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**'The Self' in Law, Psychology, and Neurology:
Understanding the Communicative Transference
of Neurocognitive Impairments.**

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Abstract

The purpose of this paper has been to create a theoretical framework by which one can understand communicative transference within, as well as between, systems. The paper has aimed to make use of how ‘the self’ in relation to neurocognitive impairments is conceptualized, communicated, and understood within the fields of Law, Psychology, and Neurology, in order to provide evidentiary support for such a communicative framework. By making use of a systematic literature review to identify relevant articles (N=31) and semi-structured interviews (N=3), the paper formulated a comprehensive empirical foundation upon which the framework was situated. The paper has found strong inferential support in both primary and secondary data which suggested an intra- and intersystematic gap that could be interpreted via the communicative transference framework. Additional support for the framework was found in the micro-macro interdependent construction of ‘the self’ between the fields of Law, Psychology, and Neurology. The paper reached the conclusion that while the frameworks’ current stage of development only leaves it as a tool by which one can ascertain the relative success of transferring communication between systems – based on the micro-macro interdependent relations of the fields in question – it is in of itself a viable tool, and so, one worth expanding upon.

Keywords: The Self, Neurocognitive Impairments, Systems Theory, Communicative Transference, Theory Generation.

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'The Self' in Law, Psychology, and Neurology:

Understanding the Communicative Transference of Neurocognitive Impairments.

Within modern law and medicine there exists interconnected aspects which bind the biopsychosocial individual together with the legal subject that he/she also composes. This can be seen in legal settings, which necessarily assumes that any legal subject is of a rational mind until otherwise is proven (Szalados, 2019, 8:3:4)¹ – whereas medical professionals, who deal more with consistencies than absolutes, are able to argue that rationality is fluxionally dependent upon both agency and structure (Freeman & Goodenough, 2017, 1:1:7; Szalados, 2019, 1:8:8). Rationality can as such be argued as emergent via path dependence when considered in medical settings (Liebowitz & Margolis, 1995, pp. 206-208; Mahoney, 2000, p. 509) – whereas it is more likely to be perceived of as a dichotomous state of being in legal settings, i.e., rational/irrational. And so, it is not uncommon to hear discussions about neurological impairments in legal settings, especially when there is a need to determine which dichotomous state an offender belongs to (Broström & Gewert, 2021, pp. 6-13; 48-49). Yet, these discussions are built upon the possibility of *communicative transference* between the medical and legal fields. As such, in order for any medical consistencies, diagnoses, or proofs to be admitted as legal evidence, they must first be *translated and transcribed* into a legal language accessible by experts, judges, and juries (Mobbs, Lau, Jones, & Frith, 2017, 2:5:3). Communicative transference can thereby be understood as a process, as well as a hidden phenomenon, removed from the spatiotemporal relations of the legal and medical fields, but which nevertheless interconnects the two sides by manner of a hidden communication in a Wittgensteinian sense of language games (Heath, 2018, 10:1:26; 10:1:39).

Considering the 2003 study conducted by Burns & Swerdlow, which documented the first causal relation between pedophilia and orbitofrontal syndrome, the question of *how* an individuals' biopsychosocial constitution interconnects with the legal subject he/she also composes, and furthermore, *how* that connection is being *communicatively transferred* in a legal setting, becomes paramount for investigation. The study was a case-review of a 40-year-old male schoolteacher who had started making advances towards his stepdaughter, as well as having secretly gathered a collection of child pornography (Burns & Swerdlow, 2003, p. 439).

¹ Some of the references literature in this paper are electronic publications without page numbers, as such and as an example, references written as (8:2:1) denote Chapter 8, Section 2, Paragraph 1.

However, prior to the mans sentencing, he was transported to a hospital due to a headache. During his stay, medical professionals identified a large tumor protruding from the olfactory groove, which displaced the right orbitofrontal cortex and distorted the dorsolateral prefrontal cortex (Burns & Swerdlow, 2003, pp. 437-438). Yet, it was not until the man had undergone critical neurosurgery that he became particularly interesting for study. The resection of the tumor resulted in a reduction of his sociopathic and deviant sexual behavior to such a degree, that after seven months of rehabilitation, the treating physicians no longer believed him to pose a threat to other children, or to his own stepdaughter (Ibid., p. 438) – and as such, was also allowed to return home. Unfortunately, after a period the tumor regrew along with the man’s sociopathic tendencies and sexually deviant behavior. However, after a final resection of the tumor along with documentation of no further regrowth, the sociopathic tendencies and deviant sexual behavior had seemingly been expunged (Ibid., pp. 437, 440).

A second case of particular interest to this paper, which not only highlights the need to map and understand how communicative transference works, but also how a lack of communicative transference can have far reaching legal consequences, is the Swedish court case B 3113-22, settled in September of 2022. The case pertains to an 18-year-old student who attacked and murdered two female staff at his school (B 3113-22, 2022, p. 11). During the criminal proceedings against the 18-year-old, he testified as to having deemed himself to be so misplaced and maladjusted in social circumstances, that he no longer believed himself worthy of being a participant in society at large (Ibid., p. 12). Given the randomness, planning, and ruthlessness of the 18-year-olds attacks, Malmö’s District Court found the man guilty of premeditated murder and sentenced him to life in prison (Ibid., pp. 13-14). This sentencing was made possible due to a statement from the Forensic Medicine Agency, which argued that his action was not motivated *by* any serious mental disorders, and that the 18-year-old was not deemed to have committed his acts whilst under the *influence* of a serious mental disorder either (The Courts of Sweden, 2022). Therefore, and in accordance with current Swedish legislation (Swedish Law, 2022, 3:31 Criminal Code)², the 18-year-old could not be surrendered to forensic psychiatric care, but was instead delivered a prison sentence. However, on the 11th of November 2022, the public was made aware that the 18-year-old had

²² This reference refers to the 143rd edition of the yearly publication *Swedish Law*, which also contains the Swedish Criminal Code. Here referencing the 3 § of chapter 31.

suffered from severe autism of such a degree that a senior physician in psychiatry had noted that: “You cannot talk about autism and then trivialize it. It is a state that is determining of everything that you do. You cannot guard yourself from external impressions {*my translation*}” (SVT News, 2022). Inferring that the 18-year-old could not control his own actions, but acted within the *state* of his cognizant capacity.

These two cases highlight an underlying issue within criminal legal proceedings, namely the integration of highly specialized knowledge from different fields of study. It is however important to note the following: Judges within criminal courts cannot, irrespective of the issue at hand, be expected to have extensive and intricate knowledge of neurological functions, or have an in-depth understanding of how atypical neuropsychological states influence behavior. This is due in part because judges are members belonging to the field of Law, and not members belonging to the fields of Psychology or Neurology, but also in part because judges are highly specialized legal actors whose speciality lie in law and not elsewhere. Still, these judges are expected to deliver a ruling that is *informed*, or supported, by equally specialized knowledge of different fields. As such, and given the time it takes to actually become specialized within a field of study, the question as to how judges can understand and incorporate such specialized knowledge into their decision-making processes becomes apparent. This also highlights the importance of how neurocognitive impairments, and their respective impacts on biological, psychological, and legal levels, are conceptualized, communicated, and understood within legal settings.

Theoretical perspectives on the self. This paper makes use of four theoretical aspects, which are in turn synthesized into two separate theoretical arguments. The initial synthesis is between that of Wilson & Ross’ *Temporal self-appraisal theory* (2001) and Markus & Nurius’ *Possible selves theory* (1986). Whereas Wilson & Ross argue that people tend to distance themselves from what they perceive as their ‘negative self’, whilst simultaneously try to adhere to what they perceive to be their ‘positive self’ in order to maintain a positive self-evaluation (2001, pp. 581-583); Markus & Nurius argue that people hold different representative ideas of what they would like their ‘selves’ to become, what they fear that it might become, and of what it might actually become (1986, pp. 954-956, 960-963) – which provides a conceptual link between a person’s motivation and their cognition. Thereby, the initial synthesis is constructed on the premise that people naturally differentiate between their ‘selves’ as they *were*, as they

are, and as they *will be*, whilst also incorporating the aspect that individuals are *motivated* by the perception they have of their future possible selves. As such, in synthesizing these two theoretical aspects, ‘the self’ becomes an emergent construct which is bound not only by temporality and motivation, but also by cognition.

By considering this synthesis in relation to the criminal case B 3113-22, it is highlighted that the 18-year-old was *cognizant* of his inability to ‘fit in’ with the rest of society, something that in turn *motivated* an act which was meant to: “[...] ensure that he would forever be barred from a free and normal life {*my translation*}” (B 3113-22, 2022, p. 12). The 18-year-old therefore saw himself as he had *been* throughout his life, as he currently *was*, and undertook an action to ensure what he desired to *become*. Furthermore, given that his self-perception had become so influenced by societal exclusion that he believed that he no longer deserved a place in open society, an argument can be made that an inversion of Wilson & Ross’ positive and negative selves occurred. This inversion creates a self-perception wherein the 18-year-old no longer distanced himself from his ‘negative self’, but rather acted to ensure the prosperity of such a self.

A similar argument can be made for the Burns & Swerdlow case. However, the 40-year-old man had a pre-existing *state of cognizant normality* which then became influenced by his tumor. And so, as he had shown no prior interest to engage with deviant sexual behavior before the occurrence of the brain tumor (Burns & Swerdlow, 2003, p. 436) – it can be inferred that the tumor’s influence on his neurological structure ultimately altered his cognizant state, and thereby also his inhibitions. Two major differences are thereby evident in these cases. The first one is that the 18-year-old had congenital neurological problems in terms of autism, and the 40-year-old developed his neurological problems later in life by means of a tumor, but both were neurologically affected. The second difference is that the 40-year-old retained a cognizant separation between his positive and negative selves, which allowed him to engage with *temporal differentiation*, i.e., a comparison of who he had *been*, who he currently *was*, and of who he might *become* – whereas the 18-year-old experienced an inversion of his possible selves.

Theoretical perspectives on systems. The second synthesis is between Ludwig Wittgenstein’s *Language Games* (1992) and Niklas Luhmann’s *Deontologization-process* (1995). Wittgenstein demonstrated in his *Philosophical Investigations* (1992) that what lies at

the heart of language is our shared conceptual understanding of the words that we use to communicate. However, Wittgenstein similarly pointed out that we cannot, with any amount of certitude, know that the recipient of our communication truly understands things the way that we understand them ourselves (1992, p. 46:73)³. This is because all the knowledge that we hold as individuals, also influence our understanding of the different conceptions which we encounter. The language games with which we engage, thereby hold that we understand words in our communications only on a surface level, and that what lies beneath, the ‘true’ understanding, is always at risk of being lost in communication between two or more actors (1992, pp. 52-53:87-88). As such, given that all of our previous knowledge influences our understanding of different conceptions, the communications that we are exposed to can only be ‘attached’ (if you will) to an already existing structure (of understanding). Thereby, we cannot fully understand or conceptualize ideas as they are envisioned by the *communicator* but are left to understand and conceptualize the ideas as best we can, given our own structures as *communicatees*.

This in turn brings us to Niklas Luhmann’s *Deontologization process*. Luhmann argued that systems, such as law, communicate with other systems through a shared environment of meaning by means of ‘irritations’ and corresponding ‘reactions’ (2004, p. 42). An ‘irritation’ is a structured message for any and all systems within the shared environment for which the message could be interpreted. The systems which in turn share the environment of the irritation conduct a so called ‘deontologization process’ in order to determine what parts, if any, of the message can be incorporated into the system itself (1995, p. 177; Luhmann, 2018, pp. 46-47). Notably, only the parts of the message which are corresponding to the internal structure of the deontologizing system can be incorporated into that system, meaning only parts of the message in its entirety are ‘accepted’ by the ‘reactive’ system (1995, p. 37; Luhmann, 2012, pp. 19, 22; Luhmann, 2013, pp. 3-4, 97-98).

Given these theoretical perspectives, a synthetization is made on the premise that communicative transference *is* a deontologization process based on intra- and intersystematic language games. We only understand the words we are being told on a general, superficial level, but we lack the underlying understanding and knowledge of what those words actually

³ Wittgenstein’s *Philosophical Investigations* is written in a sectional format where each section is given its own number in consecutive order. As such, 1992, p. 46:73 denotes page 46, section 73.

mean to the conveyor of the words. This is true for all instances of communication *within* a system, but particularly so when there is an attempt to transfer field-specific knowledge into another system, i.e., *inter-systematic communication*. This is due in part because of the language games to which one must adhere, but also because of the deontologization process of the observing system. Given that the observing system only incorporates information that it deems as either belonging or corresponding to its own internal structure, the facet of *language games* makes it even *harder* for information to be *understood* and *incorporated* in the way that it is being *communicated* by the communicator.

By reviewing the two cases in relation to this synthesis, we find that in the case of B 3113-22 there has been clear legal communication, but a lacking medical one. This is because the legal system has ensured that a severe psychiatric disorder was not the cause of the attack, and that the attacker was not under the influence of a severe psychiatric disorder at the time of the attack. However, and as noted by a senior physician at the Forensic Medicine Agency: “A severe autism, could be a serious mental disorder” (Broström & Gewert, 2021, pp. 52, 63). As such, it might be inferred that only parts of the information which the report conveyed, was incorporated, or accepted, into the legal system conducting the deontologization process. Thereby, crucial information regarding the 18-year-old’s biopsychosocial composition, which interconnects his emergent self with his *legal-self*, was overlooked due to deficiencies in the communicative transference. Of note, in the case presented by Burns & Swerdlow, the opposite was deemed to be true. Due to the 40-year-old man’s interaction with hospital services, his biopsychosocial composition became key to understanding his deviant behavior. This can be seen in that after having had a second resection of the tumor, he was allowed to return home (Burns & Swerdlow, 2003, p. 438) – albeit seven months later. Therefore, clear and concise arguments by medical staff regarding the orbitofrontal lobe’s part in regulating autonomic responses, and how the disruption of such a system result in an impairment of one’s ability to navigate social situations, became foundational in order to understand and correlate the man’s orbitofrontal syndrome with his pedophilic acts (Ibid., p. 440).

These two cases demonstrate the four theoretical cornerstones, or aspects, needed to understand communicative transference of neurocognitive impairments in relation to the self. Whilst the synthetization of the Luhmannian and Wittgensteinian theoretical aspects function as a theoretical framework, explaining how communication is being transferred, and why only

some of the information is incorporated into different systems; the synthetization of Wilson & Ross' theoretical aspect alongside that of Markus & Nurius' function as a theoretical anchor, connecting the abstract theoretical framework with empirics of the real world by means of the self. For instance, the case B 3113-22 demonstrated both temporal self-differentiation and an inversion of the 18-year-old's positive and negative self, along with apparent deficiencies in transferring the underlying etiology causing such changes to take place. Similarly, in the Burns & Swerdlow case it was shown that the man engaged with temporal self-differentiation, but without the influenced self-image which the 18-year-old had, and so managed to keep his positive and negative selves separate.

Decision-making capacity. The right of self-determination is derived from the principles of autonomy, which in turn is derived from the notions of self-governance (Peterson, 2019, p. 134). Such autonomy is defined within medical settings as a patient having a capacity to determine, a right to choose, as well as having a right to decline or accept relevant information (Ibid.) – meaning that decisions made within a medical setting must be based on the informed consent of the person involved (Tannou, et al., 2020, p. 2). Therefore, in all medical settings caregivers must strive to attain consent, which in turn is structured on a patients *ability* to make decisions, i.e., the patient must have a decision-making capacity (DMC) (Spencer, Shields, Gergel, Hotopf, & Owen, 2017, p. 1906). However, defining what DMC is and how it is to be understood, is a highly complex endeavor due to the complexity of the construct itself (Ibid., p. 1920). As such, it is pertinent to return to the roots of DMC as it emerged from the philosophical and legal traditions, in order to understand its current and more commonly argued neuropsychological function (Palmer & Savla, 2007, p. 1047; Begali, 2020, p. 190; Cohen & Sepehry, 2020, p. 24).

Decision-making capacity within its legal context (L-DMC) is divided into the terms *capacity* and *competency*, which carry a somewhat different meaning from their use within medical settings (Begali, 2020, p. 190). Legal capacity, in its most simple terms, refers to an individuals' ability to *engage* with various different forms of legal engagements, wherein the validity of those engagement is bound by the competency of the individual (Begali, 2020, p. 190; Cohen & Sepehry, 2020, p. 20; Ferguson, Duffield, & Worrall, 2010, p. 245; Palmer & Savla, 2007, p. 1048); whereas legal competency can be understood as an individuals' capacity for independent, and rational, decision-making (Begali, 2020, p. 190; Ferguson,

Duffield, & Worrall, 2010, p. 245; Cohen & Sepehry, 2020, pp. 20-21; Palmer & Savla, 2007, pp. 1048-1049). However, a single coherent definition of how to understand either capacity or competency is hard to find within the literature on legal perspectives, as every author tends to apply the terminology somewhat differently due to various underlying interpretations.

Medical decision-making capacity (M-DMC) is in turn equally divided into the subsections of *capacity* and *competency*. The terminology within the medical field is however more coherent, than that within the legal field. In short, a patient's capacity stands in relation to his/her cognitive ability to understand consequences, process information, and appreciate risk versus benefit (Begali, 2020, p. 190; Ferguson, Duffield, & Worrall, 2010, p. 245); whereas a patient's competency refers to the patient's mental and cognitive capabilities to execute legally recognized acts, such as providing consent (Cohen & Sepehry, 2020, p. 20; 24). Interestingly enough, despite the existence of legal definitions of what constitutes capacity and competency, judicial systems frequently rely on medical professionals in their legal assessments of DMC, making the determination of an individual's DMC a synthesizing medico-legal endeavor (Perington, Smith, & Schillerstrom, 2020, p. 655; Abellard, Rodgers, & Bales, 2017, p. 486; Petoft, 2015, p. 54). However, while this medico-legal approach to capacity and competency constitutes the modern understanding of DMC in both medicine and law, it is one fraught with medico-legal issues (Petoft, 2015, pp. 54-55). These issues can initially be understood as due to pluralistic world-views. Because DMC is bound by the medical and legal purviews when determining a person's capacity and competency, aspects such as free will and logical and rational thought collide when neurocognitive impairments come into play (Veretennikoff, Walker, Biggs, & Robinsson, 2017, p. 122; Perington, Smith, & Schillerstrom, 2020, p. 655).

Veretennikoff, Walker, Biggs & Robinsson argue that changes in a patient's emotions, behavior, and cognition, frequently occur in patients who suffer from primary and secondary brain tumors (2017, p. 122). Such changes influence the patient's decision-making ability, and ultimately compromise the functional independence of the individual as a whole, due to his/her affected executive functions (Ibid., p. 122; 129). The executive functions can in turn be understood as the mental skills needed to plan, organize, focus, initialize and/or inhibit a response. As such, these functions play an utmost important role in the decision-making process, and a dysfunction to said functions might influence a patient to make decisions which

might not be in his or her best interest (Ibid.). Therefore, when considering the DMC of a patient who engages with complex decision-making, specific regions that host various executive functions are investigated. For instance, executive functions pertaining to inhibition are understood as being supported by the frontal lobes, whereas selection and execution of actions are supported by the prefrontal cortex, and the information necessary to select a method for execution of an appropriate action is located in the posterior areas of the brain (Ibid., pp. 129-130). Of note, changes in the executive functions related to the orbitofrontal cortex, influence an individual's behavior to become more impulsive, act inappropriately, premature, and ultimately result in an undesirable outcome with regard to the individual's DMC (Ibid., p. 129). Peterson problematizes this fact as a separation between *will* and *action*, arguing that while the influence of executive dysfunctions might affect the kind and frequency of inappropriate actions, a cognitive disability might leave verbal communications and rationalizations intact (2019, p. 146) – meaning that an individual might argue their right to refuse certain treatments, or the righteousness of their actions, irrespectively of the perceived rationality of said action. Such an event ultimately forces medical and legal practitioners into an ethical stand-off with the individual in question, as a determination needs to be made as to whether or not the individual actually has sufficient DMC (Cohen & Sepehry, 2020, pp. 20-21; Ferguson, Duffield, & Worrall, 2010, p. 246; Peterson, 2019, pp. 138-139). Similar separations between will and action can be seen in aphasia patients who are at high risk when their DMC is called into question. This is due to their lacking capability in communicating their own will, as they are most often incapable to engage with the action of communication (Ferguson, Duffield, & Worrall, 2010, p. 247; Peterson, 2019, p. 137). Such a disability, being unable to communicate one's own will, due to neurological events, will most likely leave the patient deemed as incapable (Peterson, 2019, p. 137) – highlighting the importance of effective communication in the determination of DMC, especially since the cognitive components of DMC (reasoning, appreciation, and understanding) are conceptualized in such a way that they need lengthy and complex verbal communications (Ibid., pp. 136-139).

The influence of emotions on choice is therefore important to understand, especially in patient populations that are immediately affected by various diseases and disorders. For instance, within the brain tumor population, emotional dysregulation and disinhibition is a common feature that influences and most often impairs decision-making of a social nature,

despite the patient's intact intellectual functioning (Palmer & Savla, 2007, p. 1048; Veretennikoff, Walker, Biggs, & Robinson, 2017, pp. 133-134). Yet, if the patient is no longer capable of making decisions that can be verbally rationalized within the context of the situation, a determination as to whether the patient requires a proxy to exercise their DMC needs to be made (Cohen & Sepehry, 2020, pp. 20-21; Pace, et al., 2020, p. 607). Because an adult is presumed to be competent up until such a point that their DMC is being called into question, the determination of DMC becomes a binary judgement in both medical and legal settings (Spencer, Shields, Gergel, Hotopf, & Owen, 2017, p. 1907; Cohen & Sepehry, 2020, p. 20). However, DMC-proxies have been shown in previous studies to produce a poor level of agreement between what the patient prefers, and what the treating physicians and proxies perceive to be the most appropriate action (Pace, et al., 2020, p. 607; Spencer, Shields, Gergel, Hotopf, & Owen, 2017, pp. 1907-1908) – most often due to a misunderstanding of the DMC normative constraints (Peterson, 2019, p. 138). These normative constraints of DMC can best be described in two parts. The first part refers to DMC as a local phenomenon, meaning that patients and individuals are capable of making some decisions, while being incapable of making others (Peterson, 2019, p. 138; Spencer, Shields, Gergel, Hotopf, & Owen, 2017, pp. 1905-1906, 1920); the second part refers to the persons' ability to weigh risk-benefit ratios in relation to the social, medical, or legal decisions that are needed to be made (Peterson, 2019, p. 138; Palmer & Savla, 2007, p. 1048). As such, decisional capacity cannot be understood as context free, but is rather context- and decision-specific to each and every situation. This means that a person might have sufficient DMC with regard to entering into a phone contract or agreeing to a penicillin cure, but lack sufficient DMC to hold a car lease or refuse critical surgery (Spencer, Shields, Gergel, Hotopf, & Owen, 2017, p. 1906; Peterson, 2019, pp. 138-142; Palmer & Savla, 2007, pp. 1053-1055; Ferguson, Duffield, & Worrall, 2010, pp. 246-247). Decision-making capacity is therefore, as reviewed above, a highly multidimensional and sometimes variable phenomenon that is determined via a medico-legal process.

A medico-legal determination of DMC is most often dependent on extensive neuropsychological evaluations that investigate the specifics of neurological, psychological, legal, and social functioning, in order to determine the extent that cognitive and psychiatric dysfunctions might have on said functions (Schroeder, Martin, & Walling, 2019, p. 103;

Ferguson, Duffield, & Worrall, 2010, p. 246). In particular, neuropsychological evaluations present litigators and medical professionals with a snapshot of the individual's current L-/M-DMC, for whenever that person's DMC needs to be appraised (Cohen & Sepehry, 2020, p. 25; Ferguson, Duffield, & Worrall, 2010, pp. 246-247). However, given that both L-DMC and M-DMC are bound by cognition as a critical component for autonomous decision-making, both the medical and legal fields recognize that cognitive abilities, and in turn more basic cognitive functions, have a direct influence on DMC in general (Peterson, 2019, p. 138; Marson, Annis, McInturff, Bartolucci, & Harrel, 1999, p. 1983). This can be seen specifically in the influence that brain injuries, severe psychiatric disorders, cognitive problems, as well as developmental and neurodegenerative disorders have on both L-DMC and M-DMC (Dombrovski & Hallquist, 2022, p. 17; Peterson, 2019, p. 145; Spencer, Shields, Gergel, Hotopf, & Owen, 2017, p. 1920). This results in the issue of operationalizing both legal and medical considerations for DMC into a questionnaire of psychosocial constructs, that remain amenable to objective measurements in legal and medical proceedings (Cohen & Sepehry, 2020, p. 25). However, given the continuous findings within neurology on the influence that various diseases and disorders might have on our psychological expressions, such an operationalization is not an easy task. For instance, Veretennikoff, Walker, Biggs and Robinson argue that it is the tumor size, oedema, and mass effect that determine the degree to which a patient experiences neurocognitive impairments (2017, p. 123). An argument that is supported in recent studies by (Hendrix, et al., 2017, p. 60; Loughan, Braun, & Lanoye, 2019, p. 239) – who similarly argue that tumor location, and not malignancy grading or type of tumor, is determinant of the extent of the neurocognitive impairment. Therefore, because the mass affected by these illnesses and disorders tend to expand as they progress, a disruption of higher mental functions occurs, which in turn can affect personality, consciousness, and executive functions, leading to the DMC of the individual being compromised by virtue of the pathology of the illnesses and disorders (Cohen & Sepehry, 2020, pp. 24-25; D'cruz, 2021, p. 5; Marson, Annis, McInturff, Bartolucci, & Harrel, 1999, p. 1983; Peterson, 2019, p. 145).

Neurocognitive impairments. As a term, 'neurocognitive' pertains to the cognitive functions that are regulated within particular regions, cortical networks, or neural pathways in the brain (Bull & Kennedy, 2013, p. 986). The structure and function of these regions, networks, and pathways, modulate our individual thoughts and behaviors, which means that a

deficit or deterioration of any such structures have an immediate effect on our daily lives (Oort, et al., 2022, p. 272; Bull & Kennedy, 2013, pp. 986-987; Desjardins, et al., 2018, p. 960). As such, an intact neurocognitive functioning becomes an utmost important aspect in everyday life, especially when complex activities or an exercise of one's DMC is required (Bull & Kennedy, 2013, p. 986; Perington, Smith, & Schillerstrom, 2020, p. 655). The impacts of impaired neurocognitive functioning when complex activities are to be undertaken, can in turn best be understood in the dichotomy of direct and indirect effects on the instrumental activities of daily living (IADL) (Hobbie, et al., 2016, p. 139; Oort, et al., 2022, pp. 272-273). A direct impact on IADL can be understood as a decreased capability in managing individual finances or giving general directions, whereas indirect impacts pertain to a decreased ability for self-care (Hobbie, et al., 2016, p. 139). This is why an understanding of the brain region affected, and the consequent extent of the damages to the neurological structures, are pertinent to investigate when determining both global and local DMC (Habets, et al., 2019, p. 573; Perington, Smith, & Schillerstrom, 2020, p. 658). For instance, children who have survived treatments for brain tumors in their adolescence, have greater impairments with regard to personal insight as to why they cannot achieve their personal goals, or have a harder time to make and keep friends (Hobbie, et al., 2016, p. 140) – signifying indirect impacts on IADL given the region affected and the extent of the damages made due to the tumor.

There exists substantial evidence in previous research regarding the fact that the tumor's properties, i.e., the size, mass effect, and location, are the greatest causal factors in the occurrence of neurocognitive impairments (Habets, et al., 2019, p. 573; Oort, et al., 2022, p. 272; Hendrix, et al., 2017, pp. 60-61; Kohlmann, Janko, Ringel, & Renovanz, 2020, p. 582; Veretennikoff, Walker, Biggs, & Robinsson, 2017, p. 123; Loughan, Braun, & Lanoye, 2019, p. 289; Pace, et al., 2020, p. 600; Perington, Smith, & Schillerstrom, 2020, p. 655) – properties that have been shown to be equally causal for neurodevelopmental and neurodegenerative disorders (Lichtenberg, 2013, pp. 44-45; Oort, et al., 2022, pp. 272-273; D'cruz, 2021, pp. 1-2). Therefore, neuropathological assessments of the brain regions suspected of having suffered such neuronal loss that they disrupt critical structures, have become imperative in the determination of neurocognitive impairments (Begali, 2020, p. 184). Such assessments, by use of localization maps (LMs), can also add important information

with regard to how far an impairment has progressed, given, and as an example, that gliomas (the most common type of brain tumor in adults) actually have differences in their preferred locations, infiltrative growth patterns, and nature, compared to other acute lesions (Habets, et al., 2019, p. 574). However, despite the information that neurological, neuropsychological, and neuropathological assessments might provide, there exists a general consensus amongst medical practitioners that patients themselves are the best and most appropriate source of estimating well-being and functioning (Oort, et al., 2022, pp. 272-273). Yet, the neurocognitive impairments that the patient is suffering from, may in turn limit the patient's ability to accurately understand, and thereby accurately rate, their own level of functioning (Loughan, Braun, & Lanoye, 2019, p. 289; Kohlmann, Janko, Ringel, & Renovanz, 2020, p. 584; Dunn, Palmer, & Keehan, 2006, p. 143).

Because of the influence that neurocognitive impairments might have on IADL, a proxy representative might be chosen to ensure autonomy and agency with regard to L-/M-DMC (D'cruz, 2021, p. 1; Hobbie, et al., 2016, p. 139; Oort, et al., 2022, pp. 272-273). Yet conflict between proxies, and or, professionals, are recurrent when trying to ascertain the best course of action relative to the *will* of the patient (Ferguson, Duffield, & Worrall, 2010, p. 253) – and so the application of one or several proxies might ultimately lead to a loss of quality of life for the patient; a double-edged sword in trying to preserve autonomy and agency (Hendrix, et al., 2017, pp. 55-56). However, quality of life (QOL) with regard to the use of proxies could be argued as a secondary and distant concern in some regards, given the potential underlying causes that make the use of proxies necessary. For instance, brain dysfunction due to dementia often results in apathy in patients, but can in some instances even increase both disinhibition and hypersexuality (Lichtenberg, 2013, pp. 44-45; D'cruz, 2021, pp. 1-2); whereas high volume tumors have been known to result in reduced executive functioning, memory, perceptual speed, expression of choice, reasoning, appreciation, and understanding (Hendrix, et al., 2017, pp. 60-61; Pace, et al., 2020, pp. 600-601; Bull & Kennedy, 2013, pp. 969-970); and disruption of certain regions, cortical networks, or neural pathways in the brain in turn are associated with psychosocial and neurocognitive difficulties, along with reduced memory, meta-cognition, and self-reflection (Bull & Kennedy, 2013, p. 986; Oort, et al., 2022, p. 278; Aukema & Last, 2011, p. 1637). As such, whilst neurocognitive decline is an important prediction of patient QOL, the use of proxies can have

a similarly adverse effect from the patients perspective (Hendrix, et al., 2017, pp. 55-56) – especially since the neurocognitive decline might impair the patients social cognition, i.e., the skills for processing, analyzing, and memorizing information pertaining to people or social situations (Goebel, Mehdorn, & Wiesner, 2018, pp. 687-688).

The impact that neurocognitive impairments might have for a patient with regard to professional and social life, as well as for potential medico-legal decisions, makes the proxy a highly viable tool for both medical and legal practitioners despite the risks to patient QOL (Pace, et al., 2020, p. 607; Oort, et al., 2022, pp. 272, 277; Goebel, Mehdorn, & Wiesner, 2018, p. 687) – and an awareness of how such impairments influence behavior and cognition become of great relevance when considering management and medico-legal decisions for the patient by proxies (Hendrix, et al., 2017, pp. 55-56, 61). Therefore, an understanding of the underlying etiology in oppositional behavior for patients with neurocognitive impairments, becomes necessary when arguing as to whether or not the behavior is enlightened (Tannou, et al., 2020, pp. 2-3, 9). Furthermore, as neurocognitive impairments can be argued as moderated by both their severity and number, considerations must be given to comorbidity and sequelae (Bull & Kennedy, 2013, p. 971; Aukema & Last, 2011, p. 1638; Desjardins, et al., 2018, p. 960). As such, given the insight that the treating physicians and proxies have with regard to the patient’s neurological impairments, and given their perception of how the impairments have influenced the patient’s M-DMC and L-DMC; a decision has to be made as to whether or not the patient has retained their personal preferences post the occurrence of the impairments (Tannou, et al., 2020, p. 9). In the end, it becomes a question of the continuity of *the self*.

Implications for the self. At the core of personhood exists the self, an elusive categorical construct which integrates a multitude of schemata of who we are and how we exist in relation to others, whilst producing a sense of meaning and worth (D’cruz, 2021, p. 3). Yet, despite being an elusive construct in the psychological sense, neurological research has found that our *sense of self* and conceptualization of others, is heavily dependent upon the function of the medial prefrontal cortex and posterior cingulate (Johnson, et al., 2002, p. 1813) – meaning that the self is not only subject to change through our lived experiences and by overcoming psychosocial obstacles, but by the evolutionary development of our frontal and limbic lobes. Therefore, personhood, our existence as we are, can be understood as an

emergent and abstract product of continuous self-awareness, despite its tangible neurobiological roots (Perington, Smith, & Schillerstrom, 2020, p. 659; Johnson, et al., 2002, pp. 1812-1813). This neuropsychological phenomenon not only sustains our self-awareness as we are now, but forces upon us the concept of spatiotemporality such that we can recognize not only where and when we are today, but who we were yesterday, and might yet become tomorrow (D'cruz, 2021, pp. 3-4). However, it has recently been suggested that the ventromedial prefrontal cortex is the region responsible for an initiation of mental imagery and construction of perceptual details (Liu, Bulley, & Irish, 2021, p. 1507). This is of important note as people living with dementia experience a continuous deterioration of their sense of self, along with a progressive loss of L-/M-DMC due to a neuropsychological spatiotemporal discontinuity (D'cruz, 2021, p. 1; Peterson, 2019, p. 145; Marson, Annis, McInturff, Bartolucci, & Harrel, 1999, p. 1983). As such, because the self is developed and maintained reflexively, it requires extensive cognitive resources which are also coupled to behavioral, emotional, and biological functions (D'cruz, 2021, p. 3) – meaning that the progressive nature of neurological deterioration, or given the occurrence of neurological impairments in the frontal and limbic regions, can result in immediate yet subtle effects to be observed with regard to judgement, planning, social interaction, and self-awareness (Hendrix, et al., 2017, pp. 55-56; Johnson, et al., 2002, p. 1808).

Mental time travel, meaning the ability to project our *self* either back in time to reorient ourselves as to who we were, or forward in time to anticipate and prepare for who we want and might become, demand neurological structures which are sensitive to temporal dynamics (Liu, Bulley, & Irish, 2021, p. 1506). This is also why the self is particularly vulnerable with regard to deterioration and the occurrence of regionally specific impairments, as impairments or deterioration reduces the flexibility needed for future-oriented multiple representational formats (Ibid., 2021, pp. 1511-1514). As a result of continuous neurological deterioration and chronic or progressive impairments, the self becomes all the more situated within the temporal present, with less capability for auto-noetic (self-knowing) reliving via subjective time travel (Ibid., 2021, pp. 1511-1512). This radical discontinuity, which occurs due to such a separation between past, present, and future selves, brings a highly relevant yet somewhat uncomfortable thought to mind, namely: if the person currently living with a neurological deterioration or impairment, can be said to be the same person as he/she was

prior to its occurrence (D'cruz, 2021, p. 4). Because of the deterioration and/or impairment of cognitive, behavioral, and emotional functions, the self as it was *apriorically* recedes behind the disease, causing the person to experience a *living death* wherein the body exists in biological continuity but the mind, and therefore the self, slowly fades (Ibid., 2021, pp. 2-4).

Research questions, purpose, and aim. The purpose of this paper is to create a theoretical framework by which we can understand communicative transference *within*, as well as *between*, systems. As such, this paper aims to make use of how the self in relation to neurocognitive impairments is conceptualized, communicated, and understood within Law, Psychology, and Neurology. Furthermore, in order to meet both the stated purpose and aim, the paper has been divided into two parallel parts. The *first part* refers to the aim and consequent collection of primary data via a primary research question, that is in turn supported by secondary research questions. These have been formulated as such:

1. To what extent is there a communicative ‘*gap*’ in the understanding of ‘the self’ between the fields of Law, Psychology, and Neurology?
 - 1.1. How is ‘the self’ *conceptualized* within these respective fields?
 - 1.2. How is ‘the self’ *communicated* by professionals within neurology and psychology to professionals within law?
 - 1.3. How is ‘the self’ *understood* by professionals within law, as it is communicated by professionals within neurology and psychology?

The *second part* refers to purpose of the paper, namely the creation of a theoretical framework by which we can understand communicative transference. In order to meet the purpose, an initial synthetization is made to formulate the framework, as previously read, which is then tested against both primary and secondary data, in order to argue its soundness and validity.

METHOD (1)

Systematic literature review. Given the paper’s theory-generative outlook, a systematic literature review was conducted so as to ensure that no relevant literature was overlooked. Chris Harts’ approach to systematic literature reviews was chosen as it enabled a scheduling of the review into several stages (Hart, 2018). Within the *first stage*, EBSCOhost was chosen as the search engine for the paper considering its vast access to 43 different databases. The *second stage* pertained to the search and organization of relevant literature. A 3-tailed approach was chosen with the keywords: ‘brain tumors’, neurocogni*, ‘the self’, ‘decision-making capacity’, and ‘legal decision-making’, along with the Boolean AND within each of the tails. Thereby, each tail focused on either 1) ‘the self’ AND ‘brain tumor’, or 2) ‘decision-making capacity’, or 3) ‘legal decision-making’ with a fixed term for neurocogni* in each of the tails. At the same time, a *primary* inclusion/exclusion criteria ‘checkbox’ was set up with the following conditions:

Table 1.

Primary inclusion & exclusion criteria

Inclusion criteria	Exclusion criteria
(1) Peer-reviewed (2) Available in FullText (3) Written in English (4) Non-Duplicate (novel)	(1) Any articles that are not specified as by the inclusion criteria.

The initial search resulted in a total of 169 articles. These articles were then moved to the reference management program Zotero for a *Title-review*, to ensure that the inclusion/exclusion criteria had actually been fulfilled by the EBSCOhost search engine. Upon review, 77 articles across the 3-tails were found to be duplicates, and one (1) article was not written in English. This indicated that the tails had in part produced somewhat similar results, and in part that the search had been narrow enough to produce results of relevance to the paper. Having removed the duplicates and the article not written in English, a total of 91

novel articles were left for *Abstract review*. In order to ensure that only articles which are of relevance to the paper are taken into consideration, a *secondary* inclusion/exclusion checkbox was set up for the abstract review process. However, this time a primary condition was added for what had to be considered in relation to the inclusionary criteria:

Table 2.

Secondary inclusion & exclusion criteria

Primary condition	Exclusion criteria
(1) Articles has to treat X in relation to either brain tumors or neurocogni*	(1) Any articles that fail to meet the primary condition
Inclusion criteria (X)	
(1) Alterations of ‘the self’ (2) Alterations to ‘decision-making capacity’ (3) Alterations to ‘legal decision-making’	

The abstract review resulted in a total of 56 relevant articles for the following *FullText review*. As such, a tertiary checkbox was used which contained the same primary condition and inclusion criteria as the secondary checkbox, but with an added criteria for articles that could be excluded:

Table 3.*Tertiary inclusion & exclusion criteria*

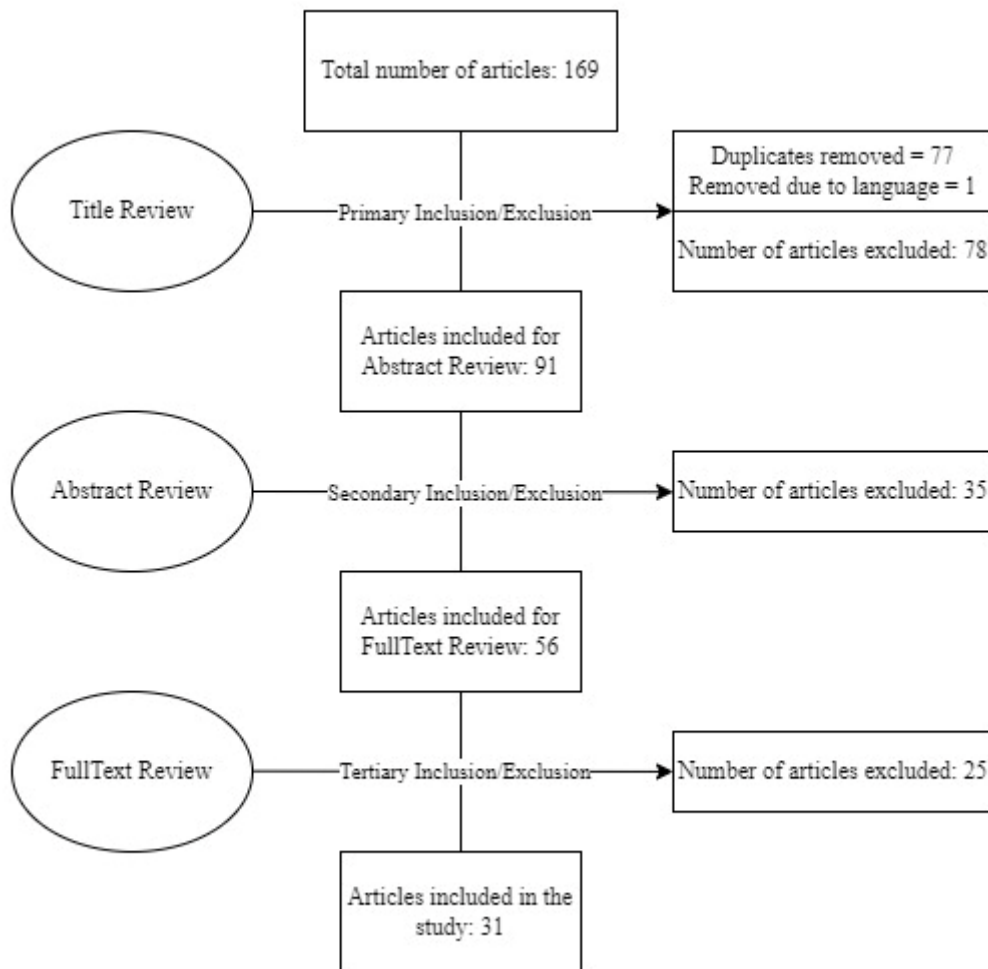
Primary condition	Exclusion criteria
(1) Articles has to treat <i>X</i> in relation to either brain tumors or neurocogni*	(1) Any articles that fail to meet the primary condition (2) Articles which exclude multifaceted explanations to <i>X</i>
Inclusion criteria (X)	
(1) Alterations of ‘the self’ (2) Alterations to ‘decision-making capacity’ (3) Alterations to ‘legal decision-making’	

The second exclusion criteria which was added in the tertiary checkbox ensured that only articles which considered some combination of law, psychology, and neurology, in relation to the *alterations* of interest, were included in the paper. This in turn resulted in a total of 31 unique articles left to be included in the paper.

The *third stage* of the literature review pertained to the extraction of pertinent data from the articles that had passed the primary, secondary, and tertiary inclusion criteria. By engaging with *keyword searches* and *phrase contextualization*, specific arguments could be identified and compared to other prior to their synthetization under thematic headings. These keywords were identified via the qualitative processing software *NVivo*, which scanned all of the articles and provided a summary list of the most frequently used words, along with their context. It was therefore made possible to immediately access and summarize topics based on keywords, field specific arguments, and thematic similarities.

Figure 1.

Flowchart of systematic literature review



Analysis of literature. The analysis of the material was done using two key aspects in theory-generative work, namely *codification* and *continuous comparisons* (Beach & Pedersen, 2019, pp. 131, 270-272; Bryman, 2018, p. 688). The codification was initially set up based on the fields of interest for the paper itself, namely: Law, Psychology, and Neurology. This led to an analytical checkbox being created for keywords and their surrounding context, as identified by NVivo, which were then determined as belonging to either of the three fields. After a statement had been identified as belonging to either of the fields, it was then controlled for thematic similarities and field specific content. This created an analytical framework wherein the *most different and most similar statements* could be identified (Beach & Pedersen, 2019, pp. 131, 140, 258). This produced the following module:

Table 4.

Example of most different and similar statement-analysis

Law	Psychology	Neurology
<p>Legal competency involves the mental and cognitive capability to understand and execute legal tasks, such as the ability to assign power of attorney, plan and execute a will, and have knowledge of one’s assets and estate choose one’s whereabouts and execute tasks associated with maintaining independent living, exercise one’s right to vote, and consent to or exercise the right to decide one’s course of medical treatment. (Cohen & Sepchry, 2020, p. 24)</p>	<p>Two people with the same DSM diagnosis can have markedly different levels of functioning and variations in their presentation. These impairments are often conceptualized as existing along a continuum. In milder personality disorders, it can be common for clients to seem unwilling to engage appropriately in their own care and act in their own self-interest. (Perington, Smith, & Schillerstrom, 2020, p. 659).</p>	<p>Pertinent information on whether damage to a specific brain region due to tumor activity results in neurocognitive impairment or not, is relevant in clinical decision-making, and at the same time renders unique information on brain lesion location and functioning relationships (Habets, et al., 2019, p. 573).</p>
<p>Codification Schedule for Continuous Comparisons</p>		
<p>Thematic similarities : Decision-making capacity Field specific : Legal competency, Personality disorders, Brain lesions Keywords : Legal, Personality, Brain</p>		<p>Thematic similarities provide an insight into the <i>most similar</i> statements, and thereby underlying themes, whereas field specific statements are of the <i>most different</i> kind, creating separations between fields.</p>

By engaging with this kind of analysis, i.e., the highlighting of similarities and differences between the arguments made within the respective papers, several underlying and recurrent themes were identified throughout the literature. Furthermore, by relying on the similarities between the arguments made in each article, in a form of pattern evidentiary analysis (Beach & Pedersen, 2019, p. 172) – the following themes were identified as the most central to the literature: *Decision-making capacity*, *Neurological impairments*, and *Implications for the self*.

METHOD (2)

Semi-structured interviews. In order to best identify *how* the self is conceptualized, communicated, and understood by those active within the fields of Law, Psychology, and Neurology, semi-structured interviews were conducted.

Participants. The interviewees were initially chosen via a *targeted selection* as the primary interest of the paper was to interview working professionals within the fields of Law, Psychology, and Neurology (Bryman, 2018, pp. 496-498) – with relative proximity to myself. The criteria for targeted selection therefore stated that any interviewees would have to: 1) Be practitioners within Skåne County, and 2) Have actual clinical experience. The selection process was then allowed to *snowball*, so that other interested parties might be able to participate, as long as they fulfilled the stated criteria (Ibid., pp. 245-246). The final number of participants meant to be included in the paper were two (2) neurologists, one (1) senior physician in psychiatry, and three (3) judges. Amongst the neurologists there was one female and one male participant, the senior physician in psychiatry was also male, and out of the three judges who participated, two were men and one was female. Of note, each of the interviews were translated into English when referenced in the paper.

Procedure. Prior to the interviews a questionnaire was constructed to serve as an interview guide. The questionnaire was formulated with enough room for the participants to elaborate on their answers, but also included follow-up questions, i.e., *conditionals*, to certain questions of particular interest (Ibid., pp. 565-567). Each of the interviewees were initially contacted via email by use of a formal interview request, with an attached consent form as a PDF-file. The prospective interviewees were asked, if interested to participate, to read the consent form which provided information on: *what the study was about, possible future applications, why I was interested in interviewing them, their participation, ethical details, possible effects of participation, and my contact information* – and then to contact me in order to set a date for the interview.

The interviews were originally planned to be conducted over the phone. However, due to circumstances such as sickness and rescheduling issues, both of the interviews with the neurologists were finally carried out in person at their place of residence. This change in interview format provided additional data in the form of body-movements, personal contact, and immediate access to the interviewees place of practice, which hopefully also made them

feel more at ease answering questions. Prior to the interview, each of the interviewees were sent a case description of 150 words and were asked to consider their perspectives on *the self* prior, during, and after the occurrence of a brain tumor. The length of the interviews was set to 30 minutes and all interviews were recorded with the software *Sound Recorder Plus*. All interviews were also managed within the allotted time. Finally, by the end of each of the interviews the interviewees were given a *debriefing* where they were thanked for their participation, highlighting that they still maintained the right to withdraw from the study, that their confidentiality as part of the study was ensured, and that they could receive a copy of the paper after its completion (Willig, 2013, pp. 96-97). Each of the interviews were thereafter transcribed for further analysis (Bryman, 2018, pp. 577-579; Denscombe, 2018, p. 395).

Analysis of interviews. The interviews were analyzed using a second *most different and similar statement-module* and were coded for field specific differences as well as thematic similarities, as per *Table 4*.

RESULT

This paper relies on data collected from both a systematic literature review (secondary data set), as well as on empirical data collected in the form of interviews (primary data set). The results have therefore been divided into two separate sections, dealing with either data pertaining to the review or the interviews, to make for an easier read. With regard to the compilation of the data collected from the review and the interviews respectively, all secondary and primary data was initially reviewed separately, before being compared to other data belonging to the same data set.

Systematic literature review. In compiling the secondary data collected from the literature review, three primary themes were identified, as presented within the introduction of the paper, namely: *Decision-making capacity*, *Neurocognitive impairments*, and *Implications for the self*. Within the articles, each of these themes were discussed in relation to each other and were continuously referenced in discussions on *autonomy* within the fields of Law, Psychology, and Neurology, suggesting it to be an overarching theme. However, autonomy was ruled out as a specific theme for the paper, as even a quick investigation into the legal, psychological, and neurological relations of autonomy immediately derailed the focus of the paper into aspects of: *neural processing of moral violations* (Harenski, Harenski, & Kiehl, 2014), *psychopathic traits during personality judgements* (Deming, et al., 2018), and

neuroprediction of recidivism (Kiehl, et al., 2018). As such, the three themes already identified were deemed as being sufficient to reach theoretical saturation (Beach & Pedersen, 2019, pp. 155-157; Bryman, 2018, p. 688) – i.e., they provided enough evidentiary data of interactions between, as well as within, the fields of Law, Psychology, and Neurology, such that no further data was needed to be collected. Of interesting note, the three themes which were detected via thematic similarities by use of the most different and most similar statement-module, were discussed and described as interconnected by their structure throughout the literature reviewed. This meant that arguments pertaining to neurological diseases and disorders were continuously discussed in relation to impairments, and by extension the impairments effects upon decision-making capacity. For instance, and as argued by D’cruz:

The impairment in memory and other cognitive abilities – amnesia, agnosia, apraxia, aphasia, alexia, agraphia, acalculia, and executive dysfunction – are therefore not just primary losses of specific abilities of the brain, in and of themselves. They also cause a secondary inability to appreciate or integrate the self. – (D’cruz, 2021, pp. 3-4)

Persons with dementia differ in the level of insight and in the presence or absence of anosognosia, though decision making capacity declines with the progression of the illness. – (D’cruz, 2021, p. 4)

Similarly, there often occurs a change in values and belief systems with cognitive decline and personality change. If the person with dementia in Pick’s disease now believes physical aggression is acceptable in order to get one’s way or if the person with dementia in Parkinson’s disease now believes there is nothing wrong with gambling at cards or shopping excessively, are they still the same person they once were? – (D’cruz, 2021, p. 4)

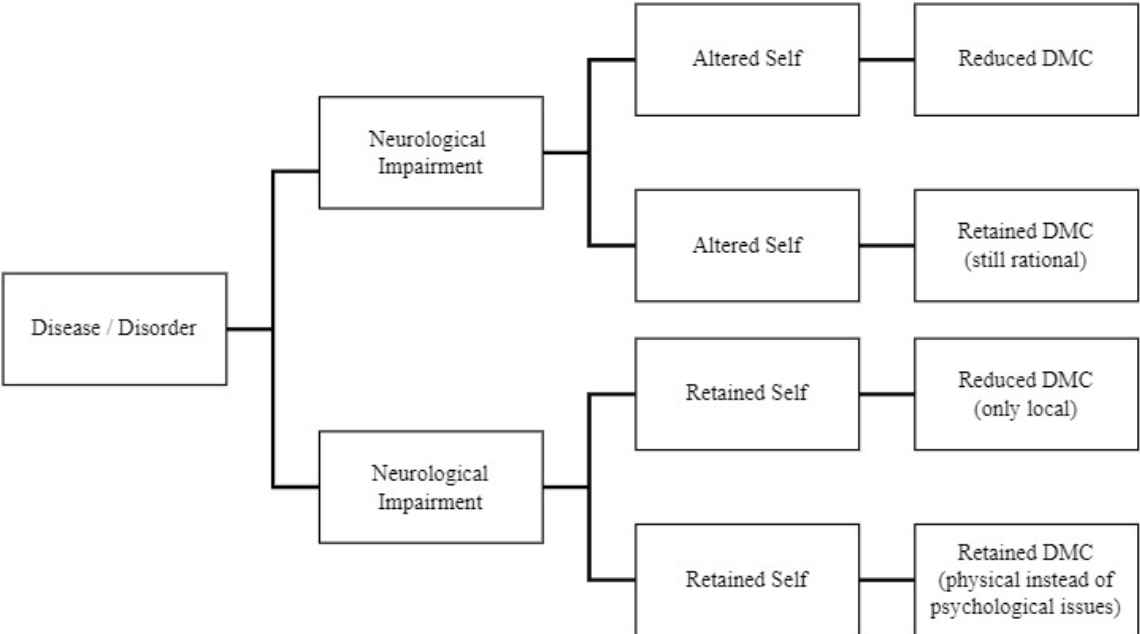
As the person with dementia navigates the disease and deals with the progressive loss of abilities, disintegration of the self, and loss of decision-making capacity – shared decision making and advance care directives, where available, offer support and the prospect of prospective or precedent autonomy. – (D’cruz, 2021, p. 6)

As seen here, and as was found throughout the literature, the three themes were interconnected and somewhat reliant upon each other. Decision-making capacity (DMC) is contingent upon both neurological impairments and the self, wherein the self is determined as being either altered or retained dependent on whether or not the decisions made by an

individual seem rational, comparatively to how their ‘prior’ self would have made decisions in similar situations. A sudden and potential deviation within the decision-making process could therefore suggest a potential neurological impairment or newly arisen psychosocial impact, but which nevertheless alters and produces a change in the prior self into something new. However, the neurological impairments were not contingent upon DMC or an intact self, but continuously acted as a bridge which interconnected the self and DMC with the disease or disorder causing the impairment in the first place. Therefore, the interconnectivity of the three themes or constructs, could be envisioned as such:

Figure 2.

Flowchart of interconnectivity between themes / constructs



However, the flowchart in Figure 2 does not imply a causal progression or direction for causal flow, but rather highlights how each aspect is to be understood in an interconnected fashion. For instance, an individual might experience a disease affecting the ocular nerve, which by definition is a neurological impairment, but the disease does not have any impact on cognitive functions and so have no bearing on the self or DMC. Furthermore, given that diseases are biological in construct, but disorders might be expressed as psychological or behavioral, this flowchart interconnects the abstract notions of psychology with tangible biological matter, in

order to understand how the semi-abstract sociolegal construct of DMC is interconnected with a biopsychosocial subject.

On a final note, throughout the literature the self is discussed in Law, Psychology, and Neurology, as a highly interconnected construct. The legal aspects of the self were best understood through the legal and medical decision-making capacity, which in turn is determined by both psychological and neurological states. However, the psychological aspects of the self were in turn best understood by spatiotemporality and self-differentiation, which were argued as being contingent on an intact neurological functioning, and in turn determined decision-making capacity as a whole. Finally, the neurological aspect of the self was understood by path dependence and the emergence of constructs, e.g., neural pathways which are constructed in a normative sense produce a normative self, but when these pathways are disturbed, they can result in a loss of the self and a consequent loss of decision-making capacity. Therefore, each of the different fields had different notions and conceptions in relation to the self that seemed more intra- than intersystematic. For instance, the legal field constructed the self upon the principle of rationality, i.e., that individuals are rational actors until proven otherwise; whereas the psychological field constructed the self upon the idea of emergence, i.e., that the self is a construct which is produced, but which cannot be reduced to the sum of its parts; and lastly, the neurological field constructed the self upon the assumption that path dependence is the dominating aspect. Thereby, the construction of the self *within* the fields provided an insight into how the fields differentiated themselves from others, but when considering legal, psychological, and neurological aspects of that very construct, it was found to have shared commonalities *between* the fields.

Interviews. The final number of participants meant to be included in the study ultimately differed from the actual number of participants. This was due to a withdrawal of consent to participate in the study by the three judges, which meant that only our prior conversations over email could be used, as those conversations constitute public records. The final number of participants was two (2) neurologists, one (1) senior physician in psychiatry, and a brief email conversation with the judges. The primary data collected as part of this paper can therefore, and with good reason, be argued to be relatively small. However, given that the purpose of this paper is to put forth a theoretical framework by which we can understand communicative transference (as supported by secondary data), and its aim is to

understand how the self in relation to neurocognitive impairments is conceptualized, communicated, and understood within the fields of Law, Psychology, and Neurology, by means of primary data; the data collected can be seen as providing excellent preliminary data as to the viability of the theoretical framework.

The judges provided some unexpected data within the primary data set. This was due to their answers being, arguably, incompatible with several statutes within the Swedish Trial Code. Firstly, the 1st – 3rd paragraphs of the 17th chapter in the Swedish Trial Code state that a Swedish court *must* reach a determination of some kind, with regard to the evidence that has been placed before it during a trial (Trial Code (1942:740)) – which highlights the fact that Swedish judges cannot choose to opt out from making a ruling in a legal case. Secondly, the 1st paragraph of the 35th chapter in the Trial Code states that the court after conscientious examination of the evidence presented, has to decide what is proven within the given case (Ibid.) – implying that the ruling, which is mandated of the court, has to be informed by the evidence at hand. And lastly, the 1st paragraph of the 40th chapter in the Trial Code states that if there is an issue which requires special expertise, it is necessary to hire an expert on the given topic to provide an opinion (Ibid.) – meaning that in such instances in which the judges lack the required expertise, outside aid might be called for from experts on topics to which the matter pertains. Therefore, the reply from the court and its respective judges, stating that: “None of our judges feel they have the knowledge or competency to answer your questions” – Suggested a certain incompatibility with the aforementioned statutes. As mentioned in the introduction, judges cannot be expected to have the intricate knowledge which neurologists and psychologists possess, but they are nevertheless expected to make an informed ruling, or at least one supported by the specialized knowledge needed within the given case. Therefore, and again as previously argued, it is most pertinent to understand how judges incorporate such specialized knowledge into their decision-making processes. As such, a reply was sent back to the court in order to clarify any misconceptions:

Even though my paper in Psychology is aimed towards Neurolaw, that is not the subject of which you are meant to be interviewed about. The interviews are aimed at generating an image of judges perceptions and understandings surrounding ‘the self’ prior to, during, and after a

neurological disorder / disease has occurred – and how such evidentiary data is then incorporated into your decision-making process. Every interviewee will be given a case description from a previous court case wherein a brain tumor was central for determining liability. The case description is therefore intended to act as the main point of discussion, wherein you will also be given some questions regarding your own thoughts and ideas about the self, liability, and culpability.

However, within an hour of said reply, a message was received stating: “Thanks for the info, but we probably still lack knowledge and experience”. Therefore, within the correspondence, only three keywords of relevance were able to be obtained, namely: *knowledge*, *competency*, and *experience*. These words might not at a first glance appear to provide much data in terms of results, but when it is placed within a proper context their meaning can be inferred.

The judges’ argument pertaining to *knowledge* could be understood as their immediate understanding of concepts such as the self, how implications of brain tumors express themselves, and how to weigh such evidentiary data within trial proceedings. The *competency* of the judges could therefore in turn be understood as to whether or not the judges believe themselves capable of integrating such specialized knowledge within said proceedings. Which in turn would be reflective of the use of the word *experience* in their correspondence. If a judge lacks the experience to interpret and thereby incorporate the knowledge put forward by an expert witness, it is also most likely that they do not feel competent to undertake such an endeavor or have the specialized *legal* knowledge of how to go about doing so. In summary, the data provided by the judges themselves makes it clear that they lack the knowledge, competency, and experience, for dealing with integration of highly specialized data from different fields.

The neurologists provided a great deal more data than did the judges. With regard to the influence that a *neurological impairment* might have on the individual, both neurologists argued in accordance with each other, as well as with the previous literature, stating that the impairments which an individual might experience are path dependent (XC302-A1, 2022, p.

2:12; FL481-H8, 2022, p. 1:6)⁴ – i.e., the disorder, disease, consequent damages, and location are determinant of the outcome. However, there was some disagreement between the two when discussing effects upon the self. One of the neurologists argued that:

I would guess based on your description and the location of the tumor that his 'self' is probably not greatly affected, but that he gets behaviors that he cannot control himself, due to the tumor's local influence in the frontal lobes – (XC302-A1, 2022, p. 2:14)

Contrary to the second neurologist who argued:

I would say that his 'self' is before the tumor gives him symptoms that cause him to change his personality. The change in personality, I would say, is caused by the tumor or the swelling that is there and affects the functioning of the brain. In terms of during, I would say that he has parts of himself and parts of how he acts that are not himself, but instead are affected by the tumor. [...] But I would probably say that his original 'self' is what his 'self' actually is, and then it changes when he gets the tumor. I would probably not say that it is his 'self' [when the tumor is present; auth. no] but that he is influenced by something – (FL481-H8, 2022, p. 2:8)

Despite their references of personality or behavior as being the aspect that is affected by the tumor, both of the neurologists agreed on the perspective that *the self* is ultimately something which can be *understood* and *conceptualized* as a dynamic construct, i.e., something which slowly changes and adapts over time due to various external influences, as shown by their respective comments:

It is something that can be discussed because it [the brain; auth. no] is exposed to a lot of environmental influences, learning, experiences, and

⁴ All interviewees have been assigned a randomized and computer-generated name in order to ensure that their anonymity is guaranteed. Furthermore, page references such as (p. 2:12) are to be read as page 2, section 12.

then on top of that a developmental curve which eventually leads to a winding down curve with normal aging and possible injuries and diseases on top of that – (XC302-A1, 2022, p. 3:22)

Some major life event can also change the personality, but I think it comes in succession and maybe a little more gradually, and that there is an external explanation for why it has changed. Or maybe some other explanation that ‘the self’ can give, for example that I was like so at one time, but now I am more like this in this time – (FL481-H8, 2022, p. 3:12)

Throughout the interviews with the neurologists, path dependence made itself evident. This was an aspect that was relatively expected, given the results of the previous literature that had been examined as part of the systematic literature review. However, despite the neurologists’ agreement on how impacts on neurocognitive functions are to be understood in terms of effects on the self, they *communicated* that understanding in different ways. Whereas one of the neurologists chose to refer solely to personality, the other chose to refer to alterations in behavior:

I think that a ‘self’ is something that of course constantly changes a little bit, but that you have a continuous thread, so we might be talking about personality. But when that starts to differ greatly from what you have been before, then we in healthcare usually investigate whether it is something organic that causes you to have changed so much [...] The change in personality, I would say, is caused by the tumor or by the swelling that is there and affects the functioning of the brain. [...] I keep coming back to personality. – (FL481-H8, 2022, pp. 2:8, 3:12)

I can probably say that doctors think based on personality [...] It is like this, the cognitive functions – the emotional reactions, and functions, and behavior [...] they all start from the brain, and nowhere else. This means that the type of injury or disease that affects the brain, can affect behavior

[...] for instance, we had a patient with a previous personality disorder that was made even more complicated due to a cognitive disease, which in turn made her unable to regulate her behavior – (XC302-A1, 2022, pp. 3:22, 4:24)

As seen here, alterations to either personality or behavioral mannerisms tend to be used somewhat interchangeably when discussing implications of neurological impairments on the self. Still, the concept of personality came more so to represent the various schemata a patient has that are subject to influence, and the behavioral mannerisms came to represent the actions taken as based on those influenced schemata. As such, and as argued by XC302-A1 in the above-mentioned quote, an inability to regulate one's own behavior due to affected cognitive functions, ultimately result in a loss of *decision-making capacity*. This was further highlighted in the discussion on how the neurologists, acting as expert witnesses in a legal proceeding, would have explained the changes taking place in the self, personality, and behavior of the man discussed in the case description provided for the interview:

There are areas in the frontal parts of the brain that are necessary for normal social behavior. There, for example, a very important part can be whether you have any inhibition, or disinhibition in this man's case, where you cannot stop a more instinctive and basic behavior [...] A person with frontal lobe dementia, they can eat from someone else's plate, or they can eat all the candy in the bowl on Christmas Eve, they can start pawing at friends and acquaintances, so they can't control their impulses so to speak [...] So I'd probably say no, you cannot demand responsibility from someone like that because they are no longer responsible for themselves. The 'self' is challenged or repressed or influenced; if you see the 'self' as the rationality which controls ones' behavior. [...] Then again, I do not know how a court assesses such things, I am not in that business, so I do not know how they judge illnesses as a basis for criminal behavior – (XC302-A1, 2022, pp. 3:18, 5:32, 6:38)

I would have talked about where the tumor is located and referred to the function of the structure, and that it was so clear that the behavior came because of it. Since ‘the self’ is dynamic, but also when it is so connected to an actual pathology in the brain, I would argue that it was not the person’s real ‘self’, but that the ‘self’ was influenced by something that was there [...] It is very clear in this case that the tumor has influenced his expression in the form of pedophilic thoughts and actions that he previously had not demonstrated. Then, as soon as he gets the tumor removed, he is back to how he was before, so I think it is very clear [...] I do not think he should be sentenced, because he cannot be held responsible for what he has done – (FL481-H8, 2022, pp. 2:10, 3:16, 4:24)

Finally, and of note, both neurologists argued that the man should not be held responsible for his deviant behavior, due to the underlying causes that motivated it. However, both neurologists also believed that their understanding of neurology and perception of the self, was not shared by those within the field of law, but hoped that both their understanding and perceptions was shared by those in psychology, as seen in these last comments:

I would like to believe and hope that the psychologists have the same picture as we do, that we nevertheless have the same training regarding the functions of the brain and so on. However, I think that there is a huge difference compared to those who have a non-medical or non-science basic education, there it can probably be very different – (XC302-A1, 2022, p. 4:26)

Perhaps it is more consistent with those who work in psychology, than law. I think if you work in law you have to be more categorical, I imagine, so I would not have wanted to be a judge myself – (FL481-H8, 2022, p. 3:18)

The results of these interviews thereby show some minor inconsistencies when the neurologists discuss aspects of the self *within* their own field (pertaining to behavior and

personality), whilst simultaneously highlighting an expectance of difficulty when communicating said aspects *to* the field of law.

The senior psychiatrist provided a somewhat similar account as the neurologists. Just as the neurologists argued that the impairments which an individual might experience are path dependent (XC302-A1, 2022, p. 2:12; FL481-H8, 2022, p. 1:16) – so too did the senior psychiatrist (YO664-N5, 2022, pp. 1:6, 5-6:10). However, there were some differences of note between the neurologists' perspective and that of the senior psychiatrist. For instance, in arguing effects upon the self, due to the tumor discussed in the case description, the senior psychiatrist provided the following comment:

Yes, so {un.} would probably claim that the self is the down-regulating part of the brain that sits frontally. That is to say, you have a thought-control that starts from the frontal lobes which is actually for down-regulating and modulating the majority of all thought-suggestions and later activity-suggestions if let through, which all stem from the more primitive parts of the brain. This down-regulation works according to the principle that you have to adapt your behavior in a way that makes you functioning and social among other people, otherwise you end up as a loner, and the loner is not allowed to join in – (YO664-N5, 2022, p. 2:8)

This suggests that while the neurologists argued that the self can be understood through either personality or behavior, the psychiatrist held the view that the self is best understood as a function that regulates and modulates impulses from the more basal parts of the brain. Of note, both neurologists arguments were, as argued, based on path dependence, and so their arguments were founded upon neurological functions that in turn too reflected changes in either personality or behavior. As such, one should not read the difference in the effects upon the self, as a differentiation in the underlying structures that form the self, or the outcomes in relation to the self, but rather that the three interviewees have different conceptualizations as to what constitutes said self. This is highlighted by the psychiatrist comment pertaining to whether or not the self can be perceived as a dynamic construct:

I would argue that the self, based on the protocol from which this control unit works, remains constantly unbroken. The difference, is the self's ability to control the thought-suggestions that the rest of the brain comes up with. That is, the self continuously works to select what will be the best for the individual in the long-term, and then just pass on that suggestion for implementation [...] I just want to say that the self, as far as the frontal lobes go, is basically unchanging – (YO664-N5, 2022, p. 4:20)

This is similar to the point one of the neurologists argued, namely that the self remains relatively unchanged. Thereby, an initial overlapping in understanding of how the self is constructed upon path dependence could be argued, especially since the self is argued as an emergent construct based of neurological structures. In a similar sense, pertaining to how the psychiatrist's understanding of the self was *communicated*, it can be said to have relied heavily on neurosocial arguments that seemed to summarize both of the perspectives put forth by the neurologists:

So, because we are so extremely social, we also have large frontal lobes. Therefore, it is fatal when someone like this man is deprived of the ability to regulate his thinking, and since thought-regulation precedes activity-regulation, he will have a behavior that is unacceptable because he simply cannot – because of the damage to his frontal lobe – send a strong enough control-signal. He cannot down-regulate the suggestion that he and everyone else has, but where everyone else is quick enough to down-regulate the suggestion that they barely notice they even had the idea. He simply becomes antisocial, and the behavior cannot be accepted in society, by the herd, in the group, or by the tribe – (YO664-N5, 2022, p. 2:8)

It can therefore be summarized that the psychiatrist argues along similar lines as the neurologists in that the neurological impairments of the self (the down-regulating mechanism) ultimately results in behavioral deficiencies which are not accepted by society. Herein, and in relation to both the primary and secondary data, we find that a faulty down-regulating

mechanism brings into question the capability of the individual to make socially acceptable decisions, i.e., the individual's decision-making capacity. However, when speaking from personal experience serving as an expert witness, this perspective was described by the psychiatrist as somewhat problematic, especially when attempts were made to communicate them within legal settings:

I was advised by the lawyer, which I do not think was very right, to use a classic analogy instead of showing a picture [...] because I have pictures that I use when I talk to patients and relatives, or when I lecture about how the brain works neuroanatomically, because then people tend to understand very well why they have difficulties with certain things and why certain medicines work in certain ways [...] But in his experience, and he has a very large one, the court had in previous attempts deemed it to not be passable. Well, maybe that is a bit like what you are dealing with, just this thing that they do not understand, or maybe it is something that is very offensive, that they do not want it to be like this. Most likely, they end up in a very difficult position or their task becomes extremely complicated if they have to take things like this [neuropsychiatric phenomena: auth. no.] into consideration – (YO664-N5, 2022, pp. 2:10, 3:14, 4:16)

And so, with regard to the neurologists' expectation of difficulty when communicating aspects pertaining to personality and behavior to members of a legal system, and the judges' comments with regard to their lacking experience, knowledge, and competency; the psychiatrist's comment would suggest the existence of an intrasystematic gap. This is highlighted further still by the psychiatrist's comment regarding the culpability the man within the case description had in relation to his undertaken actions:

It [his action: auth. no] is induced by his ability to regulate his thinking and thus his activity. The ability is eliminated by his condition, that is, when the down-regulating and inhibiting signal is eliminated, we see the full power of our brains' suggestions. These exist all the time, but the

average [people: auth. no] has an ability to inhibit them. He cannot be held accountable for this. – (YO664-N5, 2022, p. 5:24)

Again, the psychiatrist argues in line with both the previous interviews and secondary data collected, indicating an intra- and intersystematic understanding of what underlies behavior, personality, and alterations to the self. Furthermore, and of note, both the psychiatrist and the neurologists agreed in their assessments regarding the culpability of the man, arguing that he should not be held responsible for his actions. More noteworthy still, but perhaps to be expected, given the psychiatrist's encounter with the legal system as an expert witness, is the shared perception with the neurologists that members of the legal field do not hold a similar understanding to their own:

I believe that the image [of the self: auth. no.] is still in the minority, even in my own professional group, but that it is gaining more and more support in neuropsychiatry, especially among younger doctors. That they perceive it as increasingly important to get help with precisely the ability to regulate thought. But I think that it is very (laughs) rare that lawyers would have this view [...] They are not interested in going in and making an assessment – (YO664-N5, 2022, p. 5:22)

The collective results of the primary data could thereby be argued as providing an underpinning for both intra- and intersystematic difficulties relating to communication within and between different fields. This is shown by the interviews in that they describe and highlight different aspects of the construct the self, as they see and understand it. Given then the similar education and work the neurologists share, and the fact that they too presented different understandings of said concept (intersystematically), along with the psychiatrist's similar although somewhat different interpretation (intrasystematically), the interviews can be argued as providing highly useful data with regard to the existence of a communicative gap between the fields of interest.

CONCLUSION

This paper has combined a systematic literature review with the collection of empirical data in order to provide sufficient support for the proposition of a theoretical framework. The theoretical framework was synthesized via systems and language theoretical aspects, to provide an understanding of how communication is being transferred within and between systems/fields. The theoretical anchor, i.e., the theoretical aspects which connect the framework to the empirical world, was synthesized via theoretical aspects pertaining to the self. This allowed for an empirical investigation into how the self is *understood*, *conceptualized*, and *communicated* within, as well as between, different fields. Whilst the systematic literature review provided data on how fields can differentiate between constructs as either field specific or interconnected, the data collected via interviews provided an insight into how working professionals understood, conceptualized, and communicated their field specific constructs within and between fields.

Research questions. With regard to the *first* of the secondary research questions, an answer for the *conceptualization* of the self within each of the fields was found in how each of the fields chose to construct the self as a concept. Similarly, an answer to the *second* secondary research question, pertaining to how these conceptualizations of the self are *communicated*, could be answered via the primary data collected. This data highlighted that specialists, even if not intentionally, would speak in more plain terminology so as to not cause confusion regarding a highly complex matter. Furthermore, the neurologists also showed a difference in communicating their conceptualizations of the self, indicating intersystematic differences. As such, an answer could be summarized as such: with difficulty and with dependence upon expressive meanings. Finally, an answer to the *third* secondary question, regarding how the self is *understood* within each of the fields, was found to be dependent upon differential aspects in relation to the self within each of the fields. As such, and given the primary and secondary data, an *understanding* of the self within *all* of the fields, could best be conceptualized as a micro-macro interdependent phenomenon.

These three, secondary questions, provided enough evidentiary data to in turn infer an answer with regard to the primary research question, namely: To what extent is there a communicative *gap* in the understanding of the self between the fields of Law, Psychology, and Neurology? – As shown within the primary and secondary data, along with the answers

provided by the secondary questions, a communicative gap can be inferred to exist between the fields of Law, Psychology, and Neurology, when neurological impairments in relation to the self are being discussed. However, due to the interdependent micro-macro relation of *understanding*, as it pertains to the self, it is hard to argue the *extent* by which such a gap exists; especially since such a relation by default implies an overlap in some areas of understanding but a separation in others. This leads back to the purpose of the paper: To produce a theoretical framework by which communicative transference can be argued. Again, given the primary and secondary data provided by the theoretical anchor, it has been shown through inference that communicative issues exist within as well as between the respective fields. Therefore, the framework can in this stage of development be argued as an instrument by which one can ascertain the relative success of transferring communication between systems, based on the micro-macro interdependent relations of the fields in question.

DISCUSSION

The purpose of this paper has been to produce a theoretical framework by which we can understand communicative transference within, as well as between, systems. This was accomplished by use of a theoretical anchor which linked the framework put forth, with the empirical world, via collection of primary and secondary data. These data were in turn used to support the aim of the paper, namely, to determine how the self in relation to neurocognitive impairments is conceptualized, understood, and communicated, within Law, Psychology, and Neurology. Therefore, it can be summarized that the paper has been structured to investigate *three* levels of interactive phenomena.

The initial, lowest level, is that of empirics. At this level, and by use of primary and secondary data, it was shown that in clinical and legal settings, terminology was commonly used by either expressive or field specific meaning. This in turn was a source of confusion both when actors engaged with intra- and intersystematic communication, as an expressive meaning is constructed upon expressive conceptualizations, whereas field specific terminology is defined by the underlying conceptualizations that are specific to the field. Therefore, the distinct differences in how matters are understood, conceptualized, and communicated, either intra- or intersystematically, influence the understanding of the recipient of the communication. And so, again, it should hardly be surprising that the primary and secondary data provided different details on how neurocognitive impairments are to be

understood in relation to the self. This in turn brings us to *the second, intermediary level, namely that of theoretical anchoring.*

The theoretical anchoring in this paper refers to the interconnectivity between empirical and abstract phenomena. As seen, and argued, the self is an emergent construct which is dependent on underlying biopsychosocial structures in its production. Similarly, the biopsychosocial subject, i.e., the individual, is a sociolegal actor, thereby making the individual a semi-abstract entity in of itself. As such, the self was put forth as a theoretical anchor which bound the individuals material aspects together with his/her abstract aspects, and highlighted how such a concept was understood, conceptualized, and communicated within the respective fields of Law, Psychology, and Neurology. This provided useful insight into how the neurological (material) interconnected with the psychological (abstract), and how each of these fields ultimately interconnected with the already semi-abstract notion of legality within the field of law. And so, in a cone-like fashion, *the third and highest level of interactive phenomena, is that of communicative transference as a theoretical framework.*

The theoretical framework which was put forth found support in the issues of transference of communication, based on Luhmannian deontologization processes and Wittgensteinian language games. These theoretical aspects are notions so vastly separated from the empirics and abstractions of everyday life, that in order for them to find any kind of support, they require an anchor that connects them with the reality; much like a boat at sea requires an anchor that connects the hull of the boat with the earth. The theoretical anchor thereby transcribes the empirics and abstractions of everyday life and those of reality, into theoretical conceptualizations which can then be processed by the framework. As such, when reviewing the primary and secondary data, it may be inferred that the communicative gap experienced by the fields of Law, Psychology, and Neurology, comes down to the fact that they are entirely too specialized. There exists a foundational gap of difference within each of the fields, and when intrasystematic terminology is being used to describe a phenomenon, the gap reduces in size along with the information carried by the communication. Therefore, expressive meaning becomes more commonplace in the transference of communication, even as it pertains to highly specialized knowledge, which ultimately allows for information to be carried across the gap, but which peels away the complexity of the phenomenon communicated.

Future research. As both discussed and shown throughout this paper, the theoretical framework of communicative transference can only, at this time, be argued as an instrument by which one can ascertain the relative success of transferring communication between systems, based on the micro-macro interdependent relations of the fields in question. Furthermore, considering that *only* the fields of Law, Psychology, and Neurology, have been examined as part of this paper, there exists an underlying *limitation* with regard to the transferability of the theoretical framework as a whole. This could be resolved by either arguing the framework as either a legal or forensic tool, or by conducting larger research projects to determine whether or not similar communicative gaps exist between other fields. However, the theoretical framework, as a theoretical construct is deemed as both viable and sound in that it provides an understanding of communicative transference between fields, and in this case, an understanding of the self in relation to neurocognitive impairments in particular. And so, in an upcoming paper the aim has been set to solidify the *context sensitivity* of this theoretical framework by conducting a case review of a multitude of legal cases, in order to determine the extent by which judges argue the relevance of highly specialized knowledge and integration of said knowledge, when engaging with legal decision-making. This should solidify the theoretical framework in of itself as to how communication within and between systems is conducted, whilst simultaneously providing a large empirical foundation to investigate the underlying factors which might interrupt the transference, and similarly to argue what kind of information is specifically being overlooked or incorporated. Finally, the theoretical anchor should also in this endeavor become solidified based on the sheer number of legal cases that are being reviewed, as they pertain to legal decision-making capacity, and so also the neuropsychological status of the individual in question; and therein, and so also thereby, the self.

Concluding notes. In this paper, neural pathways have been discussed as the micro-component responsible for the construction of our selves as part of the secondary data, it has also been referenced within the primary data as that which contributes to our emergent selves. These neural structures have further been discussed as those which compose our cortical regions, and ultimately the distinctive regions which pertain to the cognitive functions of interest to this paper. Not only have these structures been shown to modulate our thoughts and behaviors by means of cognitive functioning, but they have also been argued as equally

responsible for an individual's spatiotemporal and self-differential capabilities. This in turn has provided us with an insight into the fact that the psychological and neurological state of any individual, thereby also determine their decision-making capacity, and so also determine their status as a competent legal subject. This was highlighted by the fact that all individuals were necessarily presumed as rational actors, up until otherwise is proven, and that said rationality was founded upon the individuals' neuropsychological status. Similarly, this was highlighted by the argument that atypical neurological structures can produce atypical neuropsychological responses to stimuli, which in turn might deem the individual as incapable of holding a decision-making capacity equivalent to that of others, whose neurological structures are deemed to be typical.

As noted by the senior physician in psychiatry, members of the legal system seem reluctant to incorporate specialized knowledge from other fields, despite the legal statutes regulating the process of doing so. This could be argued as due to the micro-macro interdependent nature of which the individual's self is understood, meaning that if a typical neurological structure produces a typical self, then an atypical structure can reasonably be assumed to produce an atypical self. This, in a legal sense, immediately brings back thoughts and questions relating to determinism and the medically uninformed legal processes of the 18th century, wherein a person could be argued as being *born* a thief, killer, adulterer, and so on. As such, some reluctance with regard to the incorporation of neuropsychological data can unfortunately be expected. However, the legal concept of *mens rea*, i.e., a guilty mindset, is still widely used in both Continental-European Law, as well as within Anglo-American Law. Which would, if the findings of neuropsychology was truly integrated into legal settings, not only imply that a guilty mindset could objectively be measured via neuropsychological tools, but that it would be understood as by the neurological structures themselves. This is a highly complex matter discussed within Neurolaw, and so it is sufficient for now to say that neuroscientific findings are meant to *inform* legal decision-making, not dictate it. For if we do not consider legal matters on an informed basis, the question ultimately becomes this: If a guilty mindset is constructed upon the basis of neuropsychological features, does that not make the neurological structure guilty in turn? – And as such, can someone then be deemed as being born with a guilty neurological structure or self?

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APPENDIX: Consent form

Vad handlar studien om och varför jag är intresserad av dina kunskaper och erfarenheter:

Den här studien är en kandidatuppsats i Psykologi med inriktning mot Neurolog, vilken jag genomför som en del av mina masterstudier i Rättssociologi vid Lunds Universitet. Jag har för uppsatsen tagit sikte på frågan om hur 'Jaget' *förstås* inom fälten för Neurologi, Psykiatri och Juridik, vid uppkomst av neurodegenerativa sjukdomar som Alzheimers eller vid uppträdandet av hjärntumörer, samt hur denna förståelse *förmedlas* och *inkorporeras* inom juridisk beslutsfattning.

Uppsatsarbetet kommer agera underlag för min masteruppsats inom Rättssociologi, i vilken flera juridiska och medicinska fall kommer att granskas mot den data som framkommer i detta inledande arbete. Det är min förhoppning att det slutgiltiga arbetet kan komma till praktisk användning inom vården och i olika rättsliga förhållanden, vari gränsdragningen mellan den juridiska och fysiska agensen är svårläslig. Ytterligare användningsområden framkommer av det efterföljande doktorsarbete jag hoppas kunna genomföra inom området Neurolog. Min förhoppning är att kunna kartlägga det etiologiska förhållandet mellan flertalet neurodegenerativa sjukdomar och förekomsten av en förlust av juridisk agens hos individen, sådant att informationen kan göras tillgänglig inom vården, för närstående och de omedelbart berörda.

Jag önskar därför inledningsvis intervjua dig för att få en inblick i hur 'Jaget' förstås före, under, och efter det att en neurodegenerativ sjukdom eller hjärntumör har uppträtt, samt hur du skulle förmedla eller förstå sådana tillstånd inom ett juridiskt ramverk.

Din intervju och den kunskap du besitter kommer således att vara essentiell för möjligheten att påbörja kartläggningen av gränslandet som förbinder Neurologi, Psykiatri och Juridik, gällande juridisk och fysisk agens.

Hur kommer ditt deltagande i studien att se ut:

Ditt deltagande i studien kommer i huvudsak att bestå av en telefonintervju som förväntas pågå i ca 30 minuter. Jag kommer att ställa frågor om dina erfarenheter och din kunskap vidkommande 'Jaget', neurodegenerativa sjukdomar och hjärntumörer inom ramen för ditt yrkesområde. Frågornas natur kommer vara av reflekterande karaktär, där du presenterar dina erfarenheter för mig och samtidigt får fundera över hur väl du tror att ditt perspektiv överensstämmer med andra professionella inom de för studien relevanta vetenskapsfälten.

Innan intervjun kommer du även att motta en kort fallbeskrivning (ca 150 ord) som du ombeds läsa och i efterföljande intervju kommer att få frågor om. Utöver detta behöver du inte förbereda dig på något sätt innan intervjun.

Dina uppgifter och mitt etiska förhållningssätt:

Din intervju kommer vid transkribering att anonymiseras på sådant sätt att din identitet kommer att skyddas. Detta görs för att obehöriga inte ska kunna identifiera dig som person och för att du på ett så obekymrat sätt som möjligt ska kunna diskutera dina perspektiv. All information som du förmedlar under din intervju vilken berör personer, händelser, fall, eller liknande, kommer att kodifieras sådant att de som berörs eller omtalas inte heller kan identifieras i efterhand. Du kan när som helst under studiens gång välja att meddela mig om ändringar i din inställning till att medverka i studien. Ditt intervjumaterial kommer därefter att korrigeras i enlighet med dina önskemål.

Ditt intervjumaterial, tillsammans med övriga intervjudeltagares, kan även komma att publiceras i vetenskapliga tidskrifter efter att studien är avslutad. Vid möjlig publikation utav studien kommer samma anonymiserings- och kodifieringsprocesser göras gällande, sådant att varken du eller de övriga intervjudeltagarna riskerar att identifieras eller komma till skada.

Hur kan deltagande i studien påverka dig:

Som deltagare i studien bedöms du inte utsättas för någon risk eller obehag på något sätt. Du som deltagare uppmuntras dock innan intervjun att fundera över ifall återberättande av eventuellt obehagliga eller beträngande erfarenheter kan skapa negativa känslor för dig, eller på annat sätt orsaka skada. Om så är fallet, bör du fundera över om du trots detta vill delta i studien.

Frivilligt deltagande:

Deltagande i studien sker på frivillig basis och du kan när som helst avbryta din medverkan. Vid sådan händelse behöver du inte motivera ditt beslut, men det är dock viktigt att du meddelar att du önskar avbryta din medverkan sådant att ditt intervjumaterial kan strykas från studien.

Kontaktuppgifter:

Ansvarig för studien är:

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B.Sc. Kriminologi,
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Case description

I en studie från 2003 dokumenterades ett samband mellan pedofili och orbitofrontalt syndrom. Studien berörde en 40-årig man som hade börjat göra sexuella närmanden mot sin prepubertala styvdotter och i hemlighet påbörjat en insamling av barnpornografi. Mannens beteende uppmärksammades och anmäldes till myndigheterna. Under gången utav det rättsliga förfarandet mot mannen påträffades en stor tumör i hans främre skallgrop, vilken inte bara trängde undan hans högra orbitofrontala cortex, utan även förvrängde hans dorsolaterala prefrontala cortex. Efter det att mannen hade opererats uppmärksammades att hans, sedan uppkomsten av tumören, sociopatiska och avvikande sexuella beteende hade återgått till ett normaltillstånd. Dessvärre, efter ytterligare en period växte tumören tillbaka och likaså hans avvikande sexuella beteende, tillsammans med hans övriga beteendestörningar. Vid detta skede valde man att göra ytterligare en resektion av tumören, varefter mannens beteende återgick till hans ursprungliga normaltillstånd. Därefter har inga beteendestörningar dokumenterats och ingen orosbild har påtalats gällande att det avvikande sexuella beteendet skulle ha återuppstått.

Med hänsyn till ovanstående fallbeskrivning, vänligen överväg ditt perspektiv på mannens 'Jag' före, under och efter uppkomsten utav hjärntumören.

Interview guide

INTERVJUFRÅGOR (ca 30 minuter):

Kodningsschema:

- N** = Frågor ämnade för samtliga intervjudeltagare.
***** = Frågor ämnade för Psykologer och Neurologer.
****** = Frågor ämnade för Domare.
¬ = Konditionalsats (Om-så)
-

1. Skulle du inledningsvis kunna berätta lite för mig om din nuvarande yrkesroll och hur din vardag vanligtvis ser ut?
2. På vilket sätt kommer du i kontakt med sjukdomar som t.ex. Alzheimers eller hjärntumörer i ditt yrke?
 - a. * Hur skulle du beskriva skillnaderna mellan Alzheimers och den typ av hjärntumör som beskrevs i fallbeskrivningen.
 - b. ** Hur skulle du beskriva din inställning till en viss handling när en sjukdom som Alzheimers eller den typ av hjärntumör som beskrivs i fallbeskrivningen åberopas?
3. Hur skulle du, utifrån den korta fallbeskrivning som du mottagit, beskriva mannens 'Jag' före, under och efter uppkomsten utav hjärntumören?
 - a. * Om du ombads vittna som sakkunnig i en rättsprocess, likt den i fallbeskrivningen, hur skulle du *förmedla* effekten som hjärntumören har på beteende och sexuell avvikelse till en domare?
 - b. ** Om du hörde en sakkunnig neurolog eller psykolog i en rättsprocess, likt den i fallbeskrivningen, hur skulle du *inkorporera* deras förklaringar in i det juridiska ramverk du använder för beslutsfattning?
4. I din betraktelse, om en fysisk person ger uttryck för olika personlighetsdrag under ett visst tidsförlopp, är 'Jaget' då något som är konstant eller flyktigt? ¬
 - a. *¬ Hur skulle du förklara 'Jagets' konstans eller flyktighet för en domare?
 - b. **¬ Hur förhåller sig i sådana fall 'Jagets' konstans eller flyktighet till individens juridiska agens?

Utfyllnadsfrågor tillkommer.

Möjliga utfyllnadsfrågor:

- I. Hur väl tror du att din bild av 'Jaget' överensstämmer med yrkesverksamma inom [Neurologi, Psykologi, Juridik]?
- II. I vilken utsträckning skulle du betrakta mannen från fallbeskrivningen som en rationell aktör?
- III. Vad, i din mening, föranledde mannens närmanden mot hans styvdotter samt hans avvikande beteendestörning?
 - a. * Hur tror du att en domare skulle tolka ditt svar, om det förmedlades på samma sätt som du precis förklarade det för mig?
 - b. ** Hur skulle du i sådana fall särskilja mellan ett skyldigt sinnelag (mens rea) och en skyldig neurologisk struktur?
- IV. I vilken utsträckning har mannen ett ansvar över situationen så som den utvecklades?