Schizophrenia spectrum disorders and dissociative disorders
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Chapter 7
General discussion
7.1 Summary

The aim of this dissertation was to examine the extent to which schizophrenia spectrum disorders and dissociative disorders are categorically distinct (i.e. whether they reflect distinct disease entities). Even though the DSM-5 (American Psychiatric Association, 2013) and ICD-10 (World Health Organisation, 1992) describe these diagnoses as distinct, researchers and practitioners have called for more dimensional approaches for several decades (e.g. Widiger, 2005). In the past few years alternative frameworks have become popular areas of research, and appear promising to change the way we conceptualize psychopathology. For example, the Research Domain Criteria (RDoC) project by the US National Institute of Mental Health (Insel et al., 2010), the Hierarchical Taxonomy of Psychopathology (HiTOP, Kotov et al., 2017), and the network model of psychopathology (Borsboom et al., 2011) all seem valuable in furthering our understanding of psychopathology.

The RDoC project is an attempt to create a new taxonomy based on genetics, neuroscience and behavioral science. Instead of using the diagnoses that where formed during the past century through consensus, the RDoC project uses objective laboratory studies to identify causes of specific psychological impairment in, for example, reward learning, attention, and perception (Insel et al., 2010). While the aim of the RDoC project is to create a new dimensional taxonomy, the project does have the potential to find categorically distinct disease entities due to the biological bottom up approach. Where RDoC focusses on biological and behavioral causes of specific aspects of psychopathology, HiTOP already formulates the basis for a new taxonomy. Similar to the aim of RDoC, this taxonomy is based on data instead of consensus and describes psychopathology as dimensional instead of categorical. According to the network model, psychopathology is a combination of impairments and causal antecedents sustaining each other through complex multidirectional networks that are, to a certain extent, expected to be unique for each individual (Borsboom et al., 2011).

The systematic review in chapter 2 examined to what extent the literature shows differences and overlap between schizophrenia spectrum disorders and dissociative disorders. There is a large body of evidence showing the presence of dissociative experiences in schizophrenia spectrum disorders and experiences typically associated with schizophrenia in dissociative disorders (e.g. positive symptoms). Although dissociative experiences are far more prevalent in dissociative disorders, and especially negative symptoms of schizophrenia and cognitive impairments are more common in schizophrenia spectrum disorders, there were no symptoms identified that were limited to one of the two diagnostic clusters. Furthermore,
Despite quantitative differences, the overlapping symptoms were not limited to non-pathological forms. From our current understanding of the etiology of these diagnoses, which for both diagnostic clusters is incomplete at best, there are also no clear boundaries, as for example seen in biological factors and trauma history.

The overlap between schizophrenia spectrum disorders and dissociative disorders could indicate several things. For one, the diagnostic clusters might not be categorically distinct but there might instead be a gradual change from patients who fit the stereotype of having a schizophrenia spectrum disorder to patients who fit the stereotype of having a dissociative disorder. Many patients would then be expected to experience a mix of symptoms that do not exactly fit one of the two diagnoses. This fits with the dimensional and network models of psychopathology, but is at odds with categorical models of psychopathology. Alternatively, it might indicate that, although the diagnoses reflect distinct disease entities, they can cause similar problems and experiences.

Regardless of what caused the overlapping symptoms, it was important to know whether these overlapping symptoms influence the patients' functioning or wellbeing over and above the core symptoms associated with their diagnosis. Chapter 3 showed that dissociation was uniquely related to affect recognition in patients with schizophrenia. As affect recognition is an index of social cognition that is closely linked to social functioning, dissociation should be seen as a unique symptom of interest in schizophrenia spectrum disorders and further research into the overlap between schizophrenia spectrum disorders and dissociative disorders is warranted. This relation between dissociation and affect recognition is hypothesized to be caused by dissociative symptoms disrupting several processes which are deemed necessary for correctly recognizing emotions. Being able to connect with your own emotions is thought to be important to correctly recognize emotions in others. For example, having experienced sadness and anger oneself, what it does to one’s behavior and reactions, would also facilitate the correct recognition of these emotions in others. In addition, recognizing one’s own emotions might directly help in recognizing the emotions of others. For example, feeling fear in reaction to someone looking at you in a certain way is a good indication that the other is expressing anger.

To follow up on the results of chapter 3, a different affect recognition task was tested in chapter 4. This affect recognition task seemed promising as it contained facial affect stimuli with and without an observer-irrelevant trigger of the facial affect. Chapter 4 showed that the observer irrelevant trigger had a significant moderating influence on approach–avoidance
related behavior in healthy individuals. As expected it decreased the intention to approach happy expressions and it decreased the intention to avoid disgusted expressions. This behavior seems to reflect relatively top down processes because the trigger had no moderating effect on automatic approach–avoidance tendencies. It would be interesting to see whether patients diagnosed with a schizophrenia spectrum disorder and patients with a dissociative disorder would use the observer irrelevant trigger in the same way as healthy controls and each other. From previous research one would hypothesize that both patient groups would perform worse than healthy controls on the social cognition task but patients with a schizophrenia spectrum disorder would on average make less use of the trigger, for example due to delusions of reference (Feeny, Zoellner, & Foa, 2000; Pijnenborg et al., 2009; Startup & Startup, 2005). However, running this study did not fit within the restraints of the current dissertation.

In line with the network model, chapter 5 directly examines the overlap and differences in dissociative experiences between patients diagnosed with a dissociative disorder and patients diagnosed with a schizophrenia spectrum disorder through network analysis. As a further comparison, the chapter also examined patients diagnosed with a post-traumatic stress disorder, in whom dissociative experiences are also frequently seen, and students to assess dissociative experiences in a non-clinical sample. Replicating other studies (e.g. Carlson & Putnam, 1993) and the results of chapter 2, DID patients reported dissociative experiences most frequently, followed by PTSD patients. Contrary to what was expected from previous research and the results of chapter 2, people diagnosed with a schizophrenia spectrum disorder scored similar to students on overall dissociative experiences. However, they did report significantly more pathological dissociative experiences than students. On a network level, there were no significant differences found between the diagnostic groups. Thus, the individual dissociative symptoms that were assessed with the dissociative experiences scale showed similar patterns in the four diagnostic groups.

Although the similar symptom patterns seem to confirm that the dissociative symptoms that are experienced by these four groups are similar, except in severity and frequency, there might be more differences. That is, chapter 5 also shows that in patients diagnosed with a schizophrenia spectrum disorder, dissociative experiences were strongly related to each other and only loosely to trauma and schizophrenia spectrum symptoms. These results confirm the conclusion of chapter 3, that dissociative experiences in schizophrenia spectrum disorders should be treated as a unique symptom cluster of interest and not just as epiphenomena of psychotic symptoms.
Chapter 6 took an experimental approach in examining the complex relation between schizophrenia spectrum disorders and dissociative disorders. The reasoning behind this was that if we are to treat schizophrenia spectrum disorders and dissociative disorders as two distinct diagnostic clusters we should have more evidence for this than just a historical consensus. This was done by trying to show a single dissociation between experiences of derealization on the one hand and depersonalization and schizotypal experiences (i.e. psychotic or psychotic like experiences; Kwapil & Barrantes-Vidal, 2015) on the other. As derealization is conceptually most similar to schizotypy we expected that showing such a single dissociation would be a strong indicator of the uniqueness of the two constructs. However, the methods that were tested were only capable of inducing derealization without inducing depersonalization, but not without simultaneously inducing schizotypy. This showed that depersonalization is distinct from derealization and schizotypy, but not that the latter two are distinct from each other.

7.2 Blurry boundaries
The big question is, as far as schizophrenia spectrum disorders and dissociative disorders are concerned, how do categorical models of psychopathology hold up to the results described in this dissertation? In line with van Os and Verdoux (2002) it was argued in the introduction that the categorical model only has merit if one of the following is true: 1) the cause of the diagnoses is categorically different, 2) the treatment of the diagnoses is categorically different, or 3) the experiences themselves are categorically different between various patient groups and healthy individuals.

The question of whether there are different causes for schizophrenia spectrum disorders and dissociative disorders is hard to tackle. This is in a large part due to the fact that although we have several theories regarding the etiology of these diagnoses, and even research backing these theories, the exact causes are still unknown. The evidence we do have, as described in chapter 2, seems to suggest that with regard to etiology there is also no definitive evidence for the categorically distinct diagnostic clusters.

The second way categorical models of psychopathology can show their merit is if the different diagnoses benefit from different treatments. In this regard, the evidence there is on the treatments of schizophrenia spectrum disorders and dissociative disorders seems to point in the direction that these are indeed two categorically distinct diagnoses. Despite some similarities between the diagnostic groups, the recommended treatments are far apart (National
Collaborating Centre for Mental Health, 2010, International Society for the Study of Trauma and Dissociation, 2011). However, to be precise, this only shows that the diagnoses are treated as distinct disorders, not that they actually are. It is important to note that there is relatively little scientific research on the best way to treat dissociative disorders, and any research in this area should be encouraged. The distinct treatments of choice do show it would be wrong to just start clustering patients diagnosed with a schizophrenia spectrum disorder and patients with a dissociative disorder under the same label, without first directly comparing treatment outcomes of the same treatment in the different patient groups.

The overlap in symptoms that is described in chapter 2 and the fact that we weren’t able to induce derealization without simultaneously inducing schizotypy in chapter 6 suggests that the last criterion for categorical models of psychopathology showing their merit is not met. On the other hand chapter 3 and 5 seem to indicate that dissociative experiences in schizophrenia spectrum disorders should be considered symptoms of interest in their own right, as they uniquely predict social cognition and seem to function relatively independent of other schizophrenia spectrum symptoms. However, the relation that previous research found between dissociative experiences and trauma could was also not found in chapter 5. Chapter 6 did indicate that there at least seem to be categorical differences between experiencing depersonalization and schizotypy.

The question remains, does it make sense to take diagnoses as a starting point for research, knowing that the diagnoses were based more on consensus than on laboratory research? Even more so, does it make sense to try and find etiological factors or prove the existence of these diagnoses? With alternatives such as: the dimensional models, that recognize there is not something categorically different about people who receive mental healthcare, but that instead they have extreme forms of experiences that we all have to a certain degree; the network model, that not only recognizes the complexity of psychopathology but even emphasizes it; and projects such as RDoC and HiTOP, categorical models of psychopathology based on consensus seem to have become obsolete. Obsolete in all but one way, indicating whether or not someone receives healthcare as insurance companies often require the patient to receive a DSM or ICD diagnosis before they pay for the intervention.

7.3 Much about semantics
Throughout this dissertation the importance of semantics have become very obvious. For example, saying patients with schizophrenia implies schizophrenia is something one can have
General discussion

(i.e. a disease entity). It is more accurate to say someone has the diagnosis schizophrenia as this does not imply that schizophrenia is more than the combination of criteria as described in the DSM-5 or ICD-10. Saying that someone is behaving schizotypal, when used in the same way as when saying someone is behaving agitated is less problematic as it does not assume a categorical distinction between normal and abnormal. Everyone can, at times, have schizotypal experiences just like everyone can feel agitated. It would, however, be more precise and less stigmatizing to specifically say whether someone is out of touch with reality, suffers from apathy or something else instead of using the term schizotypy. The only categorical (i.e. absolute) distinction there is between patients and non-patients is that patients are recognized as being in need of healthcare whereas non-patients are not. This is reflected in most of the diagnoses having significant distress and impairments in important areas of functioning as diagnostic criteria. The same problem is seen when talking about symptoms, as symptoms imply there is something these experiences and behavior are a symptom of, i.e. a disease entity. Describing behavior and experiences associated with psychopathology simply as behavior and experiences does not carry this implication.

It is easy to imagine that language also plays an important role in how patients perceive and think about their problems (Fausey, Long, Inamori, & Boroditsky, 2010). This may result in someone diagnosed with schizophrenia stating he has auditory hallucinations and someone diagnosed with DID reporting they hear the voices of the other identities, even if the actual experiences are comparable (cf. Merckelbach, Devilly, & Rassin, 2002). In addition, someone diagnosed with schizophrenia might describe they have persecutory delusions whereas someone diagnosed with DID might say they just don’t trust others.

When talking about semantics it should be noted that the discussion surrounding the different models of psychopathology has the risk of ending in a semantic discussion itself because it is closely related to the philosophical debate about natural kinds (i.e. grouping defined by nature [e.g. the chemical elements] instead of artificial or socially constructed grouping). As natural kinds have been the topic of several dissertations I will refrain from going into too much detail, for an in depth discussion on natural kinds and psychopathology see Kincaid and Sullivan (2014). The authors of the DSM did not proclaim that the diagnoses described in it are a direct reflection of underlying disease entities (i.e. natural kinds). The diagnoses were best efforts to categorize and cluster the problems that were seen in psychopathology (Andreasen, 2007). Critics of categorical models of psychopathology have argued against the DSM as the diagnoses do not appear to reflect such disease entities.
Haslam (2014) describes that psychopathological diagnoses are not natural kinds in the essentialist sense of the word (i.e. grouping defined by nature) but that they reflect practical kinds, defined by varying along a continuum with non-arbitrary cut points (such as for blood pressure and hypertension) or fuzzy kinds, also defined by varying along a continuum but with cut points reflecting a discontinuity (such as going from psychotic experiences to a florid psychosis). Kincaid (2014) does not take the essentialist definition of natural kinds and argues that psychopathological diagnoses can be described as natural kinds in the sense that there are “categorical groupings that support objective predictive and explanatory accounts of psychopathology”. Whether or not the categorical diagnoses we currently use reflect essentialist or non-essentialist natural kinds, it is interesting to note that approaches such as HiTOP have the tendency to result in the same broad clusters that are also described in the DSM (e.g. the fear cluster and anxiety disorders, the distress cluster and mood disorders, and eating pathology and eating disorders).

7.4 An integrated clinical cycle

Although the limitations of categorical models of psychopathology have been reported repeatedly, there is still no functional framework on how to work with any of the alternatives. However, there is already research on transdiagnostic and personalized treatments (e.g. Fairburn, Cooper, & Shafran, 2003; Thompson-Hollands, Sauer-Zavala, & Barlow, 2014). While it goes beyond the results of this dissertation that only examined two diagnostic clusters instead of the entire spectrum of psychopathology, I still want to take the opportunity to propose the foundation of an clinical cycle that aims to combine the functionality of the categorical model with the strengths of dimensional models, network models, HiTOP and findings of the RDoC project (see Figure 7.1).

It is important to note that this clinical cycle is in many ways similar to our current approach. For example, our current treatment guidelines would in many cases still be the starting point of treatment. We should not throw away the knowledge we have acquired over the years. However, there are also key differences. The aim of intake would only be to identify distress and impaired functioning, not to diagnose syndromes. The list of distress and impairments that can be identified would initially be based on our current diagnostic systems (Borsboom et al., [2011] serves as a good starting point).

The identified forms of distress and impairment are expected to change over time as research accumulates (e.g. research in line with RDoC, HiTOP and the network model). While
the dimensional nature (i.e. ranging from healthy to pathological) of the distress and impairments is emphasized, the different forms of distress should be categorically distinct from each other. That is, problems with item overlap such as seen between one of the DES and one of the PANSS items in chapter 5 should be resolved. As an example, schizotypy and depersonalization are dimensional because individuals can experience them ranging from not at all to a lot, but they also seem to be categorically distinct from each other, as seen in chapter 6. Schizotypy would likely end up being separated in more specific distress and impairments such as auditory hallucinations and disorganized behavior.

The other possible contributing factors include trauma (or even specific forms of trauma, cf. Bentall, Wickham, Shevlin, & Varese, [2012]), dysfunctional family situation, biological factors such as gender or over activation in D2 receptors etcetera. The results of the RDoC project are very interesting in this regard as the project is specifically aimed at finding causal factors of impairment, regardless of the diagnosis.

After the distress and impairments have been identified, the clinician has to decide whether or not an intervention (medical or psychological) is indicated for the individual. Although this is a categorical decision, the extent to which someone needs help is of course also dimensional. The categorical decision of whether or not healthcare is indicated will differ between cultures, as governmental regulations and health insurance policies play a role. The indication/diagnosis would thus be limited to “in need of healthcare” or “not in need of healthcare” conform the local regulations and policies. Although this is not expected to take away all the stigma that surrounds psychopathology (see Hinshaw & Cicchetti, 2000), it would likely reduce the stigma of some of the most stigmatized diagnoses, such as schizophrenia (see Hinshaw & Cicchetti, 2000). When communicating to colleagues, the specific distress and impairments would of course be reported, as this is currently also done.

Which intervention is provided would depend on the patient and the clinicians initial evaluation of how distress, impairments and other contributing factors are expected to relate to each other, this would be the base network of impairment. As a lot of our knowledge of psychopathology is formed around the DSM diagnoses, the recommended treatments are expected to initially still reflect these diagnoses. That is, if the distress and impairments a patient has, meet our current diagnostic criteria of schizophrenia, that patient would still receive the treatment of choice for schizophrenia, regardless of whether that person has one specific impairment or not. Over time the base network of impairment should become tailored
Chapter 7

Figure 7.1. Integrated clinical cycle, combining the strengths of categorical, dimensional and network models of psychopathology, HiTOP and research from the RDoC projects.
General discussion

uniquely to the individual, as research accumulates that does not take the DSM diagnoses as a starting point for treatment (e.g. research in line with RDoC, HiTOP or the network model of psychopathology).

The monitoring and adjustment of the intervention is where the network model of psychopathology is essential. Ecological momentary assessment (Moskowitz & Young, 2006) should be used to evaluate each patient's base network of impairment. How do the identified distress, impairments and other contributing factors change over time, and in relation to each other. Any distress, impairments or other contributing factors that are identified after intake should be added to the ecological momentary assessment. The intervention could eventually be tailored to how these factors interact with each other in the specific individual. It is important to note that the monitoring should be automated through software as much as possible. The information gathered this way should be mostly standardized, but the software should also have the option for adding new items. For example, while the standard software should include the option to inquire about hallucinations, there should also be the option for a clinician and/or researcher to specifically ask about auditory hallucinations, or even vocal hallucinations of command. This data should be made available to researchers as this would push the field forward by making it possible to identify common self-sustaining networks, and provide suggestions for further research on clustering and causal relationships. As an added benefit this collaboration between the clinical field and research would help bridge the gap that still exists between the two (see Teachman et al., 2012).

Something that is not added to the integrated clinical cycle but could prove useful is the period between referral and actually receiving healthcare. This period is not included in the cycle as the duration of this period should ideally be minimized. However, as many individuals end up having to wait a few weeks before receiving healthcare (Kirkbride et al., 2017), we can make use of this time. During this period individuals could already be asked to provide answers to general ecological momentary assessment personalized through item response models (Zanon, Hutz, Yoo, & Hambleton, 2016). The results of these assessments could then be used for intake and decision making with regard to the intervention.

7.5 Limitations and future research

The specific limitations of the individual studies are described in their respective chapters. In addition, there are some general limitations that should be acknowledged. One of the main limitations is one that is common for much psychological research but often neglected, which
is that studies are restricted to the patients who volunteer. In this specific case many patients that were included in the different studies were functioning quite well, this holds for the patients diagnosed with a schizophrenia spectrum disorder and patients diagnosed with a dissociative disorder. This means that the patients who have the most severe impairments, for example patients experiencing florid psychosis, might be a lot more distinct from other patients than the patients that are functioning relatively well. In line with this, it must be noted that acquiring acceptable sample sizes to study patients with a dissociative disorder is extremely difficult. Not only are there relatively few patients, many of these patients are reserved about participating in scientific research, in addition to their clinicians being protective of them. This, and the controversy surrounding dissociative disorders (Paris, 2012) are likely the main reasons for the limited amount of research on this complex patient group.

Another limitation that should be addressed is that biological factors have only had a small part in this dissertation. Differences between the two diagnostic clusters might become clearer when looking at the right biological factors. Areas future research could focus on are, for example, differences in social cognition and how this is related to neural connectivity in both patient groups. This would be based on the results of chapter 3 showing that dissociation in schizophrenia spectrum disorders is uniquely related to social cognition. Future research could also focus on biological antecedents of symptoms that seem to be dominant in one of the two disorders, for example cognitive impairments in schizophrenia. As both patient groups can have experiences associated with their diagnosis in the absence of external stimuli it would be interesting to examine the resting state neural connectivity of these two diagnostic groups.

There are various symptoms that are associated with schizophrenia spectrum disorders or dissociative disorders that require further investigation. For example, there is little research on negative symptoms in dissociative disorders, but the research there is seems to indicate these symptoms are more typical to schizophrenia spectrum disorders. In the same vein, research could examine the occurrence of identity fragmentation, which is typical for DID, in other diagnoses. Although amnesia was seen as an important diagnostic criteria for dissociative disorders (Cardeña, 1994), research suggest that the experiences of amnesia might reflect impaired metacognition (Huntjens, Peters, Woertman, van der Hart, & Postma, 2007; Souchay, Guillery-Girard, Pauly-Takacs, Wojcik, & Eustache, 2013) opening up research into differences and overlap into other related disorders, such as PTSD. Future research should also clarify whether the belief that one has two or more identities should be considered a delusion and whether hallucinations should be considered dissociative experiences.
One of the more obvious next steps would be to look at a broader spectrum of impairments in patients diagnosed with either a schizophrenia spectrum or dissociative disorder. They might show differences in relation to symptoms secondary to the diagnosis, for example, anxiety, depression, or PTSD. In line with the network model, differences between the diagnoses might also become more apparent when examining impairments over time through ecological momentary assessment.

Despite the general criticism on categorical models of psychopathology (e.g. Brown & Barlow, 2005), the blurry boundaries that were found between schizophrenia spectrum and dissociative disorders in this dissertation might not extend to other diagnoses. However, there is evidence for other diagnoses showing similar blurry boundaries (e.g. Goodwin, 2014; Zbozinek, 2012). Nonetheless, the conservative approach would still be to also examine the boundaries between, for example, schizophrenia spectrum and mood disorders, where bipolar disorder and schizoaffective disorders are expected to be the result of similarly blurry boundaries.

It is worth mentioning that different chapters of this dissertation can form the basis for several interesting studies. It would still be interesting to examine how patients would function on the affect recognition task that was used in chapter 4 to test the hypothesis that schizophrenia spectrum patients would on average make less use of the observer irrelevant trigger. This task could also be used to examine how other patient group use the information of an observer irrelevant trigger as is also described in that chapter. Similarly, the result that the glasses which were used in chapter 6 can induce derealization and schizotypy opens up several areas of experimental research that do not need to use patient samples.

Lastly, and perhaps most interestingly would be to test and work out the details of the integrated clinical cycle that was presented here. Such an endeavor would be ambitious, but maybe less than one would initially think, as the cycle was intended to incorporate all of the good things that are already done in mental healthcare. Taking on this endeavor would at least include the following steps. First, making an overview of dimensions of distress, impairment and other influencing factors that could be used to create base networks of impairment. As was described, this overview should at least contain the necessary items to roughly represent all the symptoms associated with the different DSM-5 diagnoses, as these are currently still the indicators of most treatment guidelines (Borsboom et al., [2011] and Kotov et al., [2017] give a good basis). Second, developing user friendly software where clinicians can select the forms of distress, impairment and other influencing factors that the patient reports. Ideally this software
would be linked to current treatment guidelines so patients that meet our current diagnostic criteria for a certain diagnosis would still receive this as their recommended treatment. This software should also provide the means for ecological momentary assessment able to give individualized symptom networks when enough data is collected. The last step would be to implement the clinical cycle and associated software into mental healthcare to examine to what extent clinicians and patients can work with it. I feel it is essential that any software developed to this end should be made freely available and open for change by the clinical and scientific community (comparable to Wikipedia), making the software truly for users by users. Any data generated through this software should also be freely available as long as it does not interfere with the patients right to privacy.

7.6 Conclusions
The blurry boundaries between schizophrenia spectrum disorders and dissociative disorders that are described in this dissertation are a perfect example of the complexity of psychopathology. The results also show some of the limitations of categorical models of psychopathology, at least in the sense of describing natural kinds. Although there might be distinct underlying disease entities causing psychopathology, the question is whether our current diagnostic categories reflect these underlying diseases. The network model, HiTOP and the RDoC project all seem promising to push our understanding of psychopathology forward, but none of them has had the chance to be tested through years of clinical practice or produce the wealth of research that has been produced in line with the categorical model of psychopathology. However, with the current developments and trends in research it seems like our conceptualization of psychopathology is at the brink of a paradigm shift.