeviant sexual interests, for example, same-sex attraction or hypersexuality/sexual compulsion with normative stimuli; (b) the etiology of sexual offense behavior but not the etiology of deviant

sexual interests; (c) an etiological analysis of the behavior of one individual that was not generalizable beyond the individual as per the definition of a theory; (d) a presentation of merely correlates or predictors of sexual deviance, not integrating this into a theory; or (e) commentaries, replies, book/film reviews, or editorials. Some reviews and empirical papers did not generate new theories, but drew on existing work. In these instances we included the original publications and not the secondary sources. Such original theories (as presented in review papers or empirical papers) were included in the search results and marked as "retrieved from additional sources". These original theories could be from before the year 2000, since topical reviews and empirical studies indicated that they could still be relevant today.

Data Collection Process

The first author read the full texts of all included studies to extract the following information: Author(s), year of publication, type of sexual deviance, given definition of sexual deviance, target population, and core message of the theory. Also, the quality of the theories was assessed with six quality criteria (see paragraph Quality of Theory). The first author assessed the quality criteria for all included theories. Each theory was rated "yes" or "no" on all six criteria. Theories were qualified as "acceptable quality" if they complied with at least five of the six criteria and as "nonacceptable quality" if they complied with four or less criteria. The third author independently qualified another random 10% of all included theories, as well as all theories that were assigned acceptable quality by the first author (total $k = 13$). There was "substantial" agreement on acceptable and nonacceptable quality theories (Cohen's kappa $\kappa = .69$) (Landis & Koch, 1977). Any differences ($k = 2$) were subsequently resolved by consensus.

Reflexive thematic analysis (Braun & Clarke, 2006, 2021) was used to identify etiological themes from the core messages of the acceptable quality theories. Using Taguette.org software (Rampin & Rampin, 2021), text fragments pertaining to etiology were highlighted and a label was given to describe their content. When relevant, labels that belonged to a similar theme were grouped. Labels that were given more than once were included in the synthesis of the results. Subsequently, we applied thematic analysis to the theories that were of *non*acceptable quality. The aim was to assess how often the themes from the acceptable quality theories were present in the nonacceptable quality theories (deductive thematic analysis). Also, additional themes could be identified (inductive thematic analysis) (Braun & Clarke, 2006).

An additional study aim was to provide a scoping review of the definition of sexual deviance. Using thematic analysis, we sought common themes in the definitions of sexual deviance as given in *all* included studies, regardless of quality status.

Quality of Theory

To our knowledge, no standardized instrument exists to assess the quality of explanatory theories in the field of psychology. A nonsystematic search of the literature was performed including search terms such as "good theory," "theory quality,"

Table 1. Quality Criteria for Good Theories (QUACGOT) and Aiding Questions.

Quality Criteria	Aiding Questions
1. Explain known findings. A good theory should explain known observations and empirical findings.	Does the theory align with empirical findings? Does the theory align with clinical observations?
2. Precision and coherency. Describing a theory in a precise, clear and logical manner limits subjective or confused interpretation.	Does the theory provide a clear definition of the sexually deviant topic and other variables involved? Does the theory clearly describe how the variables relate to each other? Does the theory clearly describe how a deviant stimulus becomes sexually arousing?
3. Parsimony. "Explain more with less," use as few parameters or assumptions as possible to explain an event.	Does the theory not have unnecessary parameters or assumptions? Is the theory as simplified as possible?
4. Testability. A good theory can produce hypotheses to not only support, but also oppose the theory.	Can testable hypotheses be made to support (parts of) the theory? Can testable hypotheses be made to oppose (parts of) the theory? *NB. It is not necessary that hypotheses are formulated by the original authors.*
5. Generalizability. A good theory is broadly applicable and generalizes beyond individual phenomena or specific contexts.	Is the theory generalizable across various deviant sexual behaviors and populations? Can the theory be applied in clinical setting?
6. Progress. A good theory should contribute beyond what is already known, set forth new research ideas, and promote progress.	Does the theory add new insight or knowledge? Does the theory provide starting points for further research? Does the theory have clinical utility? *NB. This refers to the time the article was published.*

"evaluation of theory." This search identified various scholars who have provided criteria that distinguish just any theory from a *good* theory (Davis et al., 2015; Gawronski & Bodenhausen, 2015; Gieseler et al., 2019; Higgins, 2004; van Lange, 2013; Ward & Beech, 2006). Most of these authors work in the field of social psychology, except Ward and Beech, who work in forensic psychology. The authors based their quality criteria on information from Delphi-groups (Davis et al., 2015), scientific literature (Gawronski & Bodenhausen, 2015; Gieseler et al., 2019; Ward & Beech, 2006) and own insights (Higgins, 2004; van Lange, 2013). The quality criteria of all authors were very similar. Putting their criteria side by side allowed us to make a synthesis of Quality Criteria for Good Theories (or QUACGOT; see Table 1). As an example, all authors had included a criterion regarding "parsimony" (Davis et al., 2015; Gawronski & Bodenhausen, 2015; Gieseler et al., 2019), or

"simplicity" (Ward & Beech, 2006), "abstraction" (van Lange, 2013) or being "economical" (Higgins, 2004), stating that theories should be as simple as possible. This was synthesized under our current criterion of parsimony. Similarly, five out of six papers mentioned the criterion of "falsifiability" (Gieseler et al., 2019), "truth" (van Lange, 2013), "testability" (Davis et al., 2015; Higgins, 2004), or "refutability" (Gawronski & Bodenhausen, 2015), which was summarized as our current criterion of testability. We refer readers to the online supplement, Table S1, to see the synthesis of the current QUACGOT from the original criteria of the various scholars. To further operationalize each criterion, aiding questions were devised from the criteria of the various scholars. These aiding questions could be used to support a yes/no decision on each criterion. If one of the aiding questions was scored "no", the criterion was not met. The first and third author calibrated and operationalized the quality criteria on 10% (k = 5) of the included studies. Most judgments (clinical utility, explaining known empirical findings) remained partly subjective and were based on the raters' knowledge of the field, but the current criteria are believed to be the best possible attempt currently available for a systematic quality assessment of a theory. Following the cited scholars, theories were

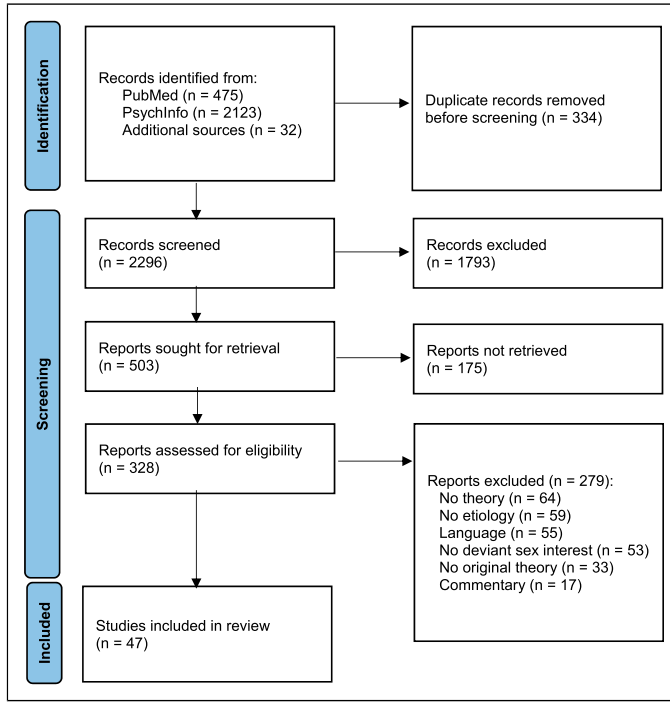

Figure 1. PRISMA flow chart of study inclusion process.

valued when they had broad generalization power. This does not mean that, outside of the current aim, very specific theories cannot be useful for certain target groups.

Results

Inclusion Process

The systematic search identified 2264 unique records. An extra 32 records were identified from additional sources, that is, from reviews and empirical studies in the search results. See Figure 1 for the PRISMA flow chart of the study selection procedure (Page et al., 2021). A total of 47 records met the inclusion criteria. These studies and their characteristics can be found in the Online Supplement, Table S2. Examples of exclusion reasons were studies that discussed: the etiology of sexual offending behavior but not of sexual deviance (Stinson et al., 2008), characteristics of sexual deviance but not etiological processes (Pflugradt & Allen, 2012), etiological implications but not theory forming (Levenson & Ackerman, 2017).

Acceptable Quality Theories

Seven studies contained theories of acceptable quality, complying with five or all six quality criteria (Critelli & Bivona, 2008; Dawson et al., 2016; Dunkley et al., 2020; Finkelhor & Araji, 1986; Laws & Marshall, 1990; McGuire et al., 1964; Smid & Wever, 2019). See the open access data file at DataverseNL (https://doi.org/10.34894/ILFUQC) for the quality coding of all theories, and see the Online Supplement, Table S2, for a description of the theories and their core messages. Examples of not meeting the criteria were: precision and clarity (Dawson et al., 2016; Laws & Marshall, 1990; McGuire et al., 1964), generalizability (Dunkley et al., 2020), or parsimony

Table 2. Etiological Themes From Thematic Analysis by Theory Quality.

	Frequency (*n*) of Theme in Theories	
Theme	Acceptable quality (*k* = 7)	Nonacceptable quality (*k* = 40)
Conditioning	5	12
Excitation transfer	5	10
Problems with normative sex	3	6
Social learning	2	15
Biological predispositions	2	12
Evolution	1	6
Higher cognitive goals	1	3
Modules		4
Imprinting		3
Attachment		2

(Finkelhor & Araji, 1986). Three of the acceptable quality theories discussed specific deviant sexual interests: rape fantasies, physical masochism, and pedophilia. The other four theories discussed sexual deviance in the general sense. Two theories were applied to offending populations, the other theories to general populations. Two theories were gender specific: one regarding women, one regarding men. Three of the seven theories were from 1990 or before.

Etiological Themes

Through thematic analysis several etiological themes were identified that were repeated throughout the acceptable quality theories: excitation transfer, conditioning, problems with normative sexuality, and social learning. Table 2 shows how often each theme was present. The themes are discussed below and supplemented with findings from the thematic analysis of the nonacceptable quality theories. Four themes consisted of several subordinate labels. Conditioning was a grouped theme of the labels conditioning and reinforcement. Social learning was a grouped theme of the labels social learning, modeling, and trauma. Modules was a grouped theme of the labels modules and target errors. Problems with normative sex was a grouped theme of the labels problems with normative sex and habituation of sexual stimuli (requiring stronger stimuli).

Conditioning. The oldest included theories describe how conditioning theory can be applied to sexual deviance (Finkelhor & Araji, 1986; Laws & Marshall, 1990; McGuire et al., 1964). These theories were included because they were often referred to by other, topical papers in the screening process, an indication that despite of their age they are still relevant today. Sexual arousal may be coupled to a deviant stimulus by means of classical conditioning. "[A]ny stimulus which regularly precedes ejaculation by the correct time interval should become more and more sexually exciting" (McGuire et al., 1964, p. 186). This coupling might also occur through operant conditioning. Deviant sexual acts are then reinforced by "for example, genital stimulation, ejaculation, social approval of the partner, or increased responsiveness of the partner" (Laws & Marshall, 1990, p. 213). According to Smid and Wever (2019), operant conditioning, where sexual climax is a reinforcer for responding to a deviant stimulus, is a stronger mechanism than classical conditioning, where the deviant stimulus and sexual climax appear in temporal succession. Other reinforcing motivators for the sexual behavior might be to "relieve psychological stress, allow the momentary suspension of the burdensome responsibilities of day-to-day life, and promote intimacy and connection between partners" (Dunkley et al., 2020, p. 433). Thirty percent of the nonacceptable quality theories included conditioning and reinforcement of sexual behavior as etiological theme.

Excitation Transfer. Latent sexual arousal that is already present, can be increased by another emotion that occurs at the same time. Smid and Wever (2019) refer to this

process as "excitation transfer". An example is the thought of being raped. This might induce fear, which increases the fantasy's sexual impact (Critelli & Bivona, 2008). Emotional arousal can also be mislabeled as a sexual response. For instance, children may elicit strong emotional reactions, such as "protective" or "affectionate" that can be misattributed as sexual arousal (Finkelhor & Araji, 1986). A similar transfer mechanism between various forms of arousal may exist in physical masochism. Emotional states are theorized to work together with sexual arousal to create a receptivity for pain (Dunkley et al., 2020). At the same time, sexual arousal counteracts the physical experience of pain. The theme of excitation transfer was also present in a quarter of the nonacceptable quality theories.

Problems with Normative Sexuality. According to Finkelhor and Araji (1986), one of the four factors potentially causing pedophilia is a blockage to obtain sexual and emotional gratification from more normatively approved sources. Other authors theorized that problems with normative sexuality may strengthen the deviant sexual conditioning process. "Men who are not easily aroused by normative stimuli will be more likely to experience strong positive reinforcement from their engagement with the deviant stimulus and will be inclined to revisit the experience where they did find sufficient arousal, thus further promoting the conditioning process" (Smid & Wever, 2019, p. 746). Meanwhile, other, normative sexual stimuli are less and less reinforced and are ultimately extinguished (McGuire et al., 1964). From the conclusions of Dawson et al. (2016), an opposite hypothesis could be drawn. "[P]eople who have a high sex drive may choose to expend their vast energy toward not only their preferred targets and activities (which in most cases will be nonparaphilic), but also other targets and activities as well, including atypical ones" (p. 35). They might hypothesize that people with a high sex drive have interest in *both* normative and deviant sexual stimuli. Problems with normative sexuality were also a theme in about 15% of the nonacceptable quality theories.

Social Learning. The theme of social learning included social learning from or modeling of early sexual experiences or sexual acts by parents or peers, and traumatic victimization of (sexual) abuse. In the acceptable quality theories, it was mentioned twice (Finkelhor & Araji, 1986; Laws & Marshall, 1990). Social learning and modeling may shape the conditioning process, for instance by means of early sexual experiences or exposure to sexuality via parents or porn (Finkelhor & Araji, 1986). Social learning may be interwoven with conditioning, for instance when coercion and sexual arousal are presented together in childhood sexual victimization (Laws & Marshall, 1990). The theme of social learning was the most common theme in the nonacceptable quality theories (in one third of the studies). It was for instance hypothesized that an individual may have learned to assert a dominant sexual role as a means to "undo" previous victimization (Gee & Belofastov, 2007). Seven psychoanalytic theories included trauma as an etiological factor, but these theories failed to meet most quality criteria.

Biological Predispositions. One acceptable quality theory mentioned biological predispositions "such as hormone levels or chromosomal make-up" (p. 152) as possible contributors to pedophilia (Finkelhor & Araji, 1986). One acceptable quality theory concluded that a "biological predisposition to surrender" should be explored, but this is more an evolutionary than a neurobiological approach (Critelli & Bivona, 2008). Much neuropsychological and biological research in the last decades has advanced the state of knowledge. Many of these recent relevant findings could not be included in the current systematic review, because very few neurobiological theories have yet been developed that complied with the inclusion criteria of this study, and the few included ones were of nonacceptable quality. In the nonacceptable quality theories, biological predispositions or mechanisms were often mentioned in general, but not specified, for example, "aberrant cortical development" (Cohen & Galynker, 2002) or "general biological sexual preparedness" (O'Keefe et al., 2009).

Other Findings. One acceptable quality and seven nonacceptable quality theories reported evolutionary factors as causing sexual deviance. An example is that women would accommodate dominant men because they would produce better offspring (Harris et al., 2017). This example could explain submissive *behavior*, but does not explain how submission becomes *sexually arousing*. Evolutionary theories often could not precisely describe how a deviant stimulus becomes sexually arousing (criterion of precision and clarity) and were hardly falsifiable (testability). Remaining etiological themes that were mainly mentioned in nonacceptable quality theories included: higher cognitive goals (e.g., pleasure seeking or dominance), imprinting, modules, and problems with attachment. Modules or targets define what features are attractive to an individual, for instance regarding age, gender, body features. These theories failed to meet most quality criteria.

Definition of Sexual Deviance

The definitions of sexual deviance from all 47 included studies can be accessed via the DataverseNL respository (https://doi.org/10.34894/ILFUQC). Most (k = 14) of the included studies discussed masochism and/or sadism, for example, "masochism", "submission", "sadism", "beating phantasies", "sadistic sexual fantasies". The definitions from the original authors most often included "physical pain" (seven theories), sometimes supplemented with "humiliation" (three of these seven theories). Three definitions included control or dominance, two included the word "consensual". Remarkably, most definitions (eight) did not explicitly couple masochism and/or sadism with sexual arousal. For instance, "the consensual receiving and enjoyment of physical sensations that would characteristically be classified as painful" (Dunkley et al., 2020), and "violence and humiliation [appear] as an important nucleus of phantasy" (Antinucci, 2016). In other theories, humiliation and pain were defined to be causal to sexual arousal (e.g., Abrams & Stefan, 2012) or only needed to both be present at the same time (e.g., MacCulloch et al., 2000).

Thirteen studies discussed "paraphilia" or "sexual deviance" in a general sense, without specifying the content of the sexual interest. Three studies defined sexual deviance as sexual behavior, two as sexual interest, two as sexual fantasies, and three studies followed the DSM-IV(-TR) definition in which paraphilia can be urges, fantasies or behavior. Authors defined "deviance" relative to a combination of various norms, most often social or societal norms (six studies) and judicial norms (six studies). Examples of societal norms were "contravenes the norms of society" (Bhugra, 2000), "socially unconventional" (Birchard, 2011) or "inappropriate" (Maniglio, 2011, 2012). Examples of judicial norms were "illegal" (Gee & Belofastov, 2007) or "nonconsent" (Ward et al., 2016). Other norms included statistical norms (three studies), for example, "atypical" (Dawson et al., 2016) or "unusual" (Smid & Wever, 2019), and psychopathological norms including DSM-classifications (four studies). Finally, three studies mentioned the infliction of harm or pain as one of the possible defining features of sexual deviance.

Eight studies discussed pedophilia or sexual preferences towards children. In their definitions most authors (four studies) referred to the DSM or ICD manual valid at that time. The remaining twelve studies included theories discussed specific types of sexual deviance that could not be grouped under one topic.

Discussion

Few good quality theories explained the etiology of sexual deviance. In a systematic review with broad inclusion criteria 2296 articles were scanned, 47 theories were included, and only seven theories were of acceptable quality. From these seven, three were from 1990 or before. The fact that these remaining theories shared common etiological themes indicates that there is agreement in the field about relevant factors in the development of sexual deviance. This also indicates a similarity in the development of general sexual deviance and various specific deviant sexual interests. The extent to which this "agreement" is funded by empirical evidence, is an important next question in research.

Synthesis of Findings

The following synthesis was made from the included etiological theories. Stimuli that elicit a strong emotion, such as fear, pain, or endearment, might enhance sexual response when presented closely together (Critelli & Bivona, 2008; Smid & Wever, 2019). The extra emotional impact might make this a stronger sexual stimulus that results in sexual gratification. This might especially be a working mechanism for people that experience no satisfying amount of sexual arousal in normative sex; they profit from additional stimulation (Finkelhor & Araji, 1986; Smid & Wever, 2019). At the same time, a ceiling effect might exist where too much stimulation disrupts sexual response (Critelli & Bivona, 2008; Smid & Wever, 2019). An intermediate optimum of arousal seems desired for sexual response. Sexual gratification is a strong reinforcer, but also social, behavioral

or cognitive events might reinforce the sexual response to a deviant stimulus. Examples are an appraising partner, sex-stimulating environment, or the impression of being desired (Critelli & Bivona, 2008; Dunkley et al., 2020; Laws & Marshall, 1990). Conscious or unconscious revisitation of the succesful experience and sexual climax strengthens the connection between sexual arousal and deviant stimulus in a process of operant conditioning (Laws & Marshall, 1990; McGuire et al., 1964; Smid & Wever, 2019). In this process, the focus may increasinlgly lie on the deviant stimulus rather than on any normative, less succesful alternatives (McGuire et al., 1964). Social learning may influence this process throughout, as well as at the start by providing sexual contexts for conditioning to take place in, for example, during early sexual experiences (Finkelhor & Araji, 1986; Lussier et al., 2005). The role of biological predispositions is not yet clear-cut. Biological predispositions may explain necessary or supporting conditions for the development of a deviant sexual interest. Examples of such predispositions are the brain's sensitivity for reward (Roszyk & Łukaszewska, 2011), interpretation of sexual cues and erectile sensitivity (Imhoff et al., 2017; Smid & Wever, 2019), or baseline level of sympathic arousal (Critelli & Bivona, 2008; Dunkley et al., 2020).

Incentive Motivational Model

The synthesis above concurs with the incentive motivational model of sexual motivation that is commonly adopted regarding general sexology (Ågmo & Laan, 2022; Both et al., 2007; Toates, 2014). In this model, sexual motivation is seen as an emotional response to a sexually relevant stimulus that provides potential reward. Smid and Wever (2019) were the only included authors who literally borrowed from this model. The other acceptable quality theories fit well into this model, centering around arousal transfer between emotions and the reinforcing properties of deviant sexual stimuli (Critelli & Bivona, 2008; Dunkley et al., 2020; Finkelhor & Araji, 1986; Laws & Marshall, 1990; McGuire et al., 1964).

Slightly different from the rest is the theory of Dawson et al. (2016), which states that high sex drive leaves extra energy to expend towards other than normative stimuli. The authors defined sex drive as "the strength of an individual's sexual motivation" (p. 23). This theory is the only one hypothesizing that an excess rather than a lack of (normative) sexual motivation might lead to sexual deviance. While an excess of sexual motivation might explain an excess of sexual *behavior* towards an excess of stimuli, including deviant ones, it does not explain precisely how a deviant sexual stimulus may become sexually arousing.

Empirical Evidence for the Etiological Factors

Good quality theories should be built upon empirical and clinical evidence (conform the "explain known findings" criterion). An extensive test of the empirical evidence for the etiological theories is an important future, second step to supplement and expand

the current aim. In a brief contemplation, we will address the current state of empirical findings for each etiological theme.

Conditioning. Reviews to the conditioning of the sexual response conclude that empirical evidence mainly comes from animal studies and that studies with humans are still scarce (Brom et al., 2014; Hoffmann, 2017). Classical conditioning of the sexual response seems possible, but the evidence for operant conditioning is too scarce to make conclusions. Conditioning seems to work best with stimuli that resemble a sexual stimulus (e.g., the abdomen of an individual of the opposite gender for humans; or a female with colored feathers for quail), as opposed to random stimuli (e.g., a gun for humans; or a stuffed animal for quail) (resp. Hoffmann et al., 2004; Domjan & Hollis, 1988). Yet, irrelevant stimuli can also be associated with sexual response (Brom et al., 2014). Results obtained in a lab setting do not appear to be very robust (Hoffmann, 2017). The challenge remains to test this in realistic settings, for instance by using online conditioning paradigms that can be implemented at home.

Excitation Transfer. It has often been demonstrated that arousal can transfer from one emotion to the other, adding up to increase the emotional response, a process called "excitation transfer" (Wang & Lang, 2012). Most empirical evidence is quite dated, but it is clear that sexual arousal can transfer *to and from* other emotions, such as aggression and fear (Allen et al., 1995; A. N. Craig et al., 2017; Hoon et al., 1977; Lalumière et al., 2017; Malamuth et al., 1986; Wolchik et al., 1980). A recent empirical study showed that being in an emotional state (e.g., aggression, endearment) can increase subjective and physiological sexual response to erotica in healthy men (Schippers, Smid, Both, & Smit, 2022). Not everyone seemed as susceptible for excitation transfer, as there were large interindividual variations, but 60% of the 30 subjects showed some form of excitation transfer. Future research should explore which people are most susceptible to these effects and why.

Problems with Normative Sexuality. To our knowledge there is no empirical research to problems with normative sexuality as an etiological cause for sexual deviance. The available evidence merely concerns sexual offending, especially pedophilia, and is correlational. A lack of experience with romantic relationships has been found to predict later sexual recidivism in people who have sexually offended (Hanson et al., 2007; Hanson & Thornton, 2000). People who have sexually offended against children and people with pedophilia have been found to be single more often than nonoffenders or community controls (Bartels et al., 2018; Cazala et al., 2019). There are empirical studies in which sexual responses were elicited to child and adult stimuli in people who have sexually offended against children and various control groups. Meta-analyses of these studies showed that people who have sexually offended against children with and without pedophilia have less sexual interest in adults than control groups (McPhail et al., 2019; Schippers, Smid, Hoogsteder, et al., 2022). There is a need for research to this topic with nonoffending, sexually deviant groups.

Neurobiology. For more information about neurobiological findings regarding sexual deviance, we refer to recent reviews (e.g., Krüger & Kneer, 2021; van Kessel et al., 2022; Wuyts & Morrens, 2022). Most neurobiological research regards pedophilia and is hampered by a lack of proper comparison groups. It seems that neurobiological aberrations are mainly found in delinquent groups (Dillien et al., 2020; Krüger & Kneer, 2021). Nondelinquent participants with pedophilia may display rather normal neurobiology (Krüger & Kneer, 2021; van Kessel et al., 2022). A recent meta-analysis of the biology of BDSM concluded that during BDSM interactions, brain systems regarding reward (for both dominants and submissives) and pain and stress (for submissives) were involved (Wuyts & Morrens, 2022). Yet, their etiological account remains unclear.

Social Learning. There seems to be no empirical evidence regarding social learning, trauma, or early sexual experiences as an etiological factor for sexual deviance (Smid & Wever, 2019). Again, most research includes sexual offending samples and correlational and retrospective data. Trauma is found to be more common among sex offenders than among the general population (Dillard & Beaujolais, 2019; Lateef & Jenney, 2021). The same is true for early exposure to pornography (Simons et al., 2008). Interviews with BDSM-practitioners revealed social learning as one of the pathways of entrance into BDSM, for instance via online popular culture or via a sexual partner (Walker & Kuperberg, 2022).

Definition of Sexual Deviance

Additional to our review of the etiology of sexual deviance we reviewed the definitions of sexual deviance from the included studies. General sexual deviance was most often defined as sexual fantasies, interests, or behavior that deviate from societal and judicial norms. Possible problems with a definition based on societal norms, and to a lesser extent judicial norms, is that these are not fixed and can change in time, place, and culture. Masochism/sadism was most often defined as a – not necessarily sexual – interest in or behavior with painful or humiliating stimuli. Whether or not this is consensual was often not specified. Pedophilia was pathologized more than masochism/sadism or general sexual deviance, as it was typically defined according to the medical handbooks DSM and ICD.

Strengths and Limitations

Some strengths of the current systematic review could be identified. We adopted a broad approach, thereby increasing the number of studies to be included. A strength was the endeavor to qualify each theory as objectively as possible using strict criteria (QUACGOT). This allowed us to emphasize good quality theories. While this quality judgment remained partly subjective, it seems like a step forward as none of the included studies explicitly addressed theory quality. Additional, several limitations could be identified. Only English or Dutch articles were included, which left out 54 screened

articles in different languages (mostly French and German). As we aimed to provide a topical overview, the systematic search only sought for articles published after 2000. Earlier theories were only included if they were referred to in these articles. A general limitation in the study of etiology is the issue of causality. Most findings stem from correlational research, therefore it is impossible to conclude if they are causal to sexual deviance or the result of repeated deviant sexual interest/behavior. Some theories only discussed specific sexual deviances in specific groups, for instance, pedophilia in offending populations and BDSM in nonoffending populations. However, very similar etiological themes were extracted from these specific theories. This indicates that the found etiological themes and incentive motivational framework could be broadly applied to any form of sexual deviance in any context.

Implications

This systematic review indicated that deviant sexual interests seem malleable, to some extent. The important roles of excitation transfer and conditioning designate that dynamic, changeable process take part in the etiology of sexual deviance. These same processes could potentially be deployed to diminish unwanted deviant sexual interests. Speculatively, several possible interventions include abstinence to prevent further reinforcement of the deviant stimulus, aversive conditioning to couple negative consequences (e.g., bitter taste or bad smell) to deviant sexual arousal, conditioning to strengthen sexual arousal to normative sexual stimuli, arousal regulation to reduce general sympathetic arousal (e.g., relaxation), or emotion regulation to reduce emotional reactions. Techniques to directly target deviant sexual arousal, such as (re) conditioning techniques, are known to be effective in reducing sexual offending (Allen et al., 2020; Gannon et al., 2019; McPhail & Olver, 2020), but it remains unclear which specific techniques work best.

Scholars have emphasized the lack of theory forming around the etiology of sexual deviance (L. A. Craig & Bartels, 2021; Smid & Wever, 2019). To our knowledge, we are the first to systematically review theories on the etiology of sexual deviance. It appears there is not necessarily a lack of theories, as we could include 47 records. There is, however, a lack of good quality theories, as well as a lack of empirical evidence substantiating these theories. Two areas of attention are problems with normative sexuality and social learning. Both need empirical research in general populations beyond the level of retrospective or correlational data.

It seems that general theories can be used to explain a variety of deviant sexual interests, eliminating the need for all too specific theories of separate deviant sexual interests. If one desires a good quality theoretical framework for the etiology of sexual deviance, we recommend those listed in Table 2, which are mostly in line with the incentive motivational model (Ågmo & Laan, 2022; Both et al., 2007; Toates, 2014). Based on the current state of research, an incentive motivational model seems not only appropriate to explain general sexual motivation, but deviant sexual interests as well.

This is a useful framework for treatment purposes to diminish unwanted deviant sexual interests.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. The term sexual deviance is sometimes considered to be emotionally loaded. Alternative terms are atypical sexual interests or paraphilic sexual interests. We adopted the term deviant because it reflects the literature in our systematic review. We do not mean to imply any moral judgment regarding one's sexual interests.
2. Bondage and Discipline (BD), Dominance and Submission (DS), and Sadism and Masochism (SM).

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