Hearing Voices, Dissociation and the Self:

A Functional-Analytic Perspective

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Abstract

In the current paper, we review existing models of the aetiology of voice hearing. We summarise the argument and evidence that voice hearing is primarily a dissociative process, involving critical aspects of self. We propose a complementary perspective on these phenomena that is functional-analytic, and based on a modern behavioural account of language and cognition, known as Relational Frame Theory (RFT). A functional-analytic approach to voice hearing seeks to specify: the response class that contains these and related experiences; the functions served for the individual by this behaviour; the necessary history that establishes these functions; and the behavioural and psychological process that explains this relationship between an individual and her current and historical contexts. In short, we propose a trauma-dissociation developmental trajectory in which trauma impacts negatively on the development of self, through the process of dissociation. Using the RFT concept of derived deictic relations, our dissociation model purports that trauma gives rise to more co-ordination than distinction relations between self and others, thus weaking an individual's sense of self. Voice hearing experiences, therefore, reflect an individual's perceptions of self and others, and may indicate impairments in the natural psychological boundaries between these critical related concepts. One clinical implication suggested by this model is that therapeutic 'intervention' should understand the behaviours associated with a sense of self that is fragile and threatened by others. Relations with self and others should be a key focus of therapy, as well as interventions designed to enhance a coherent distinct sense of self.

In the current paper, we attempt to provide an overview of the putative processes involved in voice hearing, and how these relate to trauma and dissociation. In the first half, we offer a brief review of the literature on voice hearing, trauma and dissociation and how these interact. In the second half, we attempt to provide a functional-analytic account of voice hearing and its relationship with dissociation and trauma, in terms of a modern behavioural approach to language and cognition, known as Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001). Our aim is to develop a precise and functional-analytic model of the development and maintenance of voice hearing as possible pathways of dissociative processes. To the best of our knowledge, this type of analysis is not currently available in the relevant literatures.

The Relationship between Trauma and Voice Hearing

Varese, Smeets et al. (2012) reported in a meta-analysis that individuals with histories of childhood adversity (including sexual/physical/emotional abuse and neglect) are 2.8 times more likely to develop psychosis. Furthermore, Janssen et al. (2004) found a dose-response relationship between sexual abuse and voice hearing. The relationship between these variables is supported by psychophysiological evidence that specific brain features (e.g. overactive HPA axis) are shared by individuals diagnosed with schizophrenia and children with a trauma history (Read, Fosse, Moskowitz, & Perry, 2014).

In an epidemiological review, Read, van Os, Morrison, and Ross (2005) found that hearing voices was associated with childhood trauma significantly more than any other symptom of psychosis (including delusions). A wealth of studies has reported direct correlations between voice hearing and trauma (see Bentall et al., 2014). In a

review, McCarthy-Jones (2011) reported that child sexual abuse predicted a two-fold risk of voice hearing and a six-fold risk of commenting/commanding voices.

Multiple reviews have indicated that early trauma is prevalent in voice hearers whether or not they are clinically distressed (e.g. Longden, Madill, & Waterman, 2012; Read et al., 2005). Indeed, Daalman et al. (2012) demonstrated that both groups were equally likely to have experienced sexual and emotional abuse. However, some empirical evidence suggests that the trauma experienced by non-clinical voice hearers may be less intense (e.g. Goldstone, Farhall, & Ong, 2012).

Pathways to voice hearing. A number of cognitive and behavioural models have explained the potential pathways from trauma to psychosis (see Waters et al., 2012, for a review). For example, Morrison and Petersen (2003) found that this developmental trajectory is *self-mediated* through factors that include dissociation, attribution style and/or interpretations of intrusions. Specifically, McCarthy-Jones (2012) referred to emotional isolation, including shame, self-blame and the inability to express these emotions. Other studies highlighted the role of social isolation and the moderating effect of social defeat (Shevlin, McElroy, & Murphy, 2014; Van Nierop et al., 2014). These features accord with Hoffman's (2007) *social deafferation hypothesis*, in which social withdrawal facilitates the emergence of false social meanings as hallucinatory or delusional intrusions.

Consistent with the strong association with trauma, models of voice hearing often propose that these events are on a continuum with normal experiences, such as vivid daydreams and thoughts (Launay & Slade, 1981; Slade & Bentall, 1988). But, at its more extreme end, this continuum may involve externalising biases (i.e. misattributions of internal events to external sources; Allen, Aleman, & McGuire, 2007; Bentall et al.,

2014). Specifically, there is evidence that periods of high stress (internal or external) make source monitoring more difficult and increase misattributions of internal content to external sources (Brookwell, Bentall, & Varese, 2013). There is also evidence that self-monitoring is impoverished in voice hearing (Johns et al., 2010). Steel, Fowler, and Holmes (2005) proposed that the upper end of this continuum involves deficits in the context integration of present experiences that resemble past events, again exacerbated by stress. In short, reduced context integration of present experiences increases proneness to intrusions.

Negative beliefs about voices also appear to play a role in level of distress. Indeed, they correlate highly with distress and trauma (Bartels-Velthuis, van de Willige, Jenner, Wiersma, & van Os, 2012; Romme & Escher, 2006). In addition, perception of the power of voices at voice onset appears to be critical to level of distress experienced subsequently (e.g. Andrew, Gray, & Snowden, 2008; Chadwick, Lees, & Birchwood, 2000; Romme, Escher, Dillon, Corstens, & Morris, 2009).

Does Dissociation Mediate Voice Hearing?

Many authors have argued that dissociation accounts for the relationship between trauma and voice hearing (Longden et al., 2012; Moskowitz & Corstens, 2007; Varese, Barkus, & Bentall, 2011; Varese, Barkus, & Bentall, 2012). Dissociation typically refers to a *'lack of normal integration of thoughts, feelings and experiences into the stream of consciousness and memory'* (Bernstein & Putnam, 1986, p.727), and common presentations include amnesia, imaginative involvement, absorption, depersonalisation and derealisation. These topographies support Kennedy et al.'s (2004) assumption that these experiences decrease awareness of distressing internal and external stimuli. Consistent with the view of voice hearing as a continuum, dissociation

is also believed to be dimensional, ranging from cohesive to fragmented (e.g. Putnam, 1991; Scharfetter, 2008).

A considerable body of evidence supports a relationship between dissociation and voice hearing (e.g. Kilcommons & Morrison, 2005; Ross & Keyes, 2004; Moskowitz, Schafer, & Dorahy, 2008; Dorahy et al., 2009). For example, there is evidence that individuals with hallucinations have more dissociative experiences than those with a diagnosis of psychosis *without* hallucinations (Perona-Garcelán et al., 2008; Varese, Udachina, Myin-Germeys, Oorschot, & Bentall, 2011). There is also evidence that depersonalisation and absorption are more prevalent in individuals with hallucinations and hallucination proneness (Altman, Collins, & Mundy, 1997; Morrison & Petersen, 2003). Furthermore, Alderson-Day et al. (2014) have recently found that inner speech, especially self-evaluative speech (e.g. *I should do X*) involving others (e.g. *they will think I am X*), correlates with dissociative experiences, predicts voice proneness, and this effect is mediated by dissociation.

Dissociation also appears to mediate the relationship between trauma and voice hearing (see Longden et al., 2012, for a review). Specifically, Varese, Barkus et al. (2012) found that dissociation precedes voice onset, and mediates the relationship between sexual abuse and voice-proneness (see also Anketell et al., 2010; Moskowitz & Corstens, 2007; Moskowitz, Read, Farrelly, Rudegeair, & Williams, 2009).

Is the 'self' dissociated? Many areas of psychology appeal to aspects of the self as central to psychological suffering (e.g. Barnes-Holmes, Barnes-Holmes, McHugh, & Hayes, 2004). Numerous models of dissociation, especially those linking trauma and voice hearing, also implicate the self in dissociative features or processes. That is, voices are considered to be intrusions of dissociated experiences in which aspects of the

self fail to be integrated, probably as a result of trauma and as a means of avoiding or coping with traumatic events (Van der Hart, Nijenhuis, Steele, & Brown, 2004). This view is supported by empirical evidence (e.g. Brewin & Patel, 2010; Clemmensen et al., 2014; Perona-Garcelán et al., 2011). Furthermore, Allen, Coyne, and Console (1997) proposed that trauma-induced dissociation that comprises alterations in the self increases vulnerability to voice hearing through decreased external grounding and impaired reality testing.

Lack of *self-integration* is used to describe or explain the alterations in the self which mediate the relationship between dissociation and voice hearing (Perona-Garcelan, Perez-Alverez, Garcia-Montes, & Cangas, 2015; Steel et al., 2005). For example, Ross (2009) suggested that this lack of integration involves the conscious mind, ego, or executive self, and renders the sub-selves fragmented and disconnected. Similarly, Longden et al. (2012) have argued that the dissociation of voice hearing reflects an alteration in the normal associative aspects of self and self-in-relation-to-others. Specifically, McIntee and Crompton (1997) suggested that dissociation results from an individual's attempt to develop a *false self* that reduces the impact of on-going trauma. From a cognitive perspective, Young (1999) refers to this as maladaptive schema of the self and others that facilitate avoidance of unbearable negative affect. From a psychodynamic perspective, dissociation reflects intra-psychic defences against trauma that permit *pretending* that trauma is not real and acting *as if* there is more than one part to the self (e.g. Mollon, 1996). And Mollon suggested that this begins with the child's self-hypnotic assertion: *I am not here; this is not happening to me; I am not in this body.*

Perona-Garcelan et al. (2015) proposed *Dialogical Self Theory* (see Hermans & Gieser, 2012) as a phenomenological model of voice hearing as dialogical experiences of the self, where self is dissociated into different perspectives. Accordingly, the perspectives of the self (referred to as *I* positions) are dissociated, such that each *I* represents different values that are inconsistent with the individual's history. The model argues that voices develop from two key processes. The first is dissociation, in which the normal integration of experiences into the self is interrupted. This results in distancing and loss of perspective of the I-positions, and usually occurs through absorption and derealisation. The individual loses awareness that these events are private and experiences them as *not me* in the struggle to maintain a sense of self. The coherence of the relationship between the person and the ensuing voices thereafter determines the dialogue features of the voices. The second process is early negative schemas, in which negative beliefs about the self, others, and the world begin to shape the I-positions. As a result, the I-positions acquire their own perspectives of reality and individual narratives.

Some authors have proposed that the experience of trauma, particularly in early childhood, may facilitate fragmentation between those aspects of self that are preoccupied by adverse events and those aspects of the self that are contextualised by daily functioning (van der Hart, Nijenhuis, & Steele, 2006). Accordingly this fragmentation makes it difficult to integrate one's history (psychologically) into current processes. There is evidence that this can lead to past experience being de-contextualised and experienced as current, and being categorised as non-autobiographical (rather than self-referential, Bromberg, 1995). It has been

demonstrated that these parallel outcomes may be core features of dissociation (Dorahy & van der Hart, 2007).

In this latter half of the current paper, we attempt to provide a functional-analytic approach to voice hearing and its relationship with dissociation. In short, we ask about the putative behavioural processes that underpin both, how these processes emerge, how they are maintained, and to what extent they reflect the normal processes of cognition or represent possible alterations of these. In proposing this view, we rely upon *Relational Frame Theory* (RFT), a modern functional-analytic approach (briefly explained below) to language and cognition that has amassed a very considerable body of empirical support over several decades (see Hayes et al., 2001; Dymond & Roche, 2013).

A Functional-analytic View of Voice Hearing

Although almost all schools of thought in psychology have offered comprehensive, eloquent and often overlapping accounts of psychotic experiences, including voice hearing, very little has emerged from the behavioural community. Indeed, the least one might expect from this school of thought would be hypotheses about why and how voice hearing occurs (i.e. what might the historical or current antecedents be) and is maintained (i.e. the psychological functions, such as escape, served by these behaviours). In our review of the literature on psychosis, we identified only one such account, by Rosenfarb (2013) which adopted a traditional behavioural view in which voices emerge when *"other, more potent and appropriate reinforcers are unavailable"* (p.933). Accordingly, this loss of reinforcement forces the individual to redirect his/her focus inwards which minimises the impact of other aversive experiences (i.e. escape responding) and may itself be reinforcing (similar to the concept of self-reinforcement).

In simple functional-analytic terms, hearing voices was introduced into, and has been retained in, the individual's behavioural repertoire, because it serves some, *or many,* functions (note that functions often change across time). The functions served by the behaviour of voice hearing should not be confused with *evaluations* of voices. For example, frightening and dictatorial voices may serve the *same functions* as voices that are pleasant and supportive. That is, a voice hearer may listen to, and act upon, the advice of both. In this case, one would say that the function served by both types of voice is *appetitive* (i.e. listening to these voices provides reinforcement). Similarly, a voice hearer may try to distract herself from all types of voices she hears (e.g. by listening to music). Again, the same function is served by the different types of voice, but in this case voices are *aversive* (i.e. this is escape responding).

Of course, clearly determining the various functions of complex behaviour, such as voice hearing, is not as straightforward as our simple distinction above between approach and escape behaviours. First, all behaviour results from both a historical and a current context, and both must be appreciated if the behaviour in question is to be fully understood. Second, the function of a new behaviour may change as the behaviour becomes more established, because behaviour readily acquires new functions. For instance, individuals who hear voices for the first time may try distraction (i.e. escape behaviour), but when this fails to work reliably, the voice hearer may feel that she has no choice but to listen to the voices (approach behaviour). Across time, therefore, the same behaviour can have multiple functions and it can be difficult to decipher which contexts control which functions.

In traditional functional analysis, typically used to reduce challenging behaviour, the *topographies* of response classes (i.e. what the behaviour actually looks like) may

suggest functions and the type of history that gave rise to the behaviour. But, topographies do not *reliably* specify that behaviour's functions. Consider a voice hearer whose mother is manipulative and abusive, and who hears two voices -- "The Angel" and "The Witch". The Angel is perceived as soothing and nurturing, and provides escape from reality and rejection, hence this voice has both appetitive and escape functions. The Witch enables the voice hearer to categorise and make sense of what is difficult to explain or disclose (i.e. all witches are bad, but mothers are typically not, so the witch voice absorbs/explains the behaviour of the mother)[1]. Hence, the functions served by this voice are appetitive and facilitate a sense of coherence. When the functions of voices are systematically analysed in this way, it becomes clear why a young person in a traumatic and threatening environment might begin to absorb these experiences into the content of heard voices. For example, an individual in a highly threatening environment will do whatever is necessary to escape. And when actual physical escape is not possible, psychological escape (involving changes in the perception of self and others) potentially provides an alternative means of responding.

It is likely too simplistic to assume that escape from reality, coping and distraction are the *only* functions served by voices, primarily because voice hearing most likely involves complex verbal behaviour that includes rules (internal and external) about the self and others. We use the concept of *verbal* here to refer to the generative untrained aspects of language (and we are not referring to vocal output). Hence, one should not mistake a functional-analytic account for a simplistic one: its

[1] The latter function may not be discriminated by a voice hearer who may perceive the content of the voice of "The Witch" to be as threatening as if the "witch" was real. Many voice hearers can only extract the functions of their voices after working with a therapist or support group.

focus is precision, not simplicity. As noted previously, our aim here is to use a functional-analytic approach to begin to ask questions about the types of behavioural (predominantly verbal) processes at work in voice hearing. This is done with the hope of better understanding these experiences, and ultimately changing them in the service of the individual. Toward these aims, we have constructed the following list of hypotheses which emerge from adopting this approach in the context of the complex phenomena of voice hearing. While we believe many of these suggestions are already available, we are not aware that they have been collated in this way and we propose that doing so is essential if one wishes to move toward offering a functional-analytic explanation of this behaviour.

When functional analysis is used to support suggestions from the existing literature on the relationships among dissociation, trauma and voice hearing, a number of hypotheses regarding these relationships emerge. Again, these suggestions are not generated *only* by functional analysis, many exist already (such as those mentioned in the previous section). But, conducting functional analyses of the relevant experiences supports these existing views.

1. All aspects of an individual's voice experiences should be heard because they are potentially helpful in determining the functions and history of this behaviour.
2. Furthermore, detailed knowledge of the experienced history of the individual (not simply a clinical background) must be acquired to be able to hypothesise about the functions served historically and currently by hearing voices, because from a functional-analytic perspective *all* behaviour is a result of its context.
3. Voice hearing is not *by definition* problematic. This behaviour should only be deemed problematic if it clearly impairs the quality of the individual's life and

access to reinforcers (such as meaningful social contact), and causes distress. The individual must, therefore, be fully involved in defining whether the behaviour is problematic (for them or significant others) or not.

4. The presence of early trauma is most likely associated with failure to meet the child's needs and thus functions normally served in this way will come to be served by other behaviours. For example, if a child is presented with no nurturing by a caregiver, she may seek this (excessively, contextually speaking) at school, socially or even as part of her internal experience (e.g. imaginary support).
5. When needs are not met, alternative behaviours will also occur as a means of understanding and coping with the very fact that needs are not met (e.g. withdrawal from others).
6. These coping mechanisms and experiences relate in a directly functional way to the events, people etc. they represent, and the relationship between the victim's behaviour and the context should not be understated.
7. These coping mechanisms and experiences become embedded in the way the individual interprets, and interacts with, the world and thus continue long after the traumatic events end because specific behavioural patterns have been firmly established.
8. Once established, especially early in development, these (alternative) functions and behaviours will likely impede the emergence of more common or typical behaviours (e.g. social contact).
9. As a result, the more the balance shifts from typical to alternative behavioural repertoires, the more difficult it will be to change those behaviours and the more those behaviours will look 'dysfunctional' in a typical environment.

10. Details of the experiences would ‘make sense’ to the individual and would likely make little sense to anyone else, especially someone with a more typical history. For example, someone who has never lived with threat has limited understanding of the lengths one might go to avoid threat or harm.
11. From a functional-analytic perspective, voice hearing and similar experiences are deeply embedded in histories of trauma and these histories ‘make sense’ of those behaviours. While similar histories can produce different behaviours and different histories can produce similar behaviours, there are clear functional links between the history and the behaviour. As a result, behavioural outcomes of history *do not reflect abnormal processes per se. If anything, they reflect atypical histories and behavioural responses to these.*

A Functional-analytic View of Dissociation

Functional-analytic interpretations readily avoid cognitive, middle and higher level terms, because of the need in the behavioural tradition to employ operationally defined functional-analytic concepts (see Barnes-Holmes, Hussey, McEnteggart, Barnes-Holmes, & Foody, 2016). The concept of dissociation is, of course, not functional-analytic in its origins, hence it remains to be defined as a functional process(es). Attempts to do so suggest questions along the following lines. Does dissociation, at least initially provide, escape from aversive events, such as trauma? Does this behaviour also involve one’s sense of self, and if so, what is the nature of this complex behaviour (i.e. relating to oneself)? Is the development of self as a process fractured and what then happens to that process?

In the section below, we turn specifically to Relational Frame Theory (RFT) and we do so for two key reasons. First, RFT offers an already well-supported functional-

analytic account of complex verbal behaviour, and it is our view that this is precisely what hearing voices and dissociation are – complex patterns of verbal behaviour that come to serve important behavioural and psychological functions for those individuals. In functional-analytic terms, the aim therefore is to describe these patterns succinctly and explain what purposes they serve. Second, RFT also offers a well-supported functional account of the sense of self and others, which suggests a useful insight into possible developments and alterations in these perspectives, as they apply to voice hearing, dissociation and trauma. To date, we were aware of no such application of RFT concepts to an understanding of voice hearing.

Relational Frame Theory (RFT). Relational frame theory provides a contextual, functional account of the processes that define complex language and cognition (e.g. naming, storytelling, deception, humour, perspective-taking and so on). At its core, the theory focuses on the behaviour of deriving relations among stimuli or events. For RFT, this broad type of behaviour can take one of two forms, because events can be related in two main ways.

1. You could relate as similar two red stimuli on the basis of colour (red), and as such this response is controlled by the shared physical property (redness) of the two stimuli (i.e. your relating behaviour is based on discriminating that redness is shared between the two stimuli). This is what pre-verbal infants do and what many types of animals do with exceptional precision.
2. A more complex type of behaviour, however, involves relating two events that have *no* shared physical property. For example, we relate coins together based on monetary value, rather than physical size, colour, shape, etc., and monetary value is a completely verbal concept that is generated by the social culture. Relational

frame theory refers to this behaviour as *relational framing* or *arbitrarily applicable relational responding.* This is not to say that events are related *arbitrarily,* that is clearly not the case, language is highly structured and coherent. But, the concept describes how relations are *applied arbitrarily* to stimuli (e.g. why is a smaller coin sometimes worth more than a larger one, this attribution was arbitrary at some point in history, now it is arbitrarily applied to those coins). And this requires an extensive history of a particular language to establish these arbitrarily applicable relations. Indeed, there is little or no evidence to suggest that pre-verbal infants or animals can do much of this, although there is sound evidence that children can do much more as they become increasingly verbally sophisticated (Luciano et al., 2009).

Relational frame theory subdivides the various patterns of relational responding into what are called *relational frames* and those identified thus far are as follows. 1. *Co-ordination relations* specify sameness or similarity and are often controlled by cues such as the word "is" (e.g. "the world is round" co-ordinates the Earth with roundness in shape). 2. *Opposition relations* specify extreme difference (i.e. at the two far ends of a continuum) and are often controlled by cues such as "is the opposite of" (e.g. day is opposite to night). 3. *Distinction relations* are similar to opposition relations in terms of specifying difference, but the size of the difference is not as great and thus related stimuli are not necessarily at two extreme ends of a continuum. These relations are often controlled by cues such as "different from". For example, "cats are different from dogs" specifies that at least in some ways the two animals are not the same, but does not suggest that they are extremely different to the extent of being opposite. 4. *Comparative relations* specify relative similarity or difference, usually along a specific dimension.

The cues that control this pattern of responding include “bigger/smaller/lighter” etc. and these help to specify the dimension of comparison (i.e. size, weight, etc.). 5. *Hierarchical relations* are similar to comparative relations in terms of specifying relative comparisons, but containment is also critically involved. These relations are often controlled by cues such as “contains/belongs to” and family trees are a classic example. Critically, for RFT, each of these relational frames can operate alone and with each other comprising complex *relational networks,* the basis of all complex verbal behaviour.

6. The p*erspective-taking* or *deictic relations* appear somewhat different from the other frames as they specify an individual’s perspective along interpersonal, spatial and temporal dimensions (e.g. I am HERE-NOW and YOU are THERE-THEN). For RFT, the perspective-taking relations constitute the locus of control from which an individual views the self, others and the world, hence one’s perspective *always* operates from HERE-NOW. That is, for RFT the relations that are being derived in this case are denoted as I-HERE-NOW -- a combination of interpersonal and spatial relational responding.

The Relationship between Deictic Relations and Dissociative Processes. Through our developmental histories, we typically acquire a strong perspective of the self (I-HERE-NOW) *and* a strong distinction between self and others (OTHERS-THERE-THEN). That is, individuals always see the world from their own perspective of I-HERE-NOW and appreciate the views of others as OTHERS-THERE-THEN. As a result, it is unlikely that an individual can see the world through the eyes of another because of this core distinction in terms of the interpersonal and spatial relations and because of the importance of developing a stable sense of self and perspective-taking.

However, we would argue that traumatic histories weaken this healthy distinction between self and others. Consider these different histories as illustrated in the top half of Figure 1. Consider traumatic early relationships in which significant others are over-controlling, intrusive, or unpredictable (e.g. when children are told that they are not allowed to cry or that they are not currently experiencing certain emotions). As a result, a child might derive a co-ordination relation between self and others from the perspective of HERE-NOW. That is, from the child's perspective, others (usually THERE-THEN) appear to have control over your psychological content (emotions, etc.) HERE-NOW. Given this type of intrusive and externally-controlled history, a child could readily derive the relations OTHERS-HERE-NOW because many aspects of the child's experience HERE-NOW is dictated by others. The result of such a history is that instead of the child operating from the relational perspective I-HERE-NOW and this being highly distinct from OTHERS-THERE-THEN, the child may operate from a looser, externally mediated perspective of I & OTHERS-HERE-NOW.

INSERT FIGURE 1 HERE

We would argue that this process (I & OTHERS-HERE-NOW) is the foundation of the dissociative experience, because the unique nature of I-HERE-NOW has been intruded upon. It is important to emphasise, however, that the sense of I-ness remains HERE-NOW even whilst an individual is encountering a dissociative experience (i.e. I-ness is not THERE-THEN). What is critical, we argue, is that many aspects of I-ness are co-ordinated with OTHERS, leaving the individual highly vulnerable and psychological unsafe. In our view, this increased co-ordination of self and others in the HERE-NOW is somewhat specific to the dissociative experience and is at least less common in other patterns of psychological suffering, such as depression, anxiety, etc.

Dissociative experiences also vary by *degree of* dissociation, where more extreme and distressing levels involve derealisation and depersonalisation. We believe that our current model can also account for these experiences, using the same basic processes. In brief, we propose that in certain extreme contexts, one's perspective can shift from I & OTHERS-HERE-NOW to I & OTHERS-THERE-THEN (as if one was operating from the perspective of another). That is, in extreme dissociation I is co-ordinated with OTHER, but unlike our descriptions above, I is now also operating THERE-THEN and separate from a perspective HERE-NOW. Such experiences are likely to be removed from conscious awareness because one's perspective is not operating in the HERE-NOW (see the bottom half of Figure 1 for a schematic representation of these experiences). Naturally, this process does not occur as a result of *all* traumatic histories, but is very likely as a result of physical and sexual abuse, in particular, because of the potential need to remove oneself from traumatic events HERE-NOW.

The Relationship between Dissociative Processes and Hearing Voices. In a nutshell, the model we propose suggests that dissociation involves relating to the self and others from the perspective of I & OTHERS-HERE-NOW (rather than I-HERE-NOW and OTHERS-THERE-THEN), where the essential distinction between the self and others is reduced and I-OTHERS are co-ordinated on many levels. One of the ways in which this co-ordination may manifest itself is in responding to one's own psychological content as if it is the content or voice of others. In other words, my thoughts, feelings etc. would not be discriminated (or experienced) from the perspective of I-HERE-NOW, but rather from the perspective I & OTHERS-HERE NOW. As a result of this co-ordination, the individual could not accurately decipher whether the experience belongs to the self or others (i.e. whether it was internal or external), because

I and others are co-ordinated. In the context of a traumatic history, this co-ordinated relational response could serve important functions of avoiding or alleviating pain associated with specific thoughts and feelings (in a sense what I think and feel are no longer only mine). Paradoxically, however, if this I-OTHERS co-ordination continues and enables the individual to dissociate from current experience, across time this will actually serve to reinforce the co-ordination and destabilise or fragment the self further. Put simply, the more I co-ordinate my own experience with others (and dissociate this from my own perspective), the more likely I am to externalise my current experience and the more threatening others can become.

Summary and Conclusions

In proposing the model above of the actualisation of self and others in trauma and dissociation and their role on the development of voice hearing, the following suppositions seem feasible.

1. There is likely a multitude of historical functions served by the behaviour of voice hearing (e.g. escape, avoidance, nurture, etc.).
2. Voice hearing appears to be a common topography of a class of responding more widely associated with dissociation.
3. Voice hearing would not necessarily "feel" dissociative to an individual, especially where it has become a part of the lived experience, but from a functional-analytic perspective, we suggest that this type of behaviour should be defined as dissociative.
4. A history of trauma provides a common context for the emergence of dissociation, especially where significant others exert control over a child's internal experience (such as emotions).

5. For voice hearing to be defined as a topography of dissociation, it must involve a process which centres around the self and others, where there is an impairment of the natural psychological boundaries between these person perspectives.
6. Specifically, from an RFT point of view, dissociation represents a significant disruption in the typical development of distinction relations between self and others.
7. Instead of others being distinct from my perspective, others become co-ordinated with my perspective.
8. This atypical co-ordination likely has severe and negative developmental consequences.
9. The process we proposed to underlie dissociation is the co-ordination of self and others in on-going experience (i.e. I & OTHERS-HERE-NOW).
10. In a dissociative episode, the on-going experience may become spatially and temporally distinct from the self (I & OTHERS-THERE-THEN), where the outside world is not experienced HERE-NOW. This process may account for amnesia and fugue states.
11. Dissociation appears to serve several historical functions, *one of which* may be to avoid/escape the perspective from which your reality is being experienced, because physical escape is not possible.
12. One clinical implication suggested by this model is that therapeutic 'intervention' should understand the behaviours associated with a sense of self that is fragile and threatened by others. Relations with self and others should be a key focus of therapy, as well as interventions designed to enhance a coherent distinct sense of self.

13. One empirical implication is to use a functional-analytic approach to test the trauma-dissociation developmental trajectory, and the extent to which trauma, self and others play in the development and maintenance of dissociative experiences.

The model we propose bears considerable overlap, in our opinion, with a number of models outlined in the previous section, particularly those which pointed to the self and relationships with others as central to the dissociative process, in which there are alterations or fragmentations in order to escape from a painful context (Longden et al., 2012; McIntee & Compton, 1997; Mollon, 1996; Perona-Garcelan et al., 2015; Ross, 2009; Young, 1999). Furthermore, our model also complements those suggested by both Romme and Escher (2000) and by Ross (e.g. 2000). In the former, Romme and Escher articulate an essentially diathesis-stress model of voice hearing that also places strong emphasis on the individual's history, especially a traumatic one as influential on the emergence of strong negative appraisals of self (e.g. anger, shame, etc.) and the need to avoid these. Based on this model, they then propose a type of psychological formulation called *The Construct* (similar to the Maastricht Interview) which directs interventions surrounding voice hearing in ways that overlap with our suggestions above (e.g. voice person and content relate to childhood significant others and serve functions associated with these others). In the latter, Ross proposed the *Trauma Model* for dissociative disorders, in which the role of traumatic histories in dissociation are emphasised. They also proposed *Trauma Model Therapy* which aims to assist in the development of an integrated sense of self.

In formulating the current paper, we were more than surprised to discover that functional-analytic psychology had contributed so little to our understanding of voice hearing and dissociation more broadly. As functional-analytic psychologists conducting

empirical research and clinical work with voice hearing individuals, we are constantly struck by the extent to which the individual's sense of self is, and has been, compromised by perceptions of the world around then (real or otherwise). In parallel, much existing research supports RFT's functional-analytic account of the self as relational perspective-taking. The current paper is an attempt to bring together these two strands to help explain how traumatic histories generate experiences in which the development of one's stable and coherent sense of self is interrupted or altered. It is important to emphasise that, for us, these outcomes do not reflect abnormal processes but historical and contextual alterations of normal processes that leave the individual no option but to develop alternative experiences that serve important behavioural and psychological functions. At the core of our account are two key relationships: that between oneself and one's psychological content, and that between the self and others. Our current hypotheses suggest that difficulties in the latter create difficulties in the former, in a manner that reflects significant alterations in one's sense of self. For us, this is the kernel and function of the dissociative experience.

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Figures

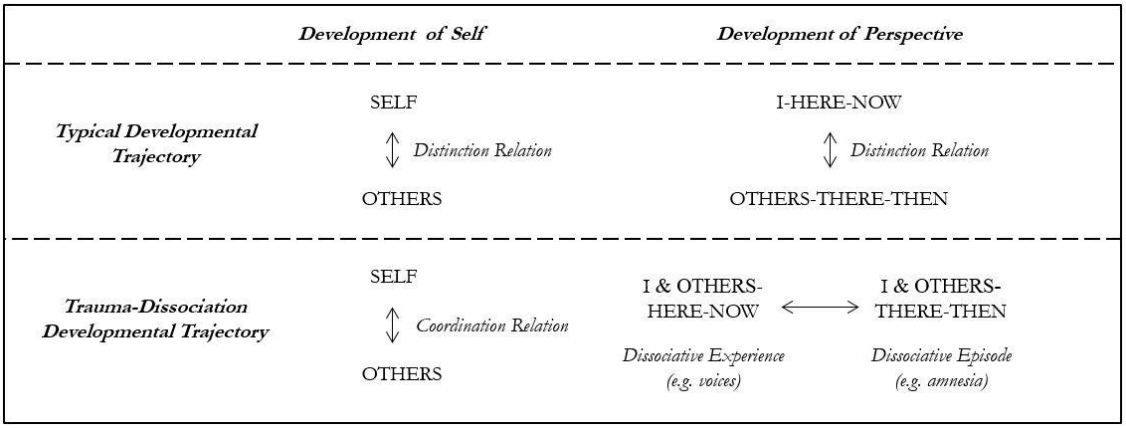

*Figure 1.*Schematic representation of the development of the self/perspective in typical versus traumatic developmental trajectories.