

# Investigating the Link between Unemployment and Disability: Lexically Ambiguous Words and Fixed Formulaic Sequences in Job Ads for Academic Reference Librarians

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## Abstract

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Informed by an overview of job advertisement research published during the past two decades, the purpose of this study is to address disability and employment in library and information science by investigating job ads for academic library reference positions for their written language comprehension qualities. With concerns for rising unemployment rates of qualified, college educated individuals with disabilities including Autism Spectrum Disorders (ASD) and the need to increase diversity in the workforce, we conducted a multi-step content analysis of all academic library reference position advertisements (43) published by libraries in the 12 member states of a Midwestern U.S. regional library association. The theoretical lens for our study draws on the field of linguistics and particularly two important components of discourse, the reading of 1) words and sentences containing lexically ambiguous words and 2) fixed formulaic sequences. From the identified reference position job ads (148 pages, 16,724 words), 79 passages were coded as problematic in the announcement areas of 1) general position information (23), 2) duty and/or responsibility (34), and 3) qualifications (22). Passages were organized into 32 categorical examples of lexically ambiguous words and 15 examples of formulaic sequences that do not, in our view, have universal meaning and can lead to uncertainty and misunderstandings among potential applicants with and without intellectual disabilities. Examples of clear, accurate language to replace problematic language are presented. While this study focuses on job ads in the U.S., it has international implications and relevance as ASD and related disabilities exist worldwide.

**Keywords:** Autism Spectrum Disorder; disability unemployment; job ad; reference librarian; semantic ambiguity

**Publication Type:** research article

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## Definitions of Terms

### Job Advertisement Research

While job advertisement research is known typically as *job ad research* and uses the term *job ad*, we use some additional terms in this study to signify our one and only job ad unit of analysis: *job advertisement*; *job descriptions*; *professional position description*; and *position*

*announcement*. Consistent with the term *job ad*, we use *professional position description* and/or *position announcement* to denote the graduate level education and advanced information and technology responsibilities librarians have in assisting other professionals and the public. Position descriptions and announcements, regardless of terms preferred and used by institutions, often comply with institutional employment mandates such as section requirements and word limits prescribed by human resources departments. Positions description, position announcement, job ad, job advertisements, job description, professional position description, and position announcement are treated as one and the same unit for analysis in our research and are terms (titles) given to the written, formal declaration of a given job appointment.

### Problematic Language

While education for professional librarians addresses concepts pertaining to future employment, there are myriad terms, rather than a single set of terminology, used by authors of job ads in describing desired professional work. According to Collier and Zhang (2016), problematic language in job descriptions includes words with multiple meaning, which is problematic for attracting a diverse application pool. Our use of the term *problematic language* is used to describe terms with multiple meanings in job ads.

### Introduction

Employers of librarians and information professionals are responsible for developing professional ranks comprised of qualified individuals who are as diverse as the communities they serve. While there are many populations that can be considered diverse in one way or another, Cooke (2018) highlights diverse groups that are not always recognized including individuals diagnosed with Autism Spectrum Disorder (ASD). Cooke cautions that individuals with ASD are “potentially invisible, and increasingly prevalent . . . and on the rise” (p. 31). According to the American Psychiatric Association (2013), ASD is described as “persistent deficits in social communication and social interaction across multiple contexts” (para. 1) that can be diagnosed with or without accompanying intellectual impairment and with or without accompanying language impairment. While there is no medical test for ASD, a lifelong developmental disability, physicians in the U.S. use criteria in the Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition (DSM-5, American Psychiatric Association, 2013) to diagnose ASD.

Individuals with ASD should be considered potential employees. Potential employers and co-workers should acknowledge DSM-5 (APA, 2013) diagnostic criteria. They should also learn about individuals with ASD from first-hand experiences. In the case of the three authors of this article, we utilize our combined knowledge of ASD from sources of authority and experiences: one author who personally lives the ASD experience, and two authors who know ASD based on their roles as parent, therapist, college educators, and college classmates of individuals with ASD. We observe that high-functioning individuals with ASD may experience sensory processing difficulties sometimes manifested in lack of tolerance for such sensory input as certain tastes or smells, loud noise, bright lights, or the texture sensitivities (e.g., foods or clothing). They may have difficulties initiating social interactions such as making small talk, understanding or empathizing with others’ perspectives, and understanding social relationships necessary for partnerships or marriage. Individuals with ASD may have difficulties understanding non-verbal communication such as facial expressions, gestures, and eye contact. They sometimes develop some atypical speech patterns, frequently have preoccupation with objects and/or topics, and may develop rituals or habits such as insisting on a certain order for putting on clothes or making a bed. Many

individuals with ASD are resistant to change (APA, 2013).

Our experiential knowledge tells us that although observable manifestations of ASD stem from a human neurological condition, with positive behavioral support by knowledgeable and caring others, high-functioning individuals with ASD can successfully modify their own behavior, complete undergraduate and graduate degrees, and function as members of social groups necessary for professional employment (Carr, 2007; Carr & Carlson, 1993; Carr, Dunlap, Turnbull, Sailor, Anderson, & Fox, 2002; Carr, Levin, McConnachie, Carlson, Kemp, Smith, 1995; Lund, 2018). We observe, as Grandin (2011) notes based on her personal life with ASD, there are advantages that individuals with ASD have including being detailed oriented, logical thinkers; having abundant long-term memory; the ability to resist peer pressure; being loyal, reliable, honest, and non-judgmental; and the ability to focus as effective participants within an organized system of activity. Further, as Grandin (2011) points out, we observe that individuals with ASD are able to think freely, creatively and outside the box. These advantages that individuals with ASD have are characteristics that employers and co-workers typically seek in ideal employees.

To determine what enables individuals with ASD to function successfully in society, Dow (1999) investigated societal achievement of a technology of positive behavioral support (Horner et al., 1990) for individuals with ASD. Dow asserted that key people (e.g., family members, community members, and employers) within an effective information system who support individuals with ASD should share the common purpose to control risk factors that occur at an early age and result in later outcomes of isolation, idle time, and frustration without meaningful employment and adequate living conditions. While many individuals with ASD gain academic knowledge and learn to modulate communication, social skills, and problem-solving deficits through worthwhile educational experiences, they, even as college graduates, are nevertheless passed over by employers.

According to Livermore and Honeycutt (2015) and Carley (2016), U.S. unemployment of individuals with disabilities is on the rise, including unemployment of high-functioning individuals with ASD. Roux et al. (2015) report that nearly 50,000 of those individuals currently diagnosed with high-functioning autism graduate from high school each year. While many individuals with ASD are likely to be underemployed, about 60% of individuals with high-functioning autism who graduate from high school and apply for jobs are unemployed (Kirchner & Dziobek, 2014; Howlin, 2013). Approximately 25% of all individuals with autism attend college, and about 60% of these individuals (or 15% of all individuals with autism) graduate with at least a bachelor's degree. Individuals with neurotypical development, on the other hand, have four-year graduation rate of only about 40% (Frank et al., 2018). This indicates both that individuals with autism are more likely to complete their advanced education than neurotypical peers and that there is a large number of qualified college graduates with autism. These statistics, together with our observations, suggest that many if not all high-functioning individuals with ASD who are college-educated and qualified as professional librarians are at high risk of unemployment. Recognition of communication difficulties in interpreting ambiguous words and frequently used library jargon may, in part, explain and suggest alternative wording for incoherent job ads. Coherently written job ads will greatly benefit all readers, including individuals with ASD and other intellectual difficulties as they seek professional employment.

## Problem Statement

Language and types of words used in job ads have been identified as problematic in attracting a diverse applicant pool, as job posts are a candidate's first interaction with employers (Collier & Zhang, 2016). The researchers' assumption is that, although educated as professional librarians, when qualified individuals who experience communication challenges, such as those with ASD, read job advertisements that use ambiguous words and include phrases with multiple meanings without a context, it is often difficult, if not impossible, to comprehend what is expected, or preferred, by an employer. This can lead to uncertainty and confusion resulting in preparation of unsatisfactory application materials and/or inadequate interview experiences, or lead to a potential applicant's decision to avoid the application process altogether given high risk of failure. Our focus on language and communication in job advertisements illuminates the overall need for job ad authors to strive for clarity, not only for the benefit of individuals with ASD, but for all readers of job ads. Our focus also enlightens employers of the widespread problem that workforce diversity is left too often to chance, rather than by deliberate design as articulated in this statement,

Diversity ideas, ideals, and considerations . . . should be seamlessly built into our curriculum, work environment, decision making, professional choices and interpersonal relationships in both the workplace and academia. They should be there from the start, not thrown in for reasons of trendiness and popularity at a moment of need; they should be part of foundation, part of core. They should be there by design, not by chance. (Dali & Caidi, 2017, para. 4)

Addressing problematic language in job ads, particularly in library job ads, is timely because as Jaeger (2018) points out, achievement of work force diversity is threatened by recent governmental actions that deny the civil rights of people with disabilities. Our study responds to Jaeger's (2018) call to the library profession to expand their support and advocacy by "thinking field-wide about ways to improve connections between libraries and disabled people" (p. 59).

## Research Questions

Designed as a qualitative content analysis, we began this study with the proposition that when lexical ambiguity and fixed formulaic sequences are present as key components in sentence formation in job ads, then job ad discourse pertaining to employment tasks and work competencies becomes confusing and ineffective in accurately conveying professional employment tasks and work. To investigate job ads from the point of view of linguistics, we selected job ads for professional academic librarian reference positions in order to have common language throughout the sample of job ads collected. We asked three questions of the data collected:

- 1) What are problematic words or word combinations with multiple meanings (lexically ambiguous) used and primarily understood by library insiders in academic reference librarian position announcements?
- 2) What are problematic sequences of words (formulaic sequences) that appear to be used as verbiage or jargon used and primarily understood by library insiders in academic reference librarian position announcements?

- 3) How can problematic language be clearly written and potentially comprehensible to qualified individuals with ASD who are challenged to make meanings of words in academic reference librarian position announcements?

### Literature Review

Job ads are studied with a variety of approaches to understand and explain tasks and work activities. According to Chandler (2007) and Hatch (1997), researchers have analyzed job descriptions as a whole to determine what a job is and what is necessary for carrying out the job. Our review of publications utilizing job descriptions reveals that the holistic approach to analysis of the past resulted in a substantial body of research designed to investigate professional job advertisements, including librarian job announcements, to determine what a job is and to identify ideal job competencies. For example, Whisenant, Miller, and Pedersen (2005) studied job descriptions for interscholastic athletic directors used by school districts to identify forms of gender bias that might deny women opportunities to complete for positions. In a content analysis, Park and Lu (2009) investigated roles and competencies sought for metadata professionals. Park, Lu, and Marrion (2009) studied position descriptions to assess the current state of responsibilities and skills required for cataloging professionals. Barison and Santos (2011) conducted a comparative review of literature and analysis of job ad descriptions to determine competencies for Building Information Modeling, a 3D model-based process used by architecture, engineering, and construction professionals in buildings construction. Sutton (2011) used job ads to identify which competencies should be taught in graduate library and information studies programs to prepare students to become electronic resources librarians. Hoffman and Bresciani (2012), used position descriptions to identify knowledge, skills, and disposition competencies expected of college student affairs professionals. Xia and Wang (2014) examined social science data librarian professional job announcements to identify trends in professional practices.

The benefit of the past holistic perspective is that it leads to hierarchies of meaning to explain tasks or work. If the reader understands the definition of the terms used in position descriptions, then they can understand authors' intended meaning. The problem is that duties typically assigned in various library positions, such as circulation, electronic records, or reference, are not necessarily unique to that position. In librarian position descriptions, terms are used interchangeably and often duties overlap with several positions in the library. This necessitates the need for job ad research with a new focus on language as an important component of discourse in librarian employment.

The present research is not the first to investigate the ramifications of language in job descriptions. Many recent publications have focused on how word choice and other linguistic elements influence the likelihood of certain populations to understand what is said and, in the case of job descriptions, apply for a job (Born & Taris, 2010; Burroughs, 2017; Gaucher, Friesen, & Kay, 2011; Horvath & Sczesny, 2016; Samek, 2015). Most studies focus on gendered wording and how word choice sustains inequality in employment (possibly subconsciously) by suggesting that a position is more suited for one gender over another. For instance, a position description may include language such as *individualistic*, *assertive*, or *caring* that are associated with one gendered identity (Gaucher, Friesen, & Kay, 2011). Other descriptions may use gendered words like *fireman* and *waiter* or descriptions that are biased simply by the association readers may have with the job title, such as *engineer* and *librarian*. In fact, even using the wording *s/he* is discouraged in favor of *they* because of implications for individuals who do not define themselves according to the traditional gender dichotomy (Perlman, 2017). The job description authors'

intent may not be discriminatory, but their own context is different from that of the reader, who may perceive the language as discriminatory.

This discriminatory effect in job descriptions extends to general diversity of a profession. Wille and Derous (2017) found that word choice in job descriptions significantly affects application decisions among ethnic minorities, potentially more so than the job itself. This study points out that the effect is particularly profound when the search committee writing the descriptions lacks diversity. Often the problem of attracting diverse applicants is a hidden, innate bias in language use by the homogeneous search committee (Wille & Derous, 2017). Schmaling, Blume, and Baker (2017) state that faculty position advertisements have a strong impact on the likelihood of marginalized populations to apply for the position. Applicants, at some level of semantic processing, recognize or are affected by biases in the use of language or arrangement of content. This suggests that the struggles of a profession to attract qualified, diverse applicants starts with how the job is described - the very first exposure a potential applicant has to the position opening.

Research by Krome (2016) and Vervecken, Hannover, and Wolter (2013) indicates that modifying the language of descriptions positively influences the likelihood of the reader to proceed (in applying for a job, participating in a program, etc.). Changing gendered wording from male-dominant language (e.g., “he” pronouns) to female-dominant language (e.g., “she” pronouns), for instance, increases the rate in which women participate in STEM-related activities (Krome, 2016). By creating gender-fair job descriptions (e.g., “they” pronouns), Vervecken, Hannover, and Wolter (2013) found that children’s perceptions of and interest in male-dominated professions could be increased in females while remaining high among males. This suggests it is possible to modify position descriptions to be accommodating to all qualified populations.

This body of evidence indicates that search committees spend a lot of time thinking about how they want to describe a job without thinking about how others would describe the job or how readers will perceive biases in the language employed. The finding that hiring bias can be neutralized to some degree with changes in the language used in the job description is of particular interest to our study. This study examines bias from a slightly different angle from those discussed in this review, focusing instead on discriminatory language-types that impact individuals with social-communicative disabilities such as ASD and all other readers with and without intellectual disabilities.

## Theoretical Framework

The theoretical lens for our study draws on the field of linguistics and two important components of discourse, particularly reading of words and sentences and language comprehension: lexical ambiguity and fixed formulaic sequences. According to Miyake, Just and Carpenter (1994) “the working memory capacity of individual readers affects their ability to maintain various representations in the process of understanding a sentence” (p. 175). Mason and Just (2007) assert that “When an individual encounters a word with multiple meanings, as is the case with lexically ambiguous words . . . one meaning must be selected while somehow retaining the possibility of using the alternative meaning” (p. 115). Neuroimaging studies are used to investigate brain activation differences as a function of working memory capacity and find “that participants with lower skills have more activation” (Reichle et al., 2000, p. 276). According to Beeman (1998), brain processes most likely occur in areas specialized for maintaining semantic interpretations of sentences such as the inferior frontal gyrus. In position announcements, many

words are likely semantic ambiguities that must be processed and understood in context, but certain words are more likely to be understood in a way that more closely aligns to the author's intention than others are. Using the concept of lexically ambiguous words, in this study, we identify language that has meaning in specific contexts and is therefore likely to cause increased brain function due to difficulty in selection of correct meanings.

According to Wray (2002), the definition of a formulaic sequence is a “sequence, continuous or discontinuous, or words or other elements, which is, or appears to be, prefabricated: This is, stored and retrieved whole from memory at the time of use, rather than being subject to generation or analysis by the language grammar” (p. 9). An investigation by Larner (2014) resulted in classifications of formulaic sequence termed “clichés, idioms, everyday expressions, sayings, proverbs, similes, and other prepositional phrases” (p. 7). Using Larner's concept of fixed formulaic sequences, we identify sequences of words that appear to be likely prefabricated verbiage, or jargon, used and primarily understood by some insiders in librarianship.

### Data Collection and Analysis

Data collection and analysis involved a research team, began with a local pilot study, and resulted in a multi-state exploration of academic library reference positions. Our pilot study confirmed our shared, general observation that library position announcements, in particular those for academic library reference positions, include lexically ambiguous words and/or formulaic sequences that were likely to occur frequently in the text of library position announcements. To determine whether the problem language related to academic reference work revealed in the pilot study data was only a regional practice or a widespread practice, we expanded the data collection and analysis to a larger geographic region in this present study.

### Research team

A team of three researchers, each with education about and personal experiences with individuals with ASD, undertook data collection and analysis. To address concerns pertaining to data interpretation bias (Beck & Manuel, 2008), the research team was comprised of two individuals without and one individual with ASD. Our knowledge of ASD, as well as graduate and post-graduate education in library and information studies, brought us together for this study and enabled us to scrutinize the data from the perspectives of language, communication, and librarianship. Two team members who are recent graduates of master's programs brought fresh perspective to word choices in job ads.

### Pilot study

This present study began as a pilot study of all available (any type) library position announcements (n=15) with any mention of academic reference work that were published from December 2016 through March 2017 by seven Midwestern universities and three community and technical colleges (all in the same state). From 43 pages (comprised of 6,731) words of narrative description, we identified 20 words and 41 (out of 429) phrases directly related to required knowledge and abilities of applicants that were likely to cause comprehension challenges for the reader.

## Expanded data collection

The present study examined all academic library reference position advertisements (n=43) published from May to July 2017 by libraries in the 12 member states of a Midwestern U.S. regional library association.

## Multi-step data analysis

The research team's initial foci was not a priori codes but the initial research question, which according to White and Marsh (2006) is optimal in qualitative content analysis. Team members interacted and conferred with each other during the phases of this research. Team members followed a multi-step, integrated analytic inductive approach adapted from the work of Krathwohl (1998). First, team members read all the position announcements to holistically examine each. Then team members re-read the data, marking all direct responses to the research questions. Looking for patterns in the responses, direct responses were read again and organized in categories that emerged from the data. Each response was sorted into the appropriate category using words directly quoted from the position description text. The results were reviewed looking for overlap and redundancy, and to refine and revise the category titles. From the position announcement text, instances of verbatim narrative were selected to illustrate categories.

## Findings

From 148 pages (comprised of 16,724 words) of narrative job announcements, we identified 118 words and 79 passages that contained problematic language articulated in position announcement sections including 1) general position information section (23 passages); 2) duty and/or responsibility section (34 passages); and 3) qualifications section (22 passages). Within the selected passages, 76 items were identified as unique terms used to indicate reference work. Thirty of those 76 unique terms, words, or word combinations (or 40%), were identified as having multiple meanings, and therefore universally problematic throughout the dataset. These were grouped into 15 categories (Table 1) of which seven categories matched the pilot study and eight categories were new categories in the present study that did not appear in the initial pilot study. Quotes that illustrate each category also appear in Table 1.

Table 1. Categories of Problematic Language (Lexical Ambiguity) in Position Description (n=92)

Category (15)	Number	Illustrative Quote
Liaison*	17	Serves as a library liaison to academic departments, divisions, or campuses
Library Instruction	14	Participate in instructional activities
Collection Development*	11	Maintain effective collections in the medical and health science disciplines
Leadership*	8	Leads and serves on library committees



Interlibrary Loan	8	Oversight of interlibrary loan functions and service technologies
Advanced Reference Assistance*	7	Provide specialized reference, advanced reference assistance and library instruction
Outreach	5	Participating in various outreach activities to build campus partnerships
Information Literacy	5	Information literacy focused curriculum
Supervision*	4	Overseeing patron work station
Reference Service	4	Provides in-person reference services
Policy Formation	3	Demonstrates engagement with ACRL framework
Assessment of Service*	3	Participates in the assessment of library services
Programming	1	Collaborates on library programming and college initiatives
Patron Service*	1	Position requires face-to-face and online duties with a patron service perspective
Technology Support	1	Technology literacy training

*Note.* Problematic words are defined as words with multiple meanings. \* Indicates categories found in the pilot study.

*Note.* Multi-word combinations are defined as an instance when a single meaning is attached to more than one word.

From the 79 passages, 32 unique formulaic sequences appearing a total of 126 times were identified as problematic language patterns in the text, of which seven appeared in the pilot study (Table 2).

Table 2. Formulaic Sequences (verbiage, or jargon) in Position Announcements (N=126)

Formulaic Sequence (16)	Number	Formulaic Sequence (16)	Number
Information Literacy	17	Service Technologies	12
Virtual Consultation	9	Research Consultations	8
Fulfill Requests	8	Reference Services	8
Library Programming	7	Point-of-Need	6

Resource for Liaison	6	Substantive Research	5
Collaboration	5	GIS (geographic information system)	3
Systematically Assess Needs	3	Variety of Methods and Tools	1
Curriculum Integrated	1	Learning Commons	1
Team-Based Organization	1	General Reference Activities	1
Information Services	1	Engagement	1
Information/Reference Services	1	Collection Development Experience	1
Overseeing Patron Workstations	1	Deliver Library Instruction	1
Bibliography	1	Technology Services	1
Course-Integrated Instruction	1	Information Literacy Needs	1
Take Instruction to Next Level	1	Extend the Library's E-learning Initiatives	1
Address Challenges in Multiple Ways Consistently Over Time	1	Large, Complex and Rapidly Expanding Information Landscape	1

### Discussion

The research questions below focus on several different ways word choice is likely to cause readers of academic reference librarian position announcements, particularly individuals with ASD, uncertainty and confusion in determining what tasks, or work, are required.

#### **Question One: What problematic words, or word combinations, with multiple meanings (lexically ambiguous) were found in position descriptions?**

To identify problematic words, or word combinations, we used Mason and Just's (2007) description of lexical ambiguity that "[w]hen a word has multiple meanings, one meaning must be selected while somehow retaining the possibility of using the alternative meaning" (p. 1). We organized the problematic words into 15 categories that enabled us to identify and count all similar problematic words that reoccurred in the writing by authors of reference librarian position announcements. Liaison appeared most often (17 times, within 18% of position announcements examined) and is problematic as a single word because it fails to convey, for example, in the phrase "subject matter liaison" that the applicant should be prepared to use academic subject area content knowledge when functioning between and among library patrons. Library instruction appeared 14 times (within 15% of position announcements examined), serving

as a category in a collection of terms such as circulation and policy formation without any mention of teaching library patrons to access, retrieve, evaluate or use sources of authority.

Collection development was included 11 times (in 12% of position announcements) and indicated maintaining collections without addressing the requisite activities to select or deselecting publications. Leadership was used 8 times (in 9% of position announcements) which suggested managing or being a member of a leadership team, but did not convey a leader's responsibilities to influence achievement of institutional effectiveness or personal successes of co-workers and patrons. Oversight of interlibrary loan was a stated category eight times in position announcements without relating to activity with other librarians at other libraries for borrowing sources (found within 9% of the position announcements examined). Advanced reference assistance was another category, mentioned seven times (within eight percent of position announcements), that was used ambiguously with no indication of conducting a reference interview or locating appropriate sources to meet a patron's information need.

The words, and word combinations, were used to identify necessary activities in reference departments, including outreach (five mentions), information literacy (five mentions), supervision (four mentions), reference service (four mentions), policy formation (three mentions), assessment of service (three mentions), programming (included once), patron service (included once), and technology support 1 (included once). The word, or word combination, could be understood when encountered in the position announcement and used to develop an interpretation consistent within the employment context. These are all words and word combinations with multiple meanings that can, with acknowledgement of the presence of lexical ambiguity, be disambiguated to make them easier to read and understand.

### **Question Two: What problematic sequences of words (formulaic sequences) that appear as verbiage, or jargon, were found in position descriptions?**

Using the Alali and Schmitt (2012) description of formulaic language, we identified "multiple word strings that behave as a single unit (e.g., realizing a single meaning or function)" (p. 153) in written reference positions that have a wide number of meanings and are likely to leave the reader to question the meaning of the entire sentence. We organized the identified multiple word strings in 32 categories that enabled us to identify and count all multiple word strings that reoccurred in the writing by authors of reference librarian position announcements. Authors of 126 position announcements used service technologies 12 times (within 10% of the examined position announcements), virtual consultant 11 times (within nine percent), research consultant was used eight times (six percent), point-of-need was used six times (five percent), and library programming was used seven times (six percent) as verbiage to describe activities involved in *reference librarian oversight*. They also used jargon such as fulfill-requests (eight times, six percent), resource for liaison (six times, five percent), effective collection (nine times, seven percent), collaborates (five times, four percent), and substantive research (five times, four percent) when describing reference librarian responsibilities. These are all word sequences, as well as the others in Table 2, that are not often taught in any principled manner or evaluated as part of an overall vocabulary of professional knowledge about librarianship.

### **Question Three: How can problematic language be written clearly and potentially comprehensibly in position descriptions?**

With particular consideration for qualified individuals with ASD whose first step in obtaining

employment is most often reading a job ad, we reviewed the lexically ambiguous words and formulaic phrases identified in this study. We answered our third research question by writing a reference list of problematic language in academic reference librarian position ads with side-by-side examples of potentially easily comprehensible language (Table 3). The clear articulation examples in Table 3 are generally stated rather than specific to any one particular library, therefore, additional language would be needed to further specify a particular library situation (e.g., face-to-face; online). As our findings indicate, authors of academic reference librarian position ads, and all other job ad authors, should scrupulously and in good conscience communicate employment duties and responsibilities.

Table 3. Unclear and Clear Reference Library Position Ads

Unclear word and/or verbiage in reference position announcements	Clear articulation of reference position duties and responsibilities
Serves as library liaison to academic departments, divisions, or campuses	Teaches searching classes to students and provides searching assistance to students and faculty in an assigned academic department each semester.
Position requires face-to-face and online duties with a patron service perspective	Works to answer questions with people within the library, in online chat, and email, while being friendly and supportive.
Participates in the assessment of library services	Surveys how well the library meets its goals, how satisfied users are with the library, and recommends when changes should be made.
Provides specialized reference, advanced reference assistance, and library instruction	Helps people answer questions using the library database, online encyclopedias, and peer-reviewed articles, and teaches classes on how users should use these resources.
Provides in-depth research consultation and point-of-need information literacy instruction	Conducts reference interviews with people, asks questions and listens to people, and explains to people how to access resources beginning at the library's webpage.

While clearly articulated duties and responsibilities tend to raise the challenges associated with word length, these examples demonstrate that length can be minimized by avoiding overuse of pronouns and prepositional phrases.

### Limitations

The findings are limited because they incorporate job ads from only one specific timeframe and only one regional area. Indications of lexical ambiguity and formulaic sequences are our interpretations of language appearing in the text of library position announcements, and not factual examples determined by linguistics experts. Nevertheless, our analyses seriously

considered the communication, social skills and problem-solving deficits experienced by individuals with ASD and our belief that what is clear to someone who experiences ASD will be especially useful to neurologically typical individuals. Our analysis is influenced also by our professional education as librarians. Our analysis, while focused only on academic library job ads, may demonstrate improvement in articulation of job competencies that will become exemplars for library and other professionals. This research focuses only on the reading of English language position announcements but has the potential to be applicable to considerations of other languages, or for individuals for whom English is their second language.

## Conclusion

As is the case in many fields and professions, job advertisements and position announcements in professional librarianship are important first steps in determining who applies and is hired. Overall, the library position announcements (job ads) examined in this study support two key points about lexical ambiguity and formulaic sequences and their impact on human cognitive processes necessary for sentence comprehension. First, according to Mason and Just (2007) when describing the activated human cortical network during reading, “lexical ambiguity evokes extra processing that could be attributable to generation, maintenance, and selection of multiple meanings” (p. 6). Given the importance of sentence comprehension when reading a job ad, Mason and Just’s (2007) descriptions are compelling reasons for authors’ of job ads to work to eliminate the possibility of prolonged mental responses caused by a mismatch between incorrect initial interpretations (the dominant meaning) of a word or sequence of words, and increased time taken to suppress the incorrect interpretation. We believe that position announcements are often written with great care to include all competencies and requirements of the position; however, job ad authors, search committees, and other responsible parties must also think about who is going to read the job ad. Job ad authors must use language most likely to make sense to all readers. Word choice in job ads must be determined with the goal of creating text that is read by a diverse audience without stress, or failure, resulting from exhaustion of mental energy to process meanings.

Second, while formulaic sequences appear to be widespread in the language of librarianship, identifying formulaic sequences in written text is not an easy task. What one reader may judge as a formulaic sequence may not be so for another. This study provides a place to begin development of a reference list as a source of examples of formulaic sequences appropriate for use when writing librarianship position announcements and/or from memory at the time of use. Use of formulaic language that is widely understood is likely to be an advantage if it can be processed quickly and leads to accurately promoting efficient and effective communication.

This study contributes to the growing body of literature about job ads. The findings underscore the problems that individuals with ASD, as well as individuals with and without intellectual disabilities, have in reading and understanding job ads (position announcements) and applying for and securing meaningful employment. The study gathers directly from library reference position announcement examples of lexically ambiguous words and formulaic sequences written by library insiders that should be tackled to reduce or resolve cognitive processing difficulties and to improve reading abilities and language comprehension. We outlined preferred language in library reference position announcements that serves as the beginning of a new reference list to be used in improving job ads as Lund (2018) suggests is necessary to “forge a communicative culture within the organization that will not alienate the employee with autism” (p. 443). This information, and the findings in general, may be of interest to all job ad authors hoping to attract

qualified professionals and who strive to control risk factors contributing to lack of meaningful employment for individuals with ASD. The theoretical framework and methodology may be of interest to other researchers who seek to better understand and ameliorate unemployment of qualified individuals with ASD and other intellectual disabilities, and who intend to increase diversity in the workforce.

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