Published in final edited form as:

AJOB Neurosci. 2017 ; 8(1): 26–36. doi:10.1080/21507740.2017.1285821.

Ethical and Legal Concerns Associated With the Comprehension of Legal Language and Concepts

Joseph Wszalek

University of Wisconsin-Madison

Abstract

Because numerous standards and ethics rules underscore the importance of language and communication within the legal process, the inability to successfully comprehend legal language is a pressing concern, particularly because many populations that are overrepresented within legal systems typically show problems with language and communication. In order to better describe the nexus between language comprehension and the law, therefore, I identify four hierarchical aspects of legal language and concepts that may challenge the language-comprehension processes and impede comprehension: (1) the challenge to “lower level” cognitive functions; (2) the demand for inferences; (3) the need for complex situation models; and (4) the idiosyncratic nature of legal language’s text “genre.” Using common examples of black-letter law, I examine how these four aspects might create legal problems and ethical concerns for both the adjudicated individual and the representing attorney. This analysis should be a valuable first step in allowing the neurolaw and bioethics fields to better identify and research these important ethical dilemmas.

Keywords

language; language comprehension; neuroethics; neurolaw

As challenging as legal language can be for the average person (Payne, Time, and Gainey. 2006; Rogers et al. 2012; Rogers et al. 2013), it can be even more incomprehensible for people with language and communication impairments. Scholarship from numerous academic fields now suggests that legal-language comprehension is impacted in many classes of persons, including adolescents (Helms 2007; Rogers et al. 2008; Rogers et al. 2012), populations with speech and language disorders (Rost and McGregor 2012; Snow, Powell, and Sanger 2012), psychiatric patients (Cooper and Zapf 2008), and individuals with traumatic brain injury (TBI) (Wszalek and Turkstra 2015). Perhaps unsurprisingly, these populations are overrepresented within the criminal justice system (Williams et al. 2010; Farrer and Hedges 2011; Fazel et al. 2011; Snow and Powell 2011; Fazel and Seewald 2012), and the alarming frequency at which these individuals become involved in adjudicative systems suggests a relationship between language abilities, including language comprehension, and desirable legal outcomes (LaVigne and Van Rybroek 2014; Wszalek and Turkstra 2015).

Even though the “Neurolaw” field has generated a considerable amount of scholarship and discussion about challenging issues that lie near the intersection of science, ethics, and law, a consideration of the legal and ethical consequences that stem from the inability to effectively comprehend legal language is generally absent from Neurolaw’s purview. In order to begin to resolve this quandary, I briefly attempt to synthesize applicable laws and guidelines with the scientific research on language and discourse comprehension. I propose that legal language and concepts (LLCs) are particularly, and perhaps uniquely, challenging within the cognitive framework of text and discourse comprehension, and I argue that impairments in LLC comprehension present a risk of ethical harm within the framework of applicable laws and ethical guidelines.

THE LEGAL AND ETHICAL FRAMEWORK RELEVANT TO LANGUAGE COMPREHENSION

Language comprehension is a fundamentally important component of meaningful participation in the U.S. legal system, and the U.S. Supreme Court has established this importance by including language and communication requirements in a number of specific constitutional standards. For example, competency to undergo criminal proceedings requires that the individual have “a rational as well as factual understanding of the proceedings” and the ability to “communicate effectively with counsel” (*Dusky v. United States* 1960; *Cooper v. Oklahoma* 1996). Related constitutional standards, such as the standard for waiving rights or entering pleas, use a “knowingly, willingly, and intelligently” standard (*Miranda v. Arizona* 1966; *Godinez v. Moran* 1993; *Brady v. United States* 1970), which necessarily requires that the individual have language-comprehension skills that allow him¹ to understand his legal rights (Wszalek 2015).

Effective language comprehension is an equally important consideration for civil-law matters. Legal competency to make a contract or other binding legal transaction requires language skills necessary to understand the nature of the transaction (*Guardianship of O’Brien* 2014), and similar understanding is generally required for creating wills or entering marriage (*Wisconsin Statutes* 853.01 2015–2016; *Estate of Laubenheimer* 2013). Finally, language and communication skills will be necessary for other nonjudicial aspects of the legal system, such as interacting with law-enforcement officers (Wszalek and Turkstra 2015) or maintaining an effective attorney-client relationship (*LaVigne and Van Rybroek* 2011). Because these legal standards underscore the importance of language comprehension within the U.S. legal system, they portend ethical quandaries if LLC-comprehension problems preclude an individual from meeting them.

Professional rules for practicing attorneys also expose the importance of language comprehension. The American Bar Association’s Model Rules of Professional Conduct (which have been adopted by 49 of the 50 U.S. states) indicate that a lawyer has a duty to communicate with his client so that the client can participate in the legal matter (ABA Rules

¹For consistency and readability, this article uses “his/him” to refer to the individual comprehending the LLC (the client and/or defendant) and “she/her” to refer to the lawyer. This choice of pronouns is arbitrary and is in no way intended to imply gender/sex roles or biases.

2014). The Model Rules also require a lawyer to provide reasonably competent legal representation and to make reasonable efforts to maintain a normal lawyer-client relationship with clients who have a “diminished capacity” to make decisions about the matter (ABA Rules 2014). In combination, the Model Rules suggest that competent lawyering requires a reasonable effort to ensure successful language comprehension on the part of the client. They also suggest that problems with LLC comprehension could jeopardize the attorney-client relationship and hinder the client’s ability to participate in his own representation, both of which are serious ethical concerns. Additionally, because violations of the professional rules can result in professional disciplinary proceedings, the ethical concerns associated with language-comprehension problems affect not just clients but also their representing lawyers. To summarize, U.S. legal standards and ethics rules, which explicitly identify communication requirements, provide a well-defined legal framework against which potential ethical issues related to language comprehension can be assessed.

PARTICULAR CHALLENGES FOR LANGUAGE COMPREHENSION IN LEGAL CONTEXTS

Relying on the computational models used to define language comprehension,² I propose that four aspects of LLCs make them particularly challenging for language comprehension’s cognitive and modeling processes. These aspects are (1) the degree to which LLCs require cognitive functions assumed to underlie comprehension; (2) LLCs’ inherent and heightened demand for inferences; (3) the requirement for particularized situation models; and (4) LLCs’ unique nature as a hybrid of multiple text genres. These aspects will demonstrate how LLCs can pose potential ethical dilemmas at each successive stage of the language-comprehension process for individuals who attempt to enter and navigate legal contexts. For each of these four aspects, I present an example of legal text that illustrates the challenge for language comprehension, and I identify particular ethical concerns that may result from impaired or improper comprehension.

Before I begin the analysis, however, I want to define the aims of this article in order to delineate its proper scope. I recognize that in real-world contexts LLCs do not exist as language samples in a vacuum, and that it is difficult to separate language from communication; resolving the incredibly complex problem that is communication challenges within the law, however, is far beyond the scope of this single article. My goal, therefore, is to use findings from language-comprehension research to identify features of black-letter legal language that may implicate the legal and ethical standards based on language understanding. In doing so, I hope to identify features of legal language that could frustrate comprehension based solely on the linguistic characteristics of the LLC itself. In setting such a narrow focus, the conclusions I reach are (1) independent of any of the other myriad factors that influence communication within legal contexts and (2) applicable to all persons who encounter LLCs, regardless of their cognitive capabilities or status. Consequently, my analysis, even with its limitations, should be a valuable tool for expanding the nexus

²For an excellent summary of these computational models, see McNamara and Magliano (2009). I rely on terminology from the Construct-Integration Model (Kintsch 1988).

between scientific inquiry and legal concerns and for identifying discreet features of legal language that could be easily operationalized for further research, policy, and professional guidance.

LLCs and the Underlying Cognitive Functions Within Language Comprehension Models

I need to, first of all, advise you that if you are not a citizen of the United States of America, you are advised that a plea of guilty or no contest for any criminal offense can result in your deportation, the exclusion from admission to this country, or the denial of naturalization under federal law.

The first aspect of LLCs that raises ethical concerns is their potential to challenge the cognitive processes that subserve language comprehension. Certain automatic cognitive functions, such as working memory, attentional resources, and lower level language processing, such as word and morpheme decoding, all affect language comprehension (McNamara and Magliano 2009). If LLCs stress, impair, or challenge any of these automatic or unconscious processes, then they risk impeding comprehension and impairing the subsequent legal outcome.

Consider our first LLC: the so-called Padilla Warning, a necessary component of many criminal proceedings and a typical example of LLCs that occur in legal hearings (Padilla v. Kentucky 2010). Despite being a common LLC, however, it contains many challenging linguistic features that could frustrate automatic cognitive processing. First, it has a relatively short independent clause with multiple subordinate, embedded clauses, one of which is a conditional clause and two of which are noun clauses. Additionally, a clunky passive verb (“you are advised”) frames the noun clause that contains the Padilla Warning language. In order to understand this text, the comprehender would need the working memory and grammar-processing abilities necessary to work through this long, complicated style of syntax (McElree, Foraker, and Dyer 2003; Constable et al. 2004; Chen, Gibson, and Wolf 2005; McKoon and Ratcliff 2007). Next, the LLC contains a list of abstract nominalizations (deportation, exclusion, denial, etc.), most of which are low-frequency and context-dependent in meaning, and an overlapping set of specialized legal vocabulary (naturalization, admission, etc.). In order to understand this feature of the text, the comprehender would need both the semantic knowledge and the working memory to manipulate these words’ meaning in context (Hoffman et al. 2012). Of particular concern are this LLC’s difficult abstract words, which likely require higher memory capacity (Loiselle et al. 2012; Jackson, Lambon Ralph, and Pobric 2015) and specialized neural representation (Guan et al. 2013; Wilson-Mendenhall et al. 2013; Vigliocco et al. 2014). Even before the listener could consciously comprehend this language, then, he would need enough working memory to hold and remember the sentence and its subordinate clauses, the semantic and lexical knowledge necessary to process the syntactic structure and semantic content, and the attentional and inhibitory control necessary to focus on the discourse itself (Keitel et al. 2011; Archibald, Levee, and Olino 2015).³ Accordingly, optimal LLC comprehension is predicated upon cognitive functioning that is robust, proficient, and accurate.

This predication, however, raises a very real risk of ethical complications. If an individual has any cognitive deficit that affects automatic cognition, language comprehension might be impaired, slowed, or compromised even under ideal circumstances. When faced with language as complex and stylized as LLCs, however, the working-memory, attentional, and automatic language demands may translate into unsuccessful comprehension. If this unsuccessful comprehension precludes the individual's "rational and factual" understanding or "knowing, willing, and intelligent" behavior, then he may not meet the legal standard required by due-process rights, and any subsequent involvement in the legal system could raise constitutional violations. Additionally, unsuccessful language comprehension may attenuate the comprehenders's ability to consult with his attorney; if this precludes his ability to "effectively consult" with his attorney, as required by law, then he again may risk due-process concerns. Because these legal questions would need to be resolved by the court, however, whether or not such a comprehender would ultimately meet the various legal standards is unclear; what is more clear, however, is that if the individual has problems with lower level cognition that affect his ability to comprehend LLCs, then his ability to participate in his own legal proceedings—the hallmark of due process rights—is called into question.

This scenario creates ethical quandaries from the lawyer's perspective as well. Because "effective communication with counsel" is a defining feature of legal competency, and because a lawyer has an ethical duty to (at least attempt to) communicate in a way that allows her client to participate in the legal proceeding, the lawyer would need to speak and communicate in a way that would accommodate this impaired comprehension. Doing so, however, might be impossible or impractical for a host of reasons. The impairments might not be identified, or they might present as a behavioral or personality "issue" instead (LaVigne and Van Rybroek 2011). The lawyer may be unable to simplify the problematic LLCs: For example, the abstract concepts "deportation" and "naturalization" are difficult to simplify into less abstract phrasings, and the procedural rules of the lawyer's court or jurisdiction may specify that these exact terms must be used. Additionally, time and resource pressures may limit access to interventional services such as more rigorous clinical or psychological assessments (LaVigne and Van Rybroek 2011). The cognitive impairments may be due to issues beyond the lawyer's ability to realistically accommodate, such as injury, educational levels, or genetics. Finally, the client's language-comprehension problems may simply be beyond the lawyer's ability to recognize or look for, since most lawyers have little formal knowledge of communication and language impairments (LaVigne and Van Rybroek 2011; LaVigne and Van Rybroek 2014). In these scenarios, then, the lawyer may find herself in a catch-22: The same LLCs she needs to explain and present to her client in order to fulfill her role as advocate and consul may ultimately frustrate the attorney-client relationship.

³.Note also that (as is likely the case for almost all legal contexts) the stress and pressure of the setting itself can place additional demands on memory and attention (Lupien, Maheu et al. 2007; Lucassen and Oomen 2016). Additionally, the power dynamic between the comprehender and the attorney/judge may create unequal speaker rights, which brings a set of additional concerns, including suggestibility and acquiescence (Wilson 1989). While these additional considerations may not be a linguistic quality of LLCs per se, they undoubtedly influence LLC comprehension for the average individual in average legal contexts.

To summarize, LLCs often contain complex syntax and vocabulary and abstract ideas that represent particular challenges for the lower level cognitive functions that sub-serve language comprehension. For individuals with impairments in these functions, the attempt to comprehend LLCs may be analogous to an attempt to construct a building on a base of sand: Without a firm cognitive foundation to underlie LLC comprehension, the comprehension will quickly collapse. Given that many populations within the legal system have conditions or disorders that are associated with impairments in these cognitive processes, the risk of ethical harms as a result of LLC comprehension is a real one.

LLCs and the Demand For Inferences

A bankruptcy discharge does not discharge an individual debtor from any debt for an obligation to repay funds received as an educational benefit, scholarship, or stipend, unless excepting such debt from discharge would impose an undue hardship on the debtor and the debtor's dependents.

The second aspect of LLCs that raises potential ethical concerns is their need for inferences. Inferences are the process by which an individual integrates current information with noncurrent information to resolve gaps in meaning or coherency (Frieze et al. 2008; McNamara and Magliano 2009). Because LLCs often represent novel and unique language samples, the ability of an individual to use inferences to bridge any meaning gaps may be limited, and this limitation may present ethical ramifications.

Our second example LLC, from the U.S. Bankruptcy code (11 U.S.C. § 523), illustrates the need for effective inference making during LLC comprehension. The comprehender of this LLC would need to make a number of different kinds of inferences. First, he would need to make automatic or minimal inferences to resolve the explicit textual ambiguity (Swinney and Osterhout 1990; McKoon and Ratcliff 1992; Moran and Gillon 2005). These inferences would allow the comprehender to understand that “such debt” means “any debt for an obligation to repay funds received as an educational benefit, scholarship, or stipend” and that “the debtor” means “an individual debtor.” Second, the comprehender would need to make elaborative or controlled inferences. These inferences are inferences that facilitate causal, predictive, and other gist-level aspects of comprehension (Virtue, van den Broek, and Linderholm 2006); to paraphrase, these inferences go beyond the literal words to allow the comprehender to deduce what the LLC is actually “saying” (Swinney and Osterhout 1990; McKoon and Ratcliff 1992; Moran and Gillon 2005). Elaborative inferences are particularly important: The ability to sacrifice literal meaning in order to derive implications appears to be associated with language competency (Noveck 2001; Pijnacker et al. 2009), but it also appears to require more effortful cognition (Bott and Noveck 2004; Breheny, Katsos, and Williams 2006) and be limited by the comprehender's background knowledge and social-cognitive abilities⁴ (Johnson and Turkstra 2012). By making causal and predictive inferences, then, the comprehender would infer that, at the “gist” level, “any debt for an obligation to repay funds received as an educational benefit, scholarship, or stipend”

⁴. Social cognition is an umbrella term referring to the cognitive functions that encode and decode social stimuli. Generally included within social cognition are emotion recognition, theory of mind, perspective taking, and moral-based cognition (Beer and Ochsner 2006; Adolphs 2009).

effectively means “school loans,” that other types of debt are discharged during a bankruptcy discharge, and that “undue hardship” likely means that “normal” hardship is insufficient. Even in this relatively simple example, therefore, successful LLC comprehension requires nontrivial automatic and elaborative inferences.

LLCs’ inference-level demands again raise the risk of ethical concerns. The inference-level demands share the same broad risks associated with deficits in lower level cognition: Because successful comprehension will be predicated on the ability to make both automatic and elaborative inferences, any disruption in the inference-making process could slow or preclude comprehension. If this impeded or unsuccessful comprehension ultimately prevents an individual from meeting the necessary legal standard of understanding, then he may not be a fit subject for that particular legal proceeding. Additionally, if this unsuccessful comprehension precludes the individual from effectively communicating with his counsel, then the language comprehension problems may strain both the legal standards and the ethical rules of the attorney-client relationship.

Inference-level demands present at least two additional ethical risks. First, problems with inference making may be even more difficult for the attorney to accommodate. Not only might the attorney need to account for the working-memory and social cognition aspects, the attorney might need to overcome any gaps in the background-knowledge or vocabulary bases from which inferences are constructed; in effect, then, the lawyer would need to somehow compensate for the lifetime’s worth of personal experiences that (ideally) would have given her client these abilities and knowledge. For example, the lawyer may be able to explain what the word “bankruptcy” means, but it may be an entirely different, much more difficult task for the lawyer to explain what the concept of “bankruptcy” is: Without the necessary elaborative inference skills, the client might simply be unable to aggregate the information needed to make the inferences that form this LLC’s “gist” meaning of bankruptcy. Consequently, because these important elaborative inferences may also be the most difficult, the attorney may again be in a paradoxical situation in which the concepts she needs to advise her client on are the most challenging for her client to understand.

Second, problems with inference making may jeopardize the traditional role assignment within an attorney-client relationship. One of the most fundamentally important characteristics of the attorney-client relationship is its assignment of authority: The client chooses the goals or objectives of the legal representation, while the lawyer chooses the means or actions (ABA Rules 2014). In order for the client to choose goals or objectives, however, he will need to understand not just the literal meaning of the black-letter laws but also the broader implications of those laws, a task for which inferences will be essential. For example, the client who wants to file for bankruptcy will need to know not only what this and related LLCs say but also what the implicatures of “bankruptcy” signify. For example, the client needs to be able to infer that “bankruptcy” does not necessarily include other states of being without money; that is, the comprehender needs to be able to infer that “bankruptcy” and “being broke,” though quite similar, are not synonymous concepts. Similarly, the comprehender will need to infer that “bankruptcy” is not necessarily a permanent state; other aspects of the comprehender’s financial life, such as spending habits and financial literacy, may also impact his financial situation. If the client struggles with the

inferences necessary to do this, however, he may not be able to choose a realistic or appropriate legal goal. This outcome could put the attorney in a difficult ethical quandary: If the attorney ignores her client's proffered goals, then the attorney risks overstepping her authority even though she may be following a more sensible or appropriate legal course of action. If the attorney respects the client's goals, however, she may risk pursuing legal goals that are frivolous, inappropriate, or otherwise discouraged. Accordingly, the balance between respecting the client's wishes and providing competent, effective legal representation (often a difficult balance under optimal conditions) may be even more precarious if the client struggles to make the inferences required for LLC comprehension.

The complex conceptual nature of LLCs creates a clear need for inference making so that the comprehender can untangle the coherence gaps and implied meanings. For individuals who struggle with inferences, however, the ability to grasp the gestalt significance of LLCs may be compromised: While they may have a solid foundation upon which to build their comprehension, they may not be able to access the material needed to construct the comprehension "edifice." Because LLC comprehension likely demands multiple inferential components, and because these demands are likely challenging for many populations, the risk of troublesome ethical outcomes as a result of LLC comprehension is genuine.

LLCs and the Need For Accurate Situation Models

The parties in an action for an annulment, divorce, or legal separation may, subject to the approval of the court, stipulate for a division of property, for maintenance payments, for the support of children, for periodic family support payments, or for legal custody and physical placement, in case a divorce or legal separation is granted or a marriage annulled.

The third aspect of LLCs that could create ethical implications is the requirement for a situation model that accurately captures the contextual factors in which LLCs generally occur. A situation model, or mental representation of the comprehended text, represents the cumulative endpoint of the language comprehension process, incorporating information from the current text or discourse, background information, and inferences (McNamara and Magliano 2009). Situation models have five dimensions: space, time, causation, intentionality, and protagonist (Zwaan and Radvansky 1998). The interaction between these dimensions, and the various weights they carry, however, are not fixed; they can differ based on the nature of the task and the nature of the individual (Zwaan and Radvansky 1998). The model itself is not static, either; the comprehender continually updates inferences and prior knowledge in order to create a situation model that "best fits" the text or discourse (Kintsch et al. 1990; Radvansky and Copeland 2001; Friesen et al. 2008; Perez et al. 2015). Because LLCs often occur in legal contexts, which are complex social situations with a unique set of expectations and standards, the degree to which an individual can accurately create a "correct" situation model may vary tremendously,⁵ and this variability might lead to

⁵As a thought exercise, consider these two very simple sentences: "I was in the office today" and "I was in court today." I suspect that the second sentence poses a much, much steeper challenge for constructing an accurate situation model than the first.

incorrect or inappropriate understanding. Therefore, LLCs' particularized situation models also present the risk of ethical concerns associated with language comprehension.

This third LLC, from a state law concerning divorce (Wisconsin Statutes 767.34 2015–2016), exemplifies the complex scenarios that a comprehender's situation models need to capture. This LLC effectively says that the couple in a divorce can agree on what the terms of the divorce will be as long as the judge agrees. The mental representation necessary to accurately comprehend this, however, requires the aggregation of the various dimensions that characterize a divorce stipulation. The comprehender's situation model for this LLC will contain a protagonist dimension ("the parties," "the court"), a causal dimension (stipulation is predicated on the court's approval and on the divorce being granted), a intentionality dimension (the comprehender's desire to reach some stipulation), a spatial dimension (the physical depiction of the courtroom), and a time dimension (the literal temporal qualities of the stipulation and the relative temporal qualities of the stipulation as part of a the overall legal proceeding). The law's assumption, however, is that the comprehender can manipulate both the prior knowledge and the inferences necessary to make these five dimensions. The complex, artificial nature of LLCs may make this assumption impossible, leaving the comprehender with a situation model that fails due to lack of knowledge base or inference accuracy. Consequently, what the comprehender pictures in his head may not match what his judge and his lawyer think he should or expect him to, and this discrepancy could precipitate worrisome consequences.

Two aspects of situation-model construction stand out as particularly difficult for LCC contexts. First, there is a very real likelihood that the comprehender's situation model will diverge from the expected outcome. When reading or hearing this LLC, both the lawyer and the judge will almost certainly create mental representations that are accurate. Both have legal training and expertise, both have practical experience, and both have working knowledge of other areas of law. As a result, they can make a situation model that is not only complete and coherent but also, and more importantly, realistic and representative of the legal context that the dimensional aspects describe. The client, on the other hand, likely does not have any of these prior experiences. His situation model, therefore, will be "built" from whatever related background knowledge he has. For example, he may have information from television programs about legal proceedings, secondhand knowledge of an acquaintance's divorce, or general knowledge about how divorces usually happen. Using all of these for his inferences and situation model, then, the client will reach a mental representation that, while "best fitting," may not be contextually accurate or that may under- or overrepresent one of the model's dimensional aspects. Consequently, the client's ability to make informed or appropriate decisions based on his situation model may be limited, biased, or impaired.

Unfortunately, the client's capacity to simply correct his situation model may be limited as well. Even though comprehenders can generally incorporate new information into their situation model, the updating process is cognitively demanding (Radvansky and Copeland 2001) and is particularly challenging when a situation model must account for conflicting information (Rapp and Kendeou 2007, 2009). This inability to complete revisions is associated with difficulty replacing outdated information (O'Brien, Cook, and Gueraud 2010; Kendeou, Smith, and O'Brien 2013). As an example, the client's situation model may

represent the causal and spatial aspects of “subject to the approval of the court” as a formal trial proceeding. Because trials are often long and expensive undertakings, the client’s situation model may include these characteristics as well. Consequently, he may be less willing to consider a divorce stipulation because in his mental representation it will be colored as time- and money-consuming. If the lawyer or judge provides correct information (for example, explaining that “approval of the court” generally means a simple courtroom hearing or a review of paperwork), the client may not be able to easily or quickly update his situation model to overwrite his previous representations. Therefore, simply acquiring correct information does not guarantee that the comprehender will be able to correct his comprehension model.⁶

Second, it is possible that the comprehender will bias some dimensional aspects of the situation model. It is important to remember that LLCs generally involve actual people in actual legal proceedings. In this example, the comprehender of this LLC would be one of the parties to the divorce. Being emotionally and personally invested in the LLC’s context, the comprehender will almost certainly create a mental representation in which the protagonist and intention dimensions are given particular weight. For example, the comprehender might feel especially cheated or betrayed by other party. If he seeks to be retributive or uncompromising, then his situation model will be colored by these intentions (e.g., his comprehension of a “successful” divorce stipulation will reflect a one-sided outcome); this may put his mental representation at odds with the correct, “unbiased” representation. While this bias is inevitably human, it may also be impossible to remove from the comprehender’s situation model. Consequently, any mental representation he has will bear this idiosyncratic influence, which may be incompatible with an LLC’s “correct” situation model.

LLCs’ demand for a complex situation model presents a more subtle risk for ethical problems. Assuming that the comprehender can physically construct a situation model, of whatever quality, his language and communication abilities are probably sufficient to let him communicate with his attorney and the judge, thereby satisfying the constitutional standards (LaVigne and Van Rybroek 2011). When the situation model is built from inaccurate or inappropriate information, or when the situation model’s dimensional aspects are skewed, however, then the comprehender might not truly “comprehend” the LLC even though he can mentally represent it. This is particularly troublesome when the comprehender’s external behavior based on that comprehension is indistinguishable from behavior based on more accurate comprehension. In this example, the comprehender might understand what a divorce stipulation is, and he might be able to explain it in his own words, but his situation modal, lacking formal legal expertise and individualized experience, likely creates a mental representation of a divorce stipulation that is cobbled together from knowledge and inferences he can pull together. Thus, when the comprehender model responds “yes” to the question “Do you understand what will happen in this stipulation?” both the judge and the lawyer may have little reason not to take that answer at face value even though the

⁶Relatedly, the comprehender may likely be unable to monitor his own situation model. The need for cognitive self-monitoring, or metacognition, is a critical component of comprehension (Wagoner 1983; Singer 2013; Perez, Cain et al. 2015), and any sort of metacognitive regulation is likely to be difficult when the comprehender doesn’t know what he doesn’t know. Metacognition (or lack thereof) likely affects all steps of language comprehension, so its role in LLC comprehension should not be understated.

comprehender's understanding may be dimensionally skewed or incomplete. It is certainly true that everyone forms unique mental representations of any particular language sample. In legal contexts, however, where rights are at stake and where accurate comprehension is necessary for meaningful participation and fair outcomes, incomplete or inaccurate mental representations may lead an individual to make choices, goals, or expectations that he would not have made if his representation were more accurate.

As was the case for inference-level risks, however, the nature of the lawyer-client relationship may make the ethical dilemmas difficult to resolve. Because the client dictates his own legal goals, and because protagonist- and goal-oriented dimensions compose parts of the situation model, the lawyer's attempt to "correct" these dimensions of her client's model in order to improve his comprehension may stretch the permissibility of the attorney-client relationship. Suppose the client's mental representation of this LLC is "a meeting with the judge where we do everything we can to make sure my soon-to-be-ex-wife gets as little money out of me as possible." Should the lawyer attempt to "improve" the client's comprehension? Or suppose the client's brother and two best friends all went through and "lost" messy, combative divorce proceedings, and the client is convinced that all divorce judges always find in favor of the wife. Should the lawyer try to "correct" this belief and experience in order to increase the situation model's accuracy? Answering these questions (which are, at least to me, not at all clear) would be left to the lawyer and the court, and whether or not these hypothetical clients' comprehensions ultimately meet the necessary legal standards would also be a legal question. The ethical evaluations within these questions, however, appear to be very much debatable.

LLCs' legal contexts create the need for a complex, accurate mental representation to achieve comprehension. Producing such a mental representation, however, likely requires cognitive ability and conceptual knowledge that many people, especially individuals with cognitive difficulties, may not have. Consequently, their ability to create a situation model may be questionable; even with a solid foundation and material with which to build their model, the finished product may simply be inappropriate. Because this mental representation will serve as the basis for both the comprehender's conscious comprehension and subsequent behaviors, there is an obvious ethical need to ensure that this mental representation is as accurate and appropriate as possible; if it is not, then ethical issues may arise.

LLCs and the Idiosyncratic Nature of Legal Language in Context

A will must be: in writing; signed by the testator or in the testator's name by some other individual in the testator's conscious presence and by the testator's direction; and either signed by at least two individuals, each of whom signed within a reasonable time after the individual witnessed either the signing of the will or the testator's acknowledgement of that signature or acknowledgement of the will or acknowledged by the testator before a notary public or other individual authorized by law to take acknowledgements.

The fourth aspect of LLCs that could raise ethical concerns is the nature of legal language as a hybrid of multiple text genres. Because one of language's primary functions is to convey information for a social purpose, context plays a significant role in shaping language form and content (Armstrong and Ferguson 2010). These contexts are defined as "genres," which include narrative, exposition, and procedure. The narrative genre, which is the traditional genre used for language comprehension tasks (Ferstl, Rinck, and von Cramon 2005; Burin et al. 2014), is readily apparent in LLCs; because LLCs also fill procedural and administrative roles, however, a single-genre classification does not accurately reflect the multifaceted characteristic of most LLCs. It may be more appropriate, therefore, to view legal language as an amalgamation of traditional genre classifications. Despite being more accurate and realistic, however, this hybrid classification also presents potential ethical concerns because it may make LLCs even more difficult to comprehend.

This final example LLC, taken from the Uniform Probate Code (National Conference of Commissioners of on Uniform State Laws 2010), is representative of LLCs' multigenre nature. The LLC details the various requirements of a legally valid will, and because it gives instructions on how to create a specific legal document within the larger societal context, it falls within a number of different text genres. First, it is a procedural text: It gives specific instructions that the reader must obey if he wants to make a valid will. In parallel, it is also an expository text: It describes what attributes constitute an official will. Finally, it is a narrative text: Because the reader of this text would by necessity be a potential testator, the text (as the reader comprehends it) exists within the narrative framework of the reader's goal to create a will. Put another way, the text describes not only the procedural guidelines of writing a will but also the narrative progression of the reader as he goes through that procedure. Successful comprehension, therefore, would require a mental representation that is able to capture and to integrate these complementary text genres.

Consequently, the comprehender of this example LLC should have a situation model that contains representations for each of the multiple genre elements. For example, the comprehender's situation model will contain a representation of "testator" (i.e., the protagonist dimension), that is, the comprehender in relation to the family members or friends whom he intends to include in his will (narrative); the comprehender in relation to the attorney and judge, with whom he is physically writing and enacting the will (procedural); and the comprehender as a legally recognized "testator" who is disposing of his estate in accordance with a set of legal rules (expository). The situation model, therefore, will be a composite of these various representations, each of which exists simultaneously and each of which characterizes one aspect of the LLC in its real-world context.⁷

LLCs' hybrid nature creates perhaps the subtlest risks of ethical implications. As was true for the previous three examples, any impairment that compromises the client's ability to meet the controlling legal standard could call the validity of the legal decision or action into question. As was true for the situation model-level demands, however, it is likely that the

⁷It is further possible that optimal comprehension of LLCs requires a dedicated comprehension "mode": Scholarship suggests that the brain is able to prime comprehension for various language genres, such that one genre of text is preferentially comprehended (Mesulam 2002; Powers et al. 2012). Consequently, an LLC comprehender may need to be able to use a dedicated "legal language" mode of comprehension that can facilitate the creation of these complicated, multigenre situation models.

ethical risks for this aspect of LLCs concern less the letter of the law and more the spirit. For example, this section's example LLC about writing a will spans narrative, procedural, and expository genres. It is not clear which of these genres should form the basis of the comprehender's understanding before the law can conclude that the comprehender understands the "nature" of this legal transaction as required by the legal standards. Because wills are legal documents used to perform predefined legal acts, the procedural side is arguably the most important. Because wills are also formulaic descriptions of certain legally recognized outcomes, however, the expository side may be most important. From the comprehender's perspective, however, the will is a part of his estate-planning or family goals, so the narrative side is arguably the most important. Theoretically, if the comprehender can build a situation model for at least one of these genres, then he may "understand" the LLC within the strict letter of the law; I would argue, however, that the spirit of the law, with its underlying protection of autonomy and due process, requires that the client understand all genre dimensions simultaneously because that understanding fully captures the LLC's actual meaning. Because this gestalt comprehension may be difficult for many individuals, any discrepancies between the client's actual comprehension and expected or ideal comprehension that influence his decisions or actions may be problematic.

The dynamic of the lawyer-client relationship again raises ethical risks. Because the lawyer's ethical guidelines mandate that she provide competent representation and that she handle the means of the legal outcomes, the lawyer's focus for our will-writing example may justifiably be on the LLC's procedural side: the lawyer would naturally want the will to be legally valid. Consequently, the lawyer may emphasize, explicitly or implicitly, the procedural dimensions of the LLC in her conversations with her client, and this emphasis may bias the client's situation model toward the procedural side. I doubt that this would violate black-letter ethics rules, but it does illustrate how understated the ethical considerations can be for LLC comprehension.

To summarize, LLCs' composite genre nature runs the risk of creating ethical harm. Given the cognitive demands inherent in situation model-level comprehension, the need for a multigenre, integrated situation model may demand comprehension modes and processing capabilities that many individuals lack. It may not be enough to build a single construct out of proper materials on a firm foundation; the construct might require multiple facades, all of which are built around the same foundation and framework. Because a fully formed and integrated situation model is essential to ensure that the client understands the full extent of his legal goals and circumstances, however, any disruption or impediment in this model may defeat this understanding, and the law's safeguards should anticipate this risk.

In conclusion, there are four aspects of LLCs that present particular challenges for individuals who attempt to comprehend them. First, LLCs generally contain vocabulary, concepts, and syntax that challenge the lower level cognitive functions required for successful comprehension. Second, LLCs generally demand a high degree of inferential processing in order to resolve meaning gaps. Third, LLCs generally require a particularized situation model that overlaps with the correct or anticipated legal meaning. Fourth and finally, LLCs generally represent a hybrid of text genres that require additional mental representations. Taken together, these aspects likely make LLCs especially difficult to

comprehend, and the resulting ethical concerns convincingly demonstrate that a suite of subtle and complex ethical issues falls within language comprehension's penumbra.

ADDITIONAL CONSIDERATIONS

Although LLCs have numerous properties that make them problematic from a language-comprehension standpoint, the arguments I present here account for only a fraction of challenges that exist within modern-day legal systems. Again, while it is beyond the scope of this article to adequately identify and address these challenges, I next briefly mention additional factors that Neurolaw should consider as it attempts to resolve the complex interactions between law, ethics, cognition, and language.

First, it is essential to remember that language comprehension is only one part of language use. There are myriad other aspects of communication that will likely affect an individual's ability to navigate the contexts in which LLCs exist. These include, but are certainly not limited to, speech production, social cognition, native language/dialect, and auditory processing. These additional aspects likely bring their own ethical considerations, and since many of them tend to be comorbid, they may increase the risk of ethical problems exponentially. While language comprehension can explain a portion of this variance, it behooves Neurolaw to recognize that for individuals who actually encounter LLCs, language comprehension does not exist in a vacuum.

Second, it is important to remember that the legal standards discussed in this essay are applicable only within the United States. Nevertheless, language and communication impairments affect humans all around the world (Hyter 2014). While the specific ethical concerns that arise from the U.S. legal standards are generally salient only within the United States, many of the underlying ethical notions (e.g., fairness, due process, the proper role of the lawyer, etc.) are equally important in other legal jurisdictions (The United Nations General Assembly 1966; European Union 2000). Therefore, while Neurolaw should be mindful of the specific ethical concerns that arise from the legal standards in the United States, Neurolaw should be equally willing to consider similar ethical concerns in other legal jurisdictions as well (Wszalek 2015).

Finally, it is important to note that LLCs are as variable and diverse as other types of language. I picked the four examples in this article because they represent relatively conventional legal scenarios that the average person is likely to encounter throughout the course of his or her life. Nevertheless, there are countless other legal contexts and situations, some more difficult and some less difficult. Consequently, the relative challenge presented by each of the comprehension-level demands (lower level, inference level, situation model level) will also vary, so strategies to reduce language demand that are applicable to some situations (e.g., reducing syntax or semantic complexity) may be less applicable in others.

CONCLUSION

With their linguistic and conceptual complexity and their need for sophisticated inferences and specialized situation models, LLCs are a language phenomenon that characterizes modern law. These same properties, however, raise ethical concerns in the framework of

legal standards and ethics rules that implicate language and communication. The challenging nature of LLCs, the dynamics of the attorney-client relationship, the prevalence of cognitive conditions that can impair language comprehension in populations within the legal system, and the general inability of the legal system to detect and accommodate language impairments all suggest that these ethical concerns are not mere conjectures but rather pressing problems that can directly affect legal outcomes. Because of the enormous societal costs associated with legal proceedings (Wszałek and Turkstra 2015), and because of the fundamental importance of the legal rights that are implicated, Neurolaw should not overlook language comprehension as it seeks to study issues that have value not just as academic discussion but also as societal advancement.

ACKNOWLEDGMENTS

This work was supported in part by the National Center for Medical Rehabilitation Research (NCMRR) of the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) under Grant R01 HD071089 (PI L. Turkstra). The author would like to acknowledge and thank Dr. Lyn Turkstra and the Communication and Cognition Lab, the University of Wisconsin-Madison's Neuroscience Training Program, and the University of Wisconsin-Madison's Neuroscience and Public Policy Program.

REFERENCES

- Adolphs R 2009 The social brain: Neural basis of social knowledge. *Annual Review of Psychology* 60:693–716.
- American Bar Association, Center for Professional Responsibility. 2014 Model Rules of Professional Conduct. Chicago, IL: ABA Publishing.
- Archibald LM, Levee T, and Olino T. 2015 Attention allocation: Relationships to general working memory or specific language processing. *Journal of Experimental Child Psychology* 139:83–98. [PubMed: 26094240]
- Armstrong E, and Ferguson A. 2010 Language, meaning, context, and functional communication. *Aphasiology* 24(4):480–496.
- Beer JS, and Ochsner KN. 2006 Social cognition: A multi level analysis. *Brain Research* 1079(1):98–105. [PubMed: 16513097]
- Bott L, and Noveck IA. 2004 Some utterances are underinformative: The onset and time course of scalar inferences. *Journal of Memory and Language* 51(3):437–457.
- Brady v. United States. 1970. (U.S. Supreme Court, 1970).
- Breheny R, Katsos N, and Williams J. 2006 Are generalised scalar implicatures generated by default? An on-line investigation into the role of context in generating pragmatic inferences. *Cognition* 100(3):434–463. [PubMed: 16115617]
- Burin DI, Acion L, Kurczek J, Duff MC, Tranel D, and Jorge RE. 2014 The role of ventromedial prefrontal cortex in text comprehension inferences: Semantic coherence or socio-emotional perspective? *Brain and Language* 129:58–64. [PubMed: 24561428]
- Chen E, Gibson E, and Wolf F. 2005 Online syntactic storage costs in sentence comprehension. *Journal of Memory and Language* 52(1):144–169.
- Constable RT, Pugh KR, Berroya E, Mencl WE, Westerveld M, Ni W, and Shankweiler D. 2004 Sentence complexity and input modality effects in sentence comprehension: An fMRI study. *Neuroimage* 22(1):11–21. [PubMed: 15109993]
- Cooper VG, and Zapf PA. 2008 Psychiatric patients' comprehension of *miranda* rights. *Law and Human Behavior* 32:390–405. [PubMed: 17674169]
- Cooper v. Oklahoma. 1996. (U.S. Supreme Court, 1996).
- Dusky v. United States. 1960. (U.S. Supreme Court, 1960).
- Union European. 2000 Charter of fundamental rights of the European Union. *Official Journal of the European Communities* 2000/C 364/01.

- Farrer TJ, and Hedges DW. 2011 Prevalence of traumatic brain injury in incarcerated groups compared to the general population: A meta-analysis. *Progress in Neuro-Psychopharmacology & Biological Psychiatry* 35(2):390–94. [PubMed: 21238529]
- Fazel S, Lichtenstein P, Grann M, and Langstrom N. 2011 Risk of violent crime in individuals with epilepsy and traumatic brain injury: A 35-year Swedish population study. *PLOS Medicine* 8(12): e1001150. [PubMed: 22215988]
- Fazel S, and Seewald K. 2012 Severe mental illness in 33,588 prisoners worldwide: Systematic review and meta-regression analysis. *The British Journal of Psychiatry* 200(5):364–73. [PubMed: 22550330]
- Ferstl EC, Rinck M, and von Cramon DY. 2005 Emotional and temporal aspects of situation model processing during text comprehension: An event-related fMRI study. *Journal of Cognitive Neuroscience* 17(5):724–39. [PubMed: 15904540]
- Friese U, Rutschmann R, Raabe M, and Schmalhofer F. 2008 Neural indicators of inference processes in text comprehension: An event-related functional magnetic resonance imaging study. *Journal of Cognitive Neuroscience* 20(11):2110–24. [PubMed: 18416672]
- Godinez v. Moran. 1993. (U.S. Supreme Court, 1993).
- Guan CQ, Meng W, Yao R, and Glenberg AM. 2013 The motor system contributes to comprehension of abstract language. *PLoS One* 8(9):e75183. [PubMed: 24086463]
- Helms J 2007 Analysis of the components of the miranda warning. *Journal of Forensic Psychology Practice* 7(3):59–76.
- Hoffman P, Jefferies E, Ehsan S, Jones RW, and Lambon Ralph MA. 2012 How does linguistic knowledge contribute to short-term memory? Contrasting effects of impaired semantic knowledge and executive control. *Aphasiology* 26(3–4):383–403.
- Hyter YD 2014 A conceptual framework for responsive global engagement in communication sciences and disorders. *Topics in Language Disorders* 34(2):103–20.
- In re Estate of Laubenhimer. 2013. (Wisconsin Supreme Court, 2013).
- In re Guardianship of O'Brien. 2014. (Minnesota Supreme Court, 2014).
- Jackson RL, Lambon Ralph MA, and Pobric G. 2015 The timing of anterior temporal lobe involvement in semantic processing. *Journal of Cognitive Neuroscience* 27(7):1388–96. [PubMed: 25633648]
- Johnson JE, and Turkstra LS. 2012 Inference in conversation of adults with traumatic brain injury. *Brain Injury* 26(9):1118–26. [PubMed: 22642382]
- Keitel C, Schroger E, Saupe K, and Muller MM. 2011 Sustained selective intermodal attention modulates processing of language-like stimuli. *Experimental Brain Research* 213(2–3):321–27. [PubMed: 21503650]
- Kendeou P, Smith ER, and O'Brien EJ. 2013 Updating during reading comprehension: Why causality matters. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 39(3):854–65.
- Kintsch W 1988 The role of knowledge in discourse comprehension: A construction-integration model. *Psychological Review* 95 (2):163–82. [PubMed: 3375398]
- Kintsch W, Welsch D, Schmalhofer F, and Zimny S. 1990 Sentence memory: A theoretical analysis. *Journal of Memory and Language* 29:133–59.
- LaVigne M, and Van Rybroek GJ. 2011 Breakdown in the language zone: The prevalence of language impairments among juvenile and adult offenders and why it matters. *UC Davis Journal of Juvenile Law & Policy* 15(1):37–124.
- LaVigne M, and Van Rybroek GJ. 2014 'He got in my face so I shot him': How defendants' language impairments impair attorney-client relationships. *CUNY Law Review* 17:69–121.
- Loiselle M, Rouleau I, Nguyen DK, Dubeau F, Macoir J, Whatmough C, Lepore F, and Joubert S. 2012 Comprehension of concrete and abstract words in patients with selective anterior temporal lobe resection and in patients with selective amygdalohippocampectomy. *Neuropsychologia* 50(5): 630–39. [PubMed: 22245005]
- Lucassen PJ, and Oomen CA. 2016 Stress, hippocampal neurogenesis and cognition: Functional correlations. *Frontiers in Biology* 11(3):182–92.

- Lupien SJ, Maheu F, Tu M, Fiocco A, and Schramek TE. 2007 The effects of stress and stress hormones on human cognition: Implications for the field of brain and cognition. *Brain and Cognition* 65(3):209–37. [PubMed: 17466428]
- McElree B, Foraker S, and Dyer L. 2003 Memory structures that subserve sentence comprehension. *Journal of Memory and Language* 48:67–91.
- McKoon G, and Ratcliff R. 1992 Inference during reading. *Psychological Review* 99(4):440–66. [PubMed: 1502273]
- McKoon G, and Ratcliff R. 2007 Interactions of meaning and syntax: Implications for models of sentence comprehension. *Journal of Memory and Language* 56(2):270–90.
- McNamara DS, and Magliano J. 2009 Toward a comprehensive model of comprehension. *Psychology of Learning and Motivation* 51:297–384.
- Mesulam M 2002 The human frontal lobes: Transcending the default mode through contingent encoding In *Principles of frontal lobe function*, ed. Stuss D and Knight R, 8–30. New York, NY: Oxford University Press.
- Miranda v. Arizona. 1966. (U.S. Supreme Court, 1966).
- Moran C, and Gillon G. 2005 Inference comprehension of adolescents with traumatic brain injury: A working memory hypothesis. *Brain Injury* 19(10):743–51. [PubMed: 16175835]
- National Conference of Commissioners of on Uniform State Laws. 2010 Uniform Probate Code. Chicago, IL: Uniform Law Commission.
- Noveck IA 2001 When children are more logical than adults: Experimental investigations of scalar implicature. *Cognition* 78:165–88. [PubMed: 11074249]
- O'Brien EJ, Cook AE, and Gueraud S. 2010 Accessibility of outdated information. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 36(4):979–91.
- Padilla v. Kentucky. 2010. (U.S. Supreme Court, 2010).
- Payne BK, Time V, and Gainey RR. 2006 Police chiefs' and students' attitudes about the miranda warnings. *Journal of Criminal Justice* 34(6):653–60.
- Perez A, Cain K, Castellanos MC, and Bajo T. 2015 Inferential revision in narrative texts: An ERP study. *Memory & Cognition* 43 (8):1105–35. [PubMed: 26047776]
- Pijnacker J, Hagoort P, Buitelaar J, Teunisse JP, and Geurts B. 2009 Pragmatic inferences in high-functioning adults with autism and Asperger syndrome. *Journal of Autism and Developmental Disorders* 39(4):607–18. [PubMed: 19052858]
- Powers C, Bencic R, Horton WS, and Beeman M. 2012 Hemispheric inference priming during comprehension of conversations and narratives. *Neuropsychologia* 50(11):2577–83. [PubMed: 22820639]
- Radvansky GA, and Copeland DE. 2001 Working memory and situation model updating. *Memory & Cognition* 29(8):1073–80. [PubMed: 11913742]
- Rapp DN, and Kendeou P. 2007 Revising what readers know: Updating text representations during narrative comprehension. *Memory & Cognition* 35(8):2019–32. [PubMed: 18265617]
- Rapp DN, and Kendeou P. 2009 Noticing and revising discrepancies as texts unfold. *Discourse Processes* 46(1):1–24.
- Rogers R, Blackwood HL, Fiduccia CE, Steadham JA, Drogan EY, and Rogstad JE. 2012 Juvenile Miranda warnings: Perfunctory rituals or procedural safeguards? *Criminal Justice and Behavior* 39(3):229–49.
- Rogers R, Fiduccia CE, Drogan EY, Steadham JA, Clark III JW, and Cramer RJ. 2013 General knowledge and misknowledge of Miranda rights: Are effective Miranda advisements still necessary? *Psychology, Public Policy, and Law* 19:432–52.
- Rogers R, Hazelwood LL, Sewell KW, Shuman DW, and Blackwood HL. 2008 The comprehensibility and content of juvenile Miranda warnings. *Psychology, Public Policy, and Law* 14(1):63–87.
- Rost GC, and McGregor KK. 2012 Miranda rights comprehension in young adults with specific language impairment. *American Journal of Speech-Language Pathology* 21:101–8. [PubMed: 22230180]
- Singer M 2013 Validation in reading comprehension. *Current Directions in Psychological Science* 22(5):361–66.

- Snow PC, and Powell MB. 2011 Oral language competence in incarcerated young offenders: Links with offending severity. *International Journal of Speech-Language Pathology* 13(6): 480–89. [PubMed: 21682546]
- Snow PC, Powell MB, and Sanger DD. 2012 Oral language competence, young speakers, and the law. *Language, Speech, and Hearing Services in Schools* 43:496–506.
- Swinney DA, and Osterhout L. 1990 Inference generation during auditory language comprehension In *Inferences and text comprehension*, ed. Graesser AC and Bower GH, 17–32. San Diego, CA: Academic Press.
- The United Nations General Assembly. 1966 International Covenant on Civil and Political Rights. Treaty Series 999 (12): 171.
- Vigliocco G, Kousta ST, Della Rosa PA, et al. 2014 The neural representation of abstract words: The role of emotion. *Cerebral Cortex* 24(7):1767–77. [PubMed: 23408565]
- Virtue S, van den Broek P, and Linderholm T. 2006 Hemispheric processing of inferences: The effects of textual constraint and working memory capacity. *Memory & Cognition* 34(6):1341–54. [PubMed: 17225513]
- Wagoner SA 1983 Comprehension monitoring: What is it and what we know about it. *Reading Research Quarterly* 18(3):328–46.
- Williams WH, Cordan G, Mewse AJ, Tonks J, and Burgess CN. 2010 Self-reported traumatic brain injury in male young offenders: A risk factor for re-offending, poor mental health and violence? *Neuropsychological Rehabilitation* 20(6):801–12. [PubMed: 21069616]
- Wilson J 1989 *On the boundaries of conversation*. New York, NY: Pergamon Press.
- Wilson-Mendenhall CD, Simmons WK, Martin A, and Barsalou LW. 2013 Contextual processing of abstract concepts reveals neural representations of nonlinguistic semantic content. *Journal of Cognitive Neuroscience* 25(6):920–35. [PubMed: 23363408]
- Wisconsin Statutes. 2015–2016 Chapter 853.01 (2015–2016).
- Wisconsin Statutes. 2015–2016 Chapter 767.34 (2015–2016).
- Wszałek JA 2015 Soziale kompetenz: A comparative examination of the social-cognitive processes that underlie legal definitions of mental competency in the United States, German, and Japan. *Fordham International Law Journal* 29:102–32.
- Wszałek JA, and Turkstra LS. 2015 Language impairments in youths with traumatic brain injury: Implications for participation in criminal proceedings. *Journal of Head Trauma Rehabilitation* 30(2):86–93. [PubMed: 25734839]
- Zwaan RA, and Radvansky GA. 1998 Situation models in language comprehension and memory. *Psychological Bulletin* 123 (2):162–85. [PubMed: 9522683]