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## Diagnostic Overshadowing of Psychological Disorders in People with Intellectual Disability: Systematic Review

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Diagnostic overshadowing is a bias in which symptoms of a psychological disorder are falsely attributed to a known diagnosis of intellectual disability (ID). This systematic review evaluated all research on diagnostic overshadowing conducted to date, including dissertations and peer-reviewed journal articles. In total, 25 studies were included in this review. Findings suggest diagnostic overshadowing may not be as ubiquitous as originally believed, with one-third of included studies finding no overshadowing. The quality of the evidence was graded as “Low” using the LEGEND tool (Clark et al., 2009), with common issues including outdated studies, analogue methodologies, small sample sizes and convenience samples, and inappropriate conducting or reporting of statistical analyses. Implications for the field and recommendations for future research are discussed.

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## **Diagnostic Overshadowing of Psychological Disorders in People with Intellectual Disability: A Systematic Review**

The proper diagnosis and treatment of psychological disorders is important for improving functioning, well-being, and overall quality of life in all people. Estimates of the prevalence of co-occurring psychological disorders in people with intellectual disability (ID) vary widely, with numbers ranging from 13.9% to 75.2% depending on the study's methodology (Buckles et al., 2013). However, researchers generally agree that people with ID experience the same range of psychological disorders as those in the general population, perhaps at an even higher rate (Hemmings & Bouras, 2016). Our understanding of dual diagnosis – the co-occurrence of intellectual disability and a psychological disorder – has increased dramatically over the past 20-30 years; however, many problems remain with assessment and diagnosis of these disorders in people with ID.

### **Psychological Disorders and Intellectual Disability**

People with ID might be at an increased risk for psychological disorders due to their smaller networks of social support (Giordano et al., 2016), disadvantaged social status (Cooper et al., 2015), more significant life events (Cooper et al., 2007), and possess fewer coping skills. Despite these challenges, however, we have increasing evidence that many psychological treatments used with people in the general population are effective in people with ID, including cognitive behavioral therapy (CBT; Vereenooghe & Langdon, 2013), dialectical behavior therapy (DBT; McNair et al., 2017), and mindfulness-based therapies (Patterson et al., 2019). Therefore, it is important that people with ID are accurately diagnosed so that they can receive appropriate treatments for these disorders.

However, there are many barriers to recognizing and diagnosing psychological disorders in people with ID (Fletcher et al., 2017). These include difficulty obtaining accurate self-report information in a psychiatric interview, difficulty finding knowledgeable informants, differences in how these disorders may present in persons with ID, a lack of assessments normed on people with ID, and siloed mental health and ID service systems (Bütz et al., 2000). Finally, an issue often discussed regarding diagnosing psychological disorders in people with ID is “diagnostic overshadowing”. The term “diagnostic overshadowing” was coined by Reiss and his colleagues (Reiss et al., 1982) to refer to the phenomenon in which a diagnosis of ID is so salient that it “overshadows” the presence of other psychological disorders, whose symptoms are erroneously attributed to the known diagnosis of ID. Reiss and his colleagues argue that diagnostic overshadowing is the result of a bias in clinical decision-making.

### **The Diagnostic Overshadowing Bias**

The diagnostic overshadowing bias is one example of what López (1989) calls a “minimizing” bias – a patient characteristic that causes the clinician to “minimize” the severity of a client’s symptoms by attributing them to that characteristic. Since first introduced by Reiss et al. (1982), his paper has been cited almost 900 times. The presence of this phenomenon in the ID field has come to be widely accepted.

In their first paper, Reiss and his colleagues (1982) conducted two experiments. In the first experiment, psychologists were presented with a short description of a patient who was experiencing a “phobic response” to a traumatic event:

Alfred took a job at a McDonald's located about five miles from home. He commuted to and from work by bus. He had no difficulty commuting for about one year when he accidentally took the wrong bus home, ended up in a high crime area, was robbed, and

was brought home by the police. He subsequently refused to ride a bus again and quit his job. (Reiss et al., 1982, p. 568)

In addition, participants were given some background information about the client that suggested he either had ID, average IQ (control group), or alcoholism. The sample sizes were small, with 13, 15, and 20 participants in each condition, respectively. Participants were asked an open-ended question about diagnostic impressions for this client. They were also asked six questions (e.g., “How likely is it that Alfred is...? [retarded, alcoholic, psychotic, neurotic, tense, emotionally disturbed, irrational]”) that were rated on a seven-point Likert scale ranging from “extremely likely” to “extremely unlikely”.

Reiss and his colleagues (1982) found that clients whose vignette suggested they had ID were less likely to be rated by psychologists as having neurosis or psychosis, and clients suggested to have ID or alcoholism were less likely to be rated as having a phobia and less likely to be recommended for systematic desensitization treatment. These findings were true in both the open-ended questions and the Likert ratings.

In the second experiment, Reiss and his colleagues (1982) wanted to test whether a longer vignette, written in line with DSM criteria, would reduce the overshadowing effects observed in Experiment 1. They found that for vignettes in which the clients were suggested to have ID, psychologists rated a lower likelihood of psychological disorders than vignettes with average intelligence. Reiss and his colleagues recognized that although these findings were compelling, they were merely a first step and left out important elements: “No effort was made to examine possible explanations for overshadowing or the extent to which it occurs in clinical practice” (Reiss et al., 1982, p. 568). They felt it was necessary to further evaluate these elements in future research. They concluded that there were doubts about whether this phenomenon would

persist across vignettes depicting different disorders or with more clinical information (Reiss et al., 1982).

Reiss and his colleagues published two more papers within the next year also investigating what they had now termed the diagnostic overshadowing bias (Levitan & Reiss, 1983; Reiss & Szyszko, 1983). These studies provided some initial evidence that, using the vignettes they created and the Likert scale format of responses, diagnostic overshadowing was observed across the professional disciplines of social work and psychology (Levitan & Reiss, 1983) and across amount of clinical experience with ID (Reiss & Szyszko, 1983).

There has been one meta-analysis (White et al., 1995) and one review paper (Jopp & Keys, 2001) published on diagnostic overshadowing, both of which are more than 20 years old. The meta-analysis (White et al., 1995) included 11 papers, all of which used a similar analogue methodology and reported a “moderate” effect size of  $r = .19$ . They interpreted this to mean that there is, on average, a 19% reduction in diagnostic accuracy and mental health treatment recommendations for people with ID. Both the meta-analysis and the review paper discussed concerns with the analogue methodology used in almost every study and argued that there was little evidence that diagnostic overshadowing was occurring in real-life clinical settings. Both papers recommended that future research use varied methodologies including *in vivo* studies, and that future research investigate the variables and processes that play a role in the likelihood of overshadowing.

Because it has been more than two decades since these review papers were published, we felt it was important to conduct an updated systematic review of the diagnostic overshadowing literature. We wanted to determine whether subsequent research had addressed the concerns

raised in these review papers. Also, knowledge about mental health in general, as well as in persons with ID, has increased substantially in the last 20+ years.

### **Research Questions**

This systematic review aims to answer the following questions about diagnostic overshadowing:

1. *Does diagnostic overshadowing persist since first reported in the early 1980s?*
2. *Has the methodology used to assess the presence of diagnostic overshadowing changed over time?*
3. *Which variables have been studied regarding their relationship to diagnostic overshadowing?*
4. *What is the quality of the literature on diagnostic overshadowing?*

### **Method**

The selection of studies for this systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher et al., 2015) guidelines. The web-based software platform Covidence was used to perform title and abstract screening, full-text review, and data extraction.

### **Eligibility Criteria**

To be included in this review, studies needed to be written in English and published in peer-reviewed journals or be a dissertation; books and book chapters were excluded. The study needed to use an experimental or quasi-experimental design. Qualitative studies, retrospective reviews, case studies, systematic reviews, and meta-analyses were excluded. The design of the study needed to include a manipulation related to IQ score (e.g., one condition depicting average IQ and one depicting ID). It also needed to present information to participants about a mental

health condition and measure the diagnostic impressions of the participant as an outcome variable. There were no restrictions on who the study participants could be.

### **Search Strategy**

The search was conducted in January 2023. The following databases were searched: ERIC, PsycINFO, Web of Science, PubMed, and ProQuest to specifically identify dissertations. Keywords for the search were: *diagnostic overshadow\**) AND (*intellectual\* disab\* OR mental\* retard\* OR intellectual\* development\* disord\**). In addition, the reference lists of included articles were examined, as well as the reference lists of a systematic review and a meta-analysis on the topic. Dissertations were excluded if a published paper on the same study was identified.

### **Study Selection**

Initially, 232 records were identified through database searches. Ninety-one were identified as duplicates, so 141 remained after the duplicates were removed. Five papers were added based on searches of reference lists and the authors' knowledge of the literature, for a total of 146 papers. Titles and abstracts for these papers were independently reviewed by each author based on inclusion criteria, and consensus was reached for each article through discussion. A subset of 112 studies were determined to be irrelevant after a screening of the title and abstract. The remaining 34 studies underwent an independent full-text review by both authors. Again, consensus was reached by discussion regarding the inclusion or exclusion of each article as well as the reasons for exclusion. Eight studies were excluded following full-text review for the following reasons: (a) the study was a dissertation but a published version of the study was also available ( $n = 3$ ), (b) the study was a masters-level thesis and not a doctoral dissertation ( $n = 1$ ), (c) the study was not about intellectual disability ( $n = 2$ ), (d) not an experimental study ( $n = 1$ ), (e), insufficient information provided in the paper ( $n = 1$ ), and (e) the authors were unable to



access a full-text version of the article to complete a review ( $n = 1$ ). In total, 25 studies were included in this systematic review. See Figure 1 for a flowchart detailing the study selection process.

### **Data Extraction and Study Quality Assessment**

The information extracted from each article included author name(s), year of publication, type of publication (peer-reviewed journal article or dissertation), sample size and characteristics, format of information presented to participants (including type of vignette used and disorder suggested by the vignette), response format (e.g., Likert ratings or open-ended responses), diagnostic overshadowing outcome, any other variables measured by the study, and the results of those measures.

The quality of each article was assessed using the Let Evidence Guide Every New Decision (LEGEND) tool (Clark et al., 2009). The authors used the “Descriptive Study, Epidemiologic Study, Case Series” form and scored Items 1-12 for each included paper. Based on these ratings, each paper was assigned an overall quality level: (1) Good quality, (2) Lesser quality, or (3) Not valid, reliable, or applicable. Both authors independently completed this process for six of the 25 included papers (24%), and disagreements were discussed and resolved. The first author completed the remainder of the ratings independently. Finally, the overall body of evidence was graded using LEGEND’s “Grading the Body of Evidence” tool and both authors came to a consensus through discussion.

### **Results**

Of the 25 studies included in our review (see Table 1 for a summary of all studies), 11 were peer-reviewed publications, while 14 were available only as doctoral dissertations. The oldest study was published in 1982 (Reiss et al., 1982), while the most recent was published in

2021 (Hinde et al., 2021). However, only six of the 25 studies (24%; three peer-reviewed papers and three doctoral dissertations) were published in the last 20 years (i.e., 2003 or later). The median year of publication among all included studies was 1994.

Overall, 44% of included studies (11 of 25) found diagnostic overshadowing across all conditions where it would be predicted to occur, while 32% of studies ( $n = 8$ ) did not find any diagnostic overshadowing. The remaining 24% of studies ( $n = 6$ ) reported mixed results: they found diagnostic overshadowing in some of the expected conditions and not in others.

### **Participants**

The number of participants in each study ranged from 44 to 372. A total of 3,343 participants were included in the 25 studies ( $M = 133.7$ ). Across all participants, 56.7% were clinical, counseling, or school psychologists; 12.1% were graduate students in psychology or social work; 7.8% were psychiatrists, 4.4% were rehabilitation counselors, 3.3% were undergraduate students, 2.2% were direct support professionals, and 13.5% were miscellaneous health practitioners and mental health providers (i.e., studies did not specify a discipline). Eight studies included participants from multiple disciplines, while 17 studies included participants of only one discipline. Four studies (i.e., Hinde et al., 2021; Jamieson & Mason, 2019; Levitan & Reiss, 1983; Mason & Scior, 2004) directly compared disciplines. Levitan and Reiss (1983) compared clinical psychology and social work graduate students and found no differences between the two on their likelihood of engaging in overshadowing. Mason and Scior (2004) compared psychologists and psychiatrists and reported that psychiatrists were more likely to consider depression as a diagnosis for the client who was depicted, but there were no other differences between the two groups in their diagnostic decisions. Hinde and colleagues (2021)

and Jamieson and Mason (2019) compared many professional groups, and both studies found no differences in the likelihood of diagnostic overshadowing across groups.

**Participant-Related Variables.** Many other participant-level variables have been studied with regard to their impact on diagnostic overshadowing. Some measure of clinician experience was collected in 40% of studies. Four studies (16%) asked about general amount of experience as a psychologist or amount of experience in diagnostic work, and eight studies (32%) contained some measure of experience with the ID population. Studies varied widely in how they measured experience with ID, from asking about number of clients seen, to length of time working in a particular specialty, to using workplace as a proxy for experience with ID (e.g., a developmental center vs. a psychiatric hospital), to using a measure such as the Contact with Disabled Persons Scale (Yuker & Hurley, 1987). Two studies found a significant result related to experience. Spengler and his colleagues (1990) found that participants with more months of experience with ID were more likely to rate the person with ID as “neurotic”. Shapiro (1994) found that a greater number of patients with ID seen in the last 10 years was related to less overshadowing. However, no other study found any impact of experience on the likelihood of overshadowing.

Three studies (12%) asked about participants’ training related to ID. Two studies (8%) measured participants’ attitudes towards ID and preferences for working with patients with ID. Six studies (24%) asked clinicians about their theoretical orientation, and two studies (8%) asked about clinicians’ confidence in their diagnoses. None of these variables were related to the likelihood of overshadowing in any study.

Two studies (8%) measured participants’ level of cognitive complexity. Cognitive complexity is defined as the capacity to construe social behavior in a multidimensional way

(Spengler & Strohmer, 1994). Theoretically, greater levels of cognitive complexity should lead a clinician to ask more questions of a client, generate more hypotheses, and therefore result in more accurate judgements. In their study, Spengler and Strohmer (1994) found results in line with this hypothesis, as only clinicians with low levels of cognitive complexity engaged in diagnostic overshadowing. However, the second study to measure cognitive complexity (Jopp, 2001) used a different measure and did not find any relationship between cognitive complexity and the diagnosis given. In sum, most clinician-related variables had no impact on diagnostic overshadowing, with some inconsistent and conflicting results for experience with ID and cognitive complexity.

### **Study Methods and Procedures**

All 25 studies included in this review used the methodology of presenting some case information about a simulated client and manipulating background information to suggest the client had an IQ in either the average range or the ID range. Twenty of the studies (80%) did this by presenting a short vignette about a client, with the description of mental health symptoms ranging in length from 66 to 228 words. The remaining five studies presented case information in a variety of formats: therapy transcripts (Alford & Locke, 1984), a simulated diagnostic interview that allowed participants to ask follow-up questions (Levitan, 1984), an audiotaped description of a client that was much longer than the typical vignette (Humphreys, 1998), a longer vignette (Reidy, 1987), and one study that manipulated the length of the vignette by including a high-and low-detail condition (Thomas, 2003). Four of the five studies that used these alternative formats were dissertations rather than published papers. The published paper (Alford & Locke, 1984) found diagnostic overshadowing. Thomas (2003) found that participants

overshadowed in the low-detail condition (i.e., the traditional vignette) but not in the high-detail condition. The remaining 3 dissertations did not find diagnostic overshadowing.

The vignettes and case descriptions used depicted the following disorders: schizophrenia ( $n = 18$ ), depression ( $n = 6$ ), specific phobia ( $n = 5$ ), avoidant personality disorder ( $n = 1$ ), and unspecified “emotional problems/psychopathology” ( $n = 2$ ). Note that this total does not add up to 25 because some studies included more than one vignette. Among the schizophrenia vignettes used, the vignette presented in Reiss et al. (1982) was used in 9 studies and a modified version of this vignette was used in 3 studies, while original vignettes developed by individual authors were used in 6 studies. For specific phobia, two of the 5 vignettes used the one presented in Reiss et al. (1982) and the remaining 3 were modified versions of that vignette. The vignettes on avoidant personality disorder, depression, and unspecified psychopathology were all original vignettes developed by the authors of each study. Diagnostic overshadowing has been found with each of these disorders.

A few other variables related to the vignettes were manipulated in other studies. Four studies included multiple IQ levels (e.g., rather than just comparing average and significantly subaverage IQ, they included additional conditions to suggest borderline intellectual functioning or mild vs. moderate ID). Results of these manipulations were inconclusive. Spengler and colleagues (1990) found overshadowing with an IQ of 58, but not with IQ of 70 or 80. Seay (1991) found no difference in amount of diagnostic overshadowing between ID with mild and moderate deficits in IQ. Shapiro (1994) and DiDomenico (1995) did not specifically present the results of this manipulation.

Three studies manipulated the severity of the mental health symptoms depicted by including a high- and low-severity condition, although the results were either not significant

(Wittman, 1989) or could not be determined from the information presented (Alford & Locke, 1984; Shapiro, 1994). Three studies manipulated the order in which IQ information and mental health information was presented, but there were no differences in diagnostic overshadowing based on order of information in any of these studies.

In terms of response modality, 17 studies (68%) had participants provide diagnostic impressions by rating how likely were particular psychopathologies for the client on a 5-, 7-, or 9-point Likert scale. Two studies (8%) used open-ended responses for diagnostic impressions, three studies (12%) used both Likert ratings and open-ended responses, two (8%) manipulated the response modality by having participants randomly assigned to respond via Likert or open-ended ratings, and one study (4%) used a continuous rating scale. Among the eight studies that did not use only Likert ratings, one was a published paper (Reiss et al., 1982) and the remaining seven were dissertations. Of the two studies that manipulated the response mode, Showich (1998) found diagnostic overshadowing in both response conditions, while Jopp (2001) found diagnostic overshadowing in the Likert-only condition but not when participants first gave an open-ended response.

### **Study Quality**

Using the LEGEND criteria, four studies (16%) were given an evidence level of “Good”, 17 studies (68%) were “Lesser quality”, and four studies (16%) were rated as “Not valid, reliable, or applicable”. See Table 1 for evidence levels of each study. Based on these ratings, the overall quality of the evidence was graded as “Low” using LEGEND’s “Grading the Body of Evidence” tool.

## Discussion

This study was the first review paper on diagnostic overshadowing since 2001, and the first-ever review paper on this topic to include unpublished doctoral dissertations. The main aim of this review was to determine the current state of the diagnostic overshadowing literature, including recent publications and unpublished dissertations.

Our first research question asked about whether diagnostic overshadowing appears to still occur based on recent literature. In fact, there are inconsistencies in this result across all of the literature, regardless of when it was published. Overall, across all studies included in this review, 44% found diagnostic overshadowing in all conditions in which they expected to find it, while 32% did not find any overshadowing, and 24% found mixed results with overshadowing in some but not all of the expected conditions. Diagnostic overshadowing is often written about as something that is definitively occurring – yet these results suggest that may not be true, as there are quite a few studies where diagnostic overshadowing has not been found. Studies that have been published since the last review in 2001 showed a similar pattern, with half finding overshadowing in at least some conditions and half finding no overshadowing. Therefore, results about the presence of diagnostic overshadowing continue to be inconsistent.

The second research question asked about the methodologies used in diagnostic overshadowing studies and whether there have been any changes over time. Overall, 80% of studies included in this review used short vignettes – with many of those being the exact same or very similar vignettes – and 68% of studies using a Likert scale response format. There have not been changes over time, as all of the published papers since the 2001 review have used this short vignette/Likert rating format. Concerns about this methodology persist, especially given the fact that four of the five studies that provided more detailed case information did not find

overshadowing. The amount of information presented in the short vignettes is far less than what would be available in a real-life evaluation of a client. It is thus possible that when participants receive more information, similar to what they would get in a real diagnostic situation, they are less likely to overshadow. Likert scale ratings, which ask clinicians to rate the likelihood that a client has a particular disorder or problem, are also different than the task clinicians are asked to do in real-life situations, where they need to make a diagnosis. It is difficult to know whether these Likert scale ratings would correspond to a diagnosis being made or not. Last, more than half of vignettes used in this research have depicted schizophrenia, which likely has a more severe set of symptoms than other diagnoses (e.g., depression, anxiety), and is less likely to be encountered in clinical practice. All of this evidence suggests the possibility that the presence of diagnostic overshadowing depends on how it is measured, and future studies with different methodologies will be critical to determining that.

The third research question in this study asked which variables are related to diagnostic overshadowing. Overall, most of the studies included in this review used psychologists and psychology graduate students as participants, but diagnostic overshadowing has also been shown in psychiatrists, social workers, rehabilitation counselors, and direct service providers. Amount of experience in general and amount of experience with ID do not contribute to overshadowing in most studies, with two exceptions where more experience with ID was related to less overshadowing. Clinicians' attitudes towards ID, theoretical orientation, and confidence in their diagnoses were not related to the likelihood of overshadowing. Cognitive complexity has mixed results, with one study showing it was related to less overshadowing and one study showing no effect.



The final research question asked about the quality of the literature on diagnostic overshadowing. Based on the LEGEND criteria used in this review, the quality of the overall body of evidence is considered Low. Some common quality concerns with studies in this review included the age of the literature – with only 3 studies being conducted after the DSM-5 was released – and the analogue methodology used, which may limit applicability to real life. Although case reports were excluded from this review, the authors are only aware of 4 published case reports that are related to diagnostic overshadowing in which ID overshadowed a mental health condition. These reports describe cases in which co-occurring psychological disorders were overlooked or missed in patients with ID but were later diagnosed and successfully treated. There is also one published focus group study that asks people with ID and their families about experiences accessing care in emergency departments, which found anecdotal evidence for diagnostic overshadowing (Weiss et al., 2009). Therefore, outside of the analogue methodology used in most studies, there is very limited evidence for the existence of diagnostic overshadowing in clinical practice.

There were also concerns about the statistics used in many of the papers included in this review. Reporting of statistics was very limited in many of the older papers and prevented a meta-analysis from being conducted. Even among papers that did report statistics, many of the statistical methods used were inappropriate for the research questions or the conclusions the authors drew. Another issue that led to low quality ratings was small sample sizes per cell and convenience samples in many studies.

### **Future Directions**

The lower quality of many of the studies included in this review and the similarity of methodologies across studies, along with the inconsistency in results, highlights the need for

continued research in this area. Future research should focus on increasing the real-life applicability of studies by providing more information about the case and asking clinicians to make a diagnosis rather than using a Likert scale. Videos and simulated patient consults (e.g., Schulman et al., 1999) and retrospective reviews (e.g., Druss et al., 2000) have been used to examine other types of clinical biases in the medical literature.

It will also be useful to study the variables and conditions under which diagnostic overshadowing is most likely to occur. For instance, studying professional groups other than psychologists and presenting case information about diagnoses that are more common than schizophrenia would be useful. The Disability Rights Commission (2006) has suggested that the presence of ID overshadows physical as well as mental health conditions, so there may be utility in expanding the kinds of diagnoses that are studied in this research.

One study (Wood & Tracey, 2009), which did not meet the criteria to be included in this review, found evidence that brief instruction about diagnostic overshadowing and feedback on diagnostic decisions reduced the likelihood of overshadowing. More research on education or training that can reduce diagnostic overshadowing is an important next step. Similarly, this review found evidence that treatment overshadowing is more common than diagnostic overshadowing. Education and training should focus not only on making accurate diagnoses but disseminating information about the effectiveness and appropriateness of psychological treatments for clients with ID.

## **Conclusions**

Diagnostic overshadowing is frequently cited as a concern for dual diagnosis cases. However, research on the presence of this bias has slowed significantly in the last 20 years. It is possible that within this time, increases in our understanding of mental health and dual diagnosis

have led to a reduction in diagnostic overshadowing. It is important to understand how prevalent diagnostic overshadowing is, as this impacts next steps for the field in improving access to mental health diagnoses and treatments in people with ID. This review is significant as the diagnostic overshadowing research has not been compiled into a review since 2001 and has never included dissertations. This review found mixed results for the presence of diagnostic overshadowing, and more research is warranted to answer the remaining questions about this phenomenon.

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**Table 1. Studies on Diagnostic Overshadowing and Intellectual Disability**

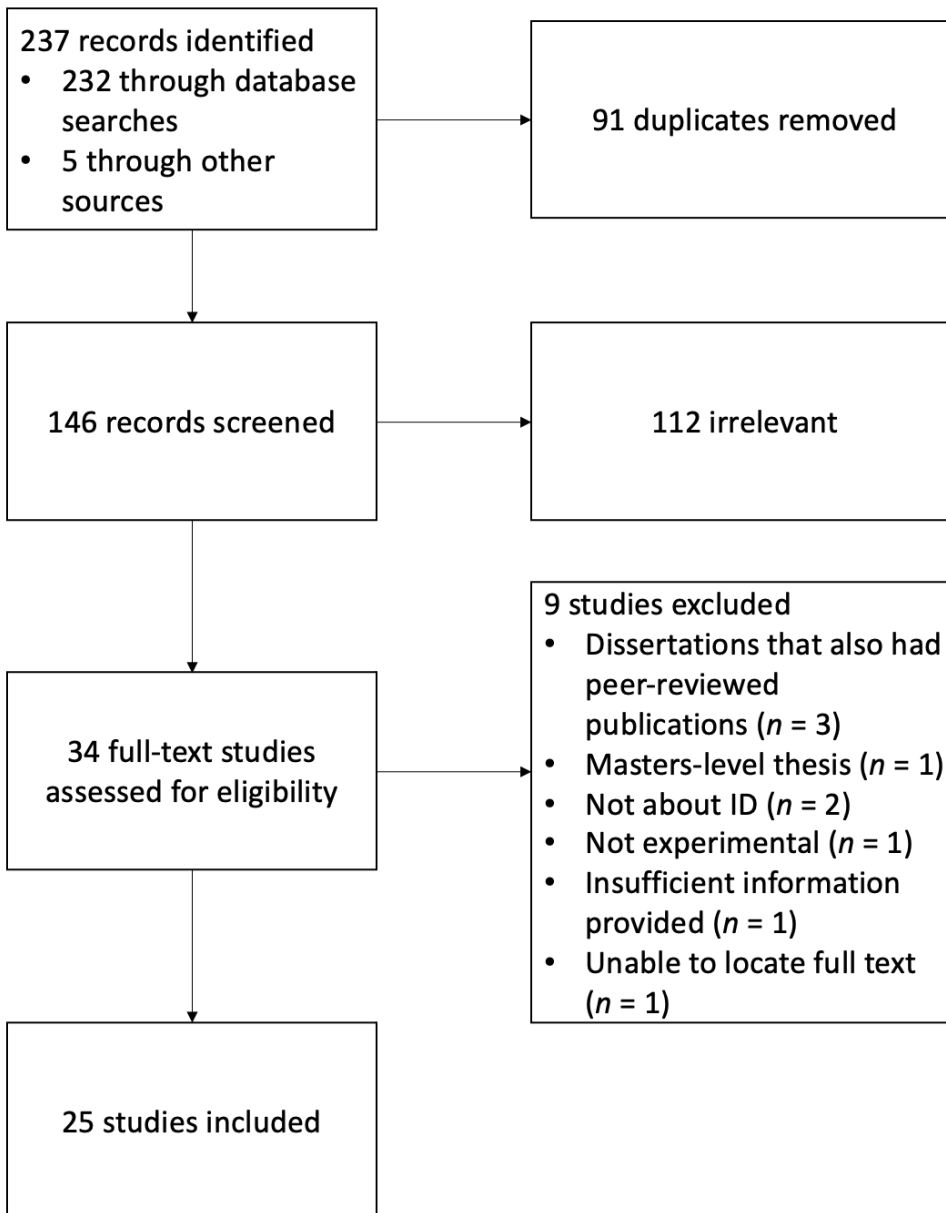
Authors & year	Method used	Sample	Vignette used/Disorder depicted	Diagnostic overshadowing found?	Other variables examined	Relevant results	LEGEND Evidence Level
<b>Peer-reviewed, published papers</b>							
Reiss et al., 1982	Experiment 1: short vignette & open-ended questions + Likert ratings  Experiment 2: short vignette & Likert ratings	Experiment 1: Psychologists ( $n = 48$ )  Experiment 2: Clinical or school psychologists ( $n = 53$ )	Experiment 1: specific phobia  Experiment 2: schizophrenia and avoidant personality disorder	Experiment 1: Yes  Experiment 2: Yes	Experiment 1: ID condition, average IQ condition, and alcoholism condition	Experiment 1: overshadowing effect is specific to ID for some ratings, but overshadowing found for alcoholism and ID for others	Lesser quality
Reiss & Szyszko, 1983	Short vignette & Likert ratings	Psychologists working in a developmental center ( $n = 29$ ), mental health hospital ( $n = 28$ ), or clinical psychology graduate students ( $n = 27$ )	Schizophrenia vignette from Reiss et al., 1982	Yes	Level of DD experience (high, moderate, low)	Psychologists at mental health facilities made better diagnoses of schizophrenia, but all groups overshadowed to the same degree.	Lesser quality
Levitan & Reiss, 1983	Short vignette & Likert ratings	Social work ( $n = 53$ ) & clinical psychology ( $n = 23$ ) graduate students	Specific phobia vignette from Reiss et al., 1982	Yes	Psychology vs. social work	No differences between disciplines	Lesser quality
Alford & Locke, 1984	Therapy transcripts & Likert ratings	Psychologists ( $n = 372$ )	Therapy transcripts portraying 2 severities of psychopathology, does not state which disorders are depicted	Yes, ID condition rated significantly lower on severity of psychopathology	Theoretical orientation; level of DD experience; how important clinicians felt IQ scores were in their diagnosis	Overshadowing occurred regardless of orientation. No results on experience presented. Clinicians attributed IQ scores as being more important when client had ID.	Not valid, reliable, or applicable
Spengler et al., 1990	Short vignette & Likert ratings	Rehabilitation counselors ( $n = 57$ )	Schizophrenia vignette from Reiss et al., 1982	In some conditions only	4 IQ conditions: 58, 70, 80, and 108; experience with DD measured in a few ways	Diagnostic overshadowing found for IQ of 58 condition, but not for IQ of 70 or 80. Experience measured by months in the field related to	Lesser quality

						less diagnostic overshadowing. Experience measured by number of clients with ID not significant.	
Spengler & Strohmer, 1994	Short vignette & Likert ratings	Members of APA Division 17 – Counseling Psychology ( <i>n</i> = 119)	Schizophrenia vignette from Reiss et al., 1982	In some conditions only	Clinicians’ level of cognitive complexity; counselor preference for working with ID	Overshadowing was found in counselors with lower cognitive complexity. Preference for working with clients with ID did not impact overshadowing	Good quality
Garner et al., 1994	Short vignette & Likert ratings	Rehabilitation counselors ( <i>n</i> = 89)	Schizophrenia vignette from Reiss et al., 1982	Yes	Compared different disorders: ID, TBI, hearing impairment, epilepsy, no disability	Overshadowing found for ID, TBI, and epilepsy, but not hearing impairment	Lesser quality
Sayal & Bernard, 1998	Short vignette & Likert ratings	Trainees ( <i>n</i> = 58), does not specify discipline	Author-developed vignette portraying “psychotic depression”	No, the ID condition had higher ratings of psychotic depression than average IQ	None	N/A	Lesser quality
Mason & Scior, 2004	Short vignette & Likert ratings	Psychiatrists ( <i>n</i> = 90) & psychologists ( <i>n</i> = 133) working in the ID field	Author-developed vignette portraying “emotional problems”	Yes	Psychiatrist vs. psychologists	Psychiatrists showed more diagnostic overshadowing on one item	Lesser quality
Jamieson & Mason, 2019	Short vignette & Likert ratings	<i>n</i> = 87 health practitioners from many disciplines	Author-developed vignette portraying schizophrenia	No	Asked about training related to ID mental health and willingness to treat clients with ID	65% of participants rated their training in ID mental health as neutral or limited, 28% said they would	Lesser quality

						prefer not to treat clients with ID	
Hinde et al., 2021	Short vignette & Likert ratings	Bangladeshi health practitioners from many disciplines ( <i>n</i> = 243)	Same as Jamieson & Mason, 2019	Yes	Compared different professions	No effect of profession on likelihood of overshadowing	Lesser quality
<b>Unpublished dissertations</b>							
Levitan, 1983	Simulated diagnostic interview, open-ended questions about diagnosis and treatment recommendations	Licensed psychologists who made diagnostic decisions as a part of their job for at least 1 year ( <i>n</i> = 48)	Author-developed vignettes portraying schizophrenia or depression	No, but a reverse effect was found in the schizophrenia condition where participants were less likely to diagnose ID	Number, type, and order of questions asked by psychologists	No significant differences in follow-up questions asked between IQ conditions	Lesser quality
Reidy, 1987	Case descriptions, open-ended diagnosis question, Likert ratings of treatments	Practicing psychologists ( <i>n</i> = 76) and doctoral students in clinical and counseling psychology ( <i>n</i> = 49)	Expanded case histories based on schizophrenia and specific phobia vignettes from Reiss et al., 1982	No	Instructed to use DSM-3 or personally developed diagnostic criteria	No overshadowing found with either instruction	Lesser quality
Wittman, 1989	Short vignette & Likert ratings	Practicing psychologists ( <i>n</i> = 109)	Schizophrenia vignette from Reiss et al., 1982 with modifications	Yes	Manipulated order of presenting IQ and background information; manipulated severity of psychological disorder described (low vs. high)	Neither order nor severity affected likelihood of overshadowing	Lesser quality
Seay, 1991	Short vignette & Likert ratings	Psychologists working in private practice, state schools for ID, or “community mental health-mental retardation centers” ( <i>n</i> = 116)	Author-developed vignette portraying depression	Yes	3 IQ conditions: 95, 65, or 50	Effect was the same for IQ of 65 and 50; no differences based on psychologist’s workplace	Lesser quality

Hunter, 1994	Short vignette & Likert ratings	Mental health professionals ( $n = 120$ )	Schizophrenia vignette from Reiss et al., 1982	No	Manipulated order of IQ information (beginning, middle, or end); Contact with Disabled Persons Scale	No differences in overshadowing based on order of IQ information; amount of contact did not impact likelihood of overshadowing	Not valid, reliable, or applicable
Shapiro, 1994	Short vignettes with open-ended questions about diagnostic impressions & some Likert ratings	Licensed psychologists ( $n = 198$ ), psychiatrists ( $n = 166$ )	Author-developed vignettes portraying schizophrenia or depression	In some conditions only	12 case descriptions manipulating: schizophrenia vs. MDD, high vs. low severity, IQ of 102, 64, or 49	More experience with ID was related to less overshadowing; more experience with schizophrenia was related to more accurate schizophrenia diagnoses	Lesser quality
DiDomenico, 1995	Short vignettes with open-ended questions & Likert ratings	Graduate students in clinical psychology ( $n = 142$ )	Author-developed vignettes portraying schizophrenia or depression	In some conditions only	Manipulated: IQ of 100, 63, or 45; depression vs. schizophrenia vs. no disorder; alternative explanation for behavior provided or not	Unable to determine results of specific manipulations based on information presented	Not valid, reliable, or applicable
Humphreys, 1998	Audiotaped description of a client (longer than traditional vignettes) with Likert ratings	Direct care staff ( $n = 74$ )	Author-developed vignettes portraying depression	No	Vignettes either described onset of disorder (change in depressive symptoms) or not	More likely to diagnose depression when onset information was included	Lesser quality
Moreno, 1998	Short vignette & Likert ratings	Advanced graduate students in psychology ( $n = 54$ ), 17 were from University Affiliated Programs	Schizophrenia vignette from Reiss et al., 1982 with modifications	Yes	Did specific training in DD through a University Affiliated Program reduce overshadowing?	No differences based on training programs	Lesser quality
Showich, 1998	Short vignette & either Likert scale or asked	Psychologists ( $n = 128$ )	Schizophrenia vignette from Reiss et al., 1982	Yes	Likert scale vs. DSM diagnosis	Psychologists less likely to diagnose schizophrenia in the	Good quality

	to provide a DSM diagnosis					DSM condition regardless of IQ	
Jopp, 2001	Short vignette & Likert ratings or DSM diagnosis and Likert ratings	Licensed clinical psychologists ( <i>n</i> = 89)	Schizophrenia vignette from Reiss et al., 1982	Only in the Likert condition; not in the DSM diagnosis + Likert condition	Need for Cognition Scale; researcher-developed scale on cognitive complexity	Cognitive complexity was not related to diagnostic accuracy; most participants recognized some form of psychopathology, but were less accurate in the ID condition	Good quality
Thomas, 2003	High and low-detail vignettes & Likert ratings	Psychologists ( <i>n</i> = 39) and psychiatrists ( <i>n</i> = 5) specializing in either ID or adult mental health	Schizophrenia vignette from Reiss et al., 1982 used for low detail condition; author-developed vignette depicting schizophrenia used for high-detail condition	Only in the low detail condition	Experience	Experience was unrelated to diagnostic overshadowing	Lesser quality
Browning, 2013	Short vignette & Likert ratings	School psychologists ( <i>n</i> = 310)	Specific phobia vignette from Reiss et al., 1982 with modifications	No	3 conditions: average IQ, nonspecific ID (IQ = 58), Down syndrome (IQ = 58); Intellectual Disability Attitude Inventory	Attitudes were not related to overshadowing	Good quality
Pickard, 2017	Short vignette & continuous rating scale	Undergraduate students in a general psychology course ( <i>n</i> = 111)	Specific phobia vignette from Reiss et al., 1982 with modifications	No	Essentialism Belief Scale; counterbalanced the order of information presented	Effects of essentialism and order were not examined	Not valid, reliable, or applicable

**Figure 1***Flow Chart of Study Selection Process*



237 records identified

- 232 through database searches
- 5 through other sources

91 duplicates removed

146 records screened

112 irrelevant

34 full-text studies  
assessed for eligibility

9 studies excluded

- Dissertations that also had peer-reviewed publications ( $n = 3$ )
- Masters-level thesis ( $n = 1$ )
- Not about ID ( $n = 2$ )
- Not experimental ( $n = 1$ )
- Insufficient information provided ( $n = 1$ )
- Unable to locate full text ( $n = 1$ )

25 studies included