Perceptual Confusion during Cultural Displacement: an Argument for Ecological Psychology

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Abstract
Sensory perception is essential for our everyday activities. Anecdotal evidence from migrant memoirs suggests that sensory perception is sometimes seriously impaired shortly after arriving in an unfamiliar cultural environment. The sojourner is unable to discern certain culture-specific shapes, objects and structures in their perceptual field. As a result of this perceptual problem, the sojourner is left seriously disabled in their interaction with the new environment. In this article, I argue that ecological psychology of perception provides a better account of this curious phenomenon than cognitive psychology on the bases of the principle of explanatory parsimony. I maintain that the cognitivist's explanation is indirect because it relies heavily on the internal, representational abilities of the sojourner. Ecological psychology, on the other hand, targets precisely what seems to be at stake: the sojourners inability to perceive affordances in their new socio-cultural environment. Local socio-cultural practices shape the available affordances in the environment, and the socio-cultural context in which one grew up strongly influences the development of one's abilities and skills. Together they determine which affordances one perceives. The change of socio-cultural context during cross-cultural transition presumably limits the sojourner's field of affordances.

Over the past decades, cross-cultural travel has increased continuously. While the motives for cross-cultural travel vary extensively amongst travelers (e.g., economical, recreational, political, etc.) nearly all long-term travelers experience something called 'culture shock'. The term 'culture shock' has come to denote various (affective) reactions to a new social environment (Furnham, 2012; 2019), though in reality these reactions are mostly negative. Still, it is likely that the ambiguity of the concept caused the decrease in popularity of culture shock as a research topic over the past two decades. Meanwhile, long-term cross-cultural travel has only increased, which implies that experiences of culture shock are more ubiquitous than ever.

This article does not address culture shock in its most general form but rather a problematic, though little researched, curious experience that coincides with 'culture shock'. This curious experience, *perceptual confusion*, is the inability of sojourners to discern many basic but also complex features in their visual field, even though they are aware that these features are there. The phenomenon is frequently described by migrants in their memoirs. Considering the general importance of perception for our interaction with the environment, it is not surprising that these memoirs also describe some difficulty interacting with the environment. This article will specifically consider descriptions of perceptual confusion in Eva Hoffman's autobiographical work *Lost in Translation* (1989), as her work most vividly describes what this experience entails. Moreover, Hoffman's work is strictly autobiographical whereas the work of other authors is often loosely autobiographical.

The purpose of this article is to discuss possible psychological explanations for the experience of perceptual confusion during cultural displacement. I will do so from two distinct theoretical approaches to perception: cognitive psychology and ecological psychology.[1] In the course of this article, I will explain that an ecological approach to perceptual confusion provides a simpler and more direct explanation of this phenomenon than the cognitive approach. Ecological psychology targets directly what seems to be at stake, whereas the cognitive psychologist's devotion to internal representations requires needless extra explanatory steps. The simplicity of the ecological explanation should therefore, in accordance with the principle of explanatory parsimony, be preferred over the cognitive explanation. Hence, the phenomenon of perceptual confusion in situations of cultural displacement offers an argument in favor of ecological psychology.

First, I will lay the groundwork and introduce the phenomenon of perceptual confusion by quoting and discussing Hoffman's work. Then, I will briefly discuss the principles of cognitive psychology before I provide a cognitivist's assessment of perceptual confusion during cultural displacement. Subsequently, I will introduce ecological psychology and an ecological assessment of this phenomenon. In the second-last section, these two explanations are compared, and I explain why the cognitive explanation is needlessly circumstantial. The article concludes with several opportunities to continue the ecological line of research on this topic.

Perceptual Confusion during Cultural Displacement

Over the years, many authors have described their own migration or other long-term cross-cultural experiences in autobiographical novels (e.g., *Girl in Translation* (2010) by Jean Kwok; *Barefoot Heart* (1999) by Elva Treviño Hart). These books beautifully describe the

[1] Cognitive and ecological psychology are not the only theoretical approaches to perception. For example, until the 1950s, psychological behaviorism was very popular. However, psychological behaviorism significantly decreased in popularity over the past decades, whereas cognitive and ecological theories are still popular amongst psychologists. Moreover, the comparison between cognitive and ecological psychology is especially interesting considering the current topic. Therefore, the discussion of psychological theories remains limited to these two.

author's nostalgia to their home country, especially to the simple everyday experiences, and the confusion and mismatch they experience when they try to participate in the local daily life.

One of the curious experiences that is often described in these immigrant novels is an experience of *perceptual confusion*. This confusion does not merely refer to the inability to understand the spoken language or the inability to understand the point of, or participate in, the sociocultural habits they witness. The perceptual confusion is more fundamental than this. The authors describe what seems nearly a perceptual disability: the inability to perceive fundamental aspects of the visual field that natives do perceive and that the migrants would have been able to perceive in their home environment, such as colors, shapes, various objects, etc. For example, upon arrival in New York, Jamaica Kincaid writes in *Lucy* (2002): "I could not see anything clearly on the way in from the airport, even though there were lights everywhere" (p. 3). On a similar note, Eva Hoffman writes in *Lost in Translation* (1989): "What has happened to me in this new world? I don't know. I don't see what I have seen, don't comprehend what's in front of me" (p. 108). What this lack of perception and comprehension involves, Hoffman describes a couple of pages later:

> I walk through those streets not seeing anything clearly, as if a screen has fallen before my eyes, a screen that obscures and blurs everything in my field of my vision. […] The city's unfocused sprawl, its inchoate spread of one-family houses, doesn't fall into any grid of mental imagery, and therefore it is a strain to see what is before me. A few years later, when I am taken to my first football game, I have the same experience of my sight going awry. Since I don't know the rules of the game, and don't know what to look for, I can never see where the ball is. You can only keep your eye on the ball, it seems if you have a rough a priori idea of its trajectory. Even on those days when the sun comes out in full blaze and the air has the special transparency of the North, Vancouver is a dim world to my eyes, and I walk around it in a static of visual confusion. (p. 135)

In her book, Hoffman describes her experience of migrating to Canada from Poland at 13 years of age. The quote above perfectly describes what it means for Eva not to be able to see what is in her perceptual field. She is unable to locate the objects in her visual field, even though she knows that these objects are there. During the football game, Eva knows that the football is somewhere in her visual field, and she would be able to perceive the ball if it were laying still. However, since the ball is being moved by the players and since it is subject to the rules of a game unfamiliar to her, she does not know where to look for it and fails to perceive it. Similarly, since Eva is unfamiliar with the architectonical conventions of the city, it is difficult for her to perceive the structure and the beauty of the city she perceives.

Eva blames her inability to comprehend what she perceives on the lack of the right mental imagery that would fit her visual data, suggesting that, if she would have had perceived these visual stimuli many times before, it would not be such a "strain" perceiving them. Eva also recognizes that the "dim" appearance of Vancouver is not universal, as she acknowledges that Vancouver appears dim only to her, not to the locals.

Interestingly, the "dim" appearance and the "strain" of perceiving vanish a couple of years after Eva's migration to Canada. In the following quote one reads how Eva looks back on her difficulty perceiving the various colors and sounds in the first couple of months of living in Canada and how her perception has changed over the years:

> I breathe in this austere beauty deeply and remember how, many years ago, I sat here in a cloud of unhappiness and unknowing, and felt only the terror of this scene and its

> emptiness. […] it is impossible to perceive the meaning of any one thing without knowing the pattern of the surrounding things. Without the color spectrum, there is no yellow or blue, and without seeing its colors, how can one be touched by the beauty of the world? […] But now I have eyes to see its flower-filled gardens, and hear small kindnesses under the flat Canadian accents. (p. 151)

In her book, Hoffman does not only describe her own perceptual experience and her own feelings of cultural displacement. She also frequently writes about how the migration to Vancouver affected her family members:

> My mother reminds herself and us that my father is the man whose resourcefulness has never failed him, who has never been in a situation he couldn't get out of. But for the first time, he can't find his nerve; he becomes anxious about making small decisions, and anxious that he has made the wrong ones. […] The structure of the space within he moves has changed. It has no obstacles he can daringly jump over, no closed doors he can cleverly open. Everything seems to be open, but where is the point of entry? How do you maneuver when there seems to be nothing to maneuver around? […] he sinks into a despair that is like lead, like the Dead Sea. "For what is the purpose?" he says when somebody asks him to go to a movie or for a walk. "Why are you torturing yourself like that?" I shout. "What do you want?" The answer is astonishing to me. "I want my peace of mind back" he says. (p. 128)

The change in the socio-cultural environment of Eva's father does not only affect the way in which he perceives the environment, which appears limited. It also affects the way in which he interacts with the environment. He is unable to interact with the environment in the way he was used to and was skilled in. Eva's father cannot grasp the action opportunities the environment provides, because the sociocultural "structure of the space has changed". He seems stuck, and, as a result, he "sinks into […] despair", emphasizing the depressing nature of this experience. Eva describes a similar experience of lacking a grasp of the opportunities for interaction with her new environment when she writes about her first football game: "Since I don't know the rules of the game, and don't know what to look for, I can never see where the ball is. You can only keep your eye on the ball, it seems if you have a rough a priori idea of its trajectory" (p. 135).

The quotes from Hoffman's book also demonstrate the holistic structure of one's cultural environment and how that structure complicates the sojourner's perception of, and interaction with the environment. The perceived artefacts and their conventional connotations are essentially interwoven and all largely unfamiliar to the sojourner. Just like the players in Eva's football game never *just* kick the ball but its trajectory is always subject to the players and the rules of the game. Learning and understanding what is perceived by the sojourner and how this perceptual information can facilitate one's interaction with the new environment to fulfill one's needs is not as easy as learning in a stepwise manner the function of each artefact one perceives. It requires understanding the purposes, meanings and functions of artefacts, their dependency on other artefacts, and knowing the history behind them, so that these perceptions become naturally integrated in one's perceptual repertoire. The fundamental interwovenness of each aspect of the socio-cultural environment, which developed over many years of cultural evolution, undeniably complicates the ability of a sojourner to interact with the cultural environment they perceive, as understanding any one of these cultural aspects requires understanding several others. Such understanding is naturally inherited by the locals.

Hoffman's book vividly describes the painfulness and seriousness of the perceptual problems she and her family experience within the first months upon arrival in Canada. How

can one explain the perceptual confusion experienced by sojourners like Eva? And why do these perceptual issues arise during cross-cultural transition? Importantly, how can one explain the influence perceptual confusion has on the way the sojourner interacts with their new socio-cultural environment? This article aims to provide an answer to these questions by discussing two possible psychological explanations of this phenomenon: a cognitive and an ecological explanation. Yet, before I discuss these explanations, I will first place perceptual confusion in the context of other cross-cultural research on perception.

Cross-Cultural Differences in Perception

Considering the topic of this paper, it is necessary to briefly discuss studies that aim to explain cross-cultural differences in perception. For example, we must consider the possibility that individuals from one culture are unable to perceive certain colors or shapes that individuals from other cultures can. Perhaps the existing literature can account for perceptual confusion?

It is often assumed that basic cognitive abilities such as perceptual abilities are universal, and that findings about the way our perceptual system functions can be applied to every human being from any culture (Henrich et al., 2010). Yet, this assumption is not completely justified.

In their influential paper, Henrich and colleagues (2010) propose that much research on behavioral and psychological abilities, including perception, relies too heavily on WEIRD subjects, an acronym for persons from the wealthiest, educated, industrialized, rich and democratic societies. Approximately 96% of the subjects in behavioral and psychological studies are WEIRD subjects (Arnett, 2008), even though WEIRD subjects represent only 12% of the world's population. The subject samples in these studies are therefore not representative of the world population, and the findings in these studies should therefore not immediately be generalized to the world population. Still, this is what usually happens, even though there are several examples of culturally determined perceptual differences. I will discuss several of them here.

For example, Segall and colleagues (1966) found that subjects from American and European societies were much more susceptible to the Müller-Lyer optical illusion than subjects from other societies, whereas the San foragers of the Kalahari were completely unaffected by the illusion. Given the frequent use of precisely this illusion in optical and psychological tests, this study shows how extremely problematic it is to simply generalize findings from such tests. Cross-cultural differences were also found in the Sander-Parallelogram and both Horizontal-Vertical illusion (Segall et al., 1966).

Another example is the cultural effect on having a holistic or analytic perceptual orientation. It has been demonstrated in several studies (Boduraglu et al., 2009; Masuda & Nisbett, 2001; Nisbett & Miyamoto, 2005) that individuals from Western cultures (which are mostly WEIRD individuals) tend to organize perceptual information analytically, i.e., by rules and categories, and tend to focus on the object itself rather than on the context it is in (field-independent). Individuals from Asian cultures on the other hand, tend to organize perceptual information holistically, meaning that they are more inclined to look at how the object relates to the context (field-dependent). A related example that illustrates this difference is the study by Saulton and colleagues (2017) who found that South Korean subjects made more eye movements than German subjects when estimating the size of a virtual room. South Korean subjects were also less biased in their judgement by the rectangularity of the room and their viewpoint than the German subjects.

Culture also affects the perceptual abilities of other senses than vision. Diverse studies by Majid demonstrate large cultural differences in smell discrimination. For example, most modern and westernized societies have a very limited smell vocabulary and rarely speak

about smells, whereas many Aslian languages have an elaborate vocabulary for different kinds of smells and speak about smells as easily as about visual properties (O'Meara & Majid, 2016). Interestingly, people from societies with larger smell vocabularies are better and faster at smell naming and smell discrimination than persons from societies with smaller smell vocabularies (Majid, 2021; Majid et al., 2018). In some cultures, the smell terminology is connected to local socio-cultural concerns, such as hierarchical status, pleasantness, or dangerousness, illustrating the relevance of these smells to local cultural practices (O'Meara & Majid, 2016).

Nonetheless, there are also some important similarities in human perception that sustain across cultures. For example, the ability to perceive colors is common across societies, even though there are large differences in the terms used to denote such colors (Regier et al., 2005). While the cultural differences in color terminology do influence the ability to discriminate between shades of colors (e.g., different shades of blue), they do not determine the ability to perceive different colors more generally (Henrich et al., 2010). Similarly, the ability to smell is universal, though cultural and environmental differences do affect the ability to discriminate between more or less smells.

To summarize, many studies confirm the influence of culture on certain perceptual abilities, mainly discrimination abilities, which could explain the inability to discern very specific odors or colors in the new environment. However, these findings are too narrowly focused to explain perceptual confusion at the scale and complexity that Hoffman and other sojourners describe. For example, the inability to track a ball in a football game or discern architectural features falls outside the purview of the kinds of study referred to above. In the following sections, two theoretically distinct explanations will be offered to these open questions.

Cognitive Psychology of Perception

Before I explore a cognitivist's perspective on Hoffman's experiences, I will briefly introduce the main principles of cognitive psychology. Note that this introduction does not exhaust all that cognitive psychology has to offer on perception. Over the years, cognitive theorists have diverged on many matters, experimental approaches, and definitions. Doing justice to these discussions would cost several hundred pages, and, for the purposes of this paper, these discussions are not relevant.

Cognitive psychology tries to uncover the organization of the mind and aims to understand how this organization can produce intelligent thought and behavior (Anderson, 2014, p. 1). Three influences have developed cognitive psychology to the modern version of this theory: the research conducted on human performance during World War II, the development of information-processing theories in computer science, and Chomsky's work on linguistics. As a result of these developments, the information-processing approach to understanding cognition and the mind has become the dominant approach in cognitive psychology. This approach supposes that cognitive tasks are executed in several steps at which pieces of "information", an abstract entity with a symbolic character referring to the outside world, are sequentially processed. These steps are often visually modelled by means of flowcharts (Anderson, 2014, pp. 9-10).

Regarding perception, cognitivists mostly focused on visual perception. This is largely due to the fact that humans seem to rely most heavily on sensory information from the visual system and since the visual cortex in the brain, the organ assumed to be the material source of mental processes, is larger than most other sensory cortices (Anderson, 2014, p. 27; Coxon & Upton, 2014). Visual information processing starts with light being reflected from external objects which enters the eye through the lens and falls on the retina in the back of the eye. In a way, the retinal 'reflection' on the back of the eye constitutes a first 'copy' in the organism of

the objects in the 'external' world. The retina exists of light-sensitive cells, called photoreceptors, which exist of both cones and rods. Cones are suggested to be involved in high acuity and color vision, requiring much light, while the rods are suggested to be involved in less precise black-and-white vision. The photoreceptors initiate a process that converts light into neural signals which can be transferred to the brain.

An important premise in the cognitive psychology of perception is that the 'retinal reflection' is a 'bad copy' of the world. Firstly, it is upside down, since the light reflected at the top of the external object reaches the lower part of the retina and the light reflected at the lower part of the external object reaches the upper area of the retina. Moreover, the 'copy' on the retina is two-dimensional, while we know that the external objects are three-dimensional. Lastly, the two-dimensional 'copy' on the retina cannot uniquely be traced back to one specific external source. Therefore, we need to *infer* based on the information that we have which external object exactly caused this retinal stimulation. The 'copy' on the retina thus needs to be 'fixed' internally by further processing in the brain. This assumption in cognitive psychology is also called the *impoverished stimulus* assumption (Blau & Wagman, 2022, p. 10; Chomsky, 1980)

Entering the brain through the optical nerve, the sensory data is sequentially processed in the multiple areas in the brain dedicated to visual information processing. The cells in these areas are sensitive to various features, such as color, orientation, depth, and movement, and analyze the sensory stimulus for any of these features. After recognizing a pattern of features from analyzing the stimulus, these features are divided and combined to create a three-dimensional copy or 'representation' of external objects. This dividing and combing happens in accordance with the so-called *Gestalt-principles* of orientation[2] that allow one to classify features as belonging together. This results in recognition of separate objects instead of dealing with one complex representation existing of many different color and depth features.

Although I have thus far only discussed the processing of visual information, the same principles can be applied to other kinds of sensory processing. Touch, smell, and sound are all converted to neural signals by the respective senses before being processed in multiple sensory areas in the brain dedicated to processing relevant features in a sequential manner. This process generates a mental representation of the external world in the higher cognitive areas at the end of the information-processing cycle. During this process, the sensory information from different senses is also combined to confirm information from the other senses (e.g., hearing a dog bark and seeing a dog confirms the presence of a dog), and create a more comprehensive representation of the environment.

Besides such bottom-up processing of features of the stimulus, top-down cognitive influences also contribute to the representation of external objects. Top-down influences exist of context general information, e.g., from past experiences, which allows one to fill in the blanks of our mental representation of the external world that cannot be reconstructed from the sensory data alone. It is suggested that, as one gains more life experience, one starts to recognize causal patterns in the sensory data from the environment in which one grows up, and, consequently, generates internal expectations (or *internal structures*[3]) about future

[2] The Gestalt principles or laws refer to a set of organizing principles in perception that cause humans to group perceptual 'parts' together as belonging to the same object or 'whole' rather than perceiving them as individual parts. Examples of these laws or principles are perceptual grouping according to proximity, similarity, and good continuation (Coxon & Upton, chapter Perception).

[3] Wexler (2006) uses the term 'internal structures' to denote information about the environment in the brain that the individual has gathered over the years and that represent the causal expectations of the world based on those experiences. According to Wexler, until adulthood, we mostly use incoming sensory information to shape these internal structures as they are still very malleable. As one reaches adulthood, one starts shaping perceptual information according to these developed internal structures and the structures become less flexible. Different socio-cultural environments shape internal structures in different ways, and, according to Wexler, such large

sensory data in accordance with those patterns. These expectations influence the incoming sensory data in a top-down fashion by organizing and interpreting the received sensory data according to those expectations (Wexler, 2006). For example, when one reads the sentence "the soup is h*t", one is more likely to read "the soup is hot" than "the soup is hat", because one expects to read an 'o', even though the sensory data by itself is ambiguous about whether the * hides an 'a' or an 'o' (or any other letter). One's socio-cultural context has a strong influence on the development of top-down predictions (Wexler, 2006, chapter 3). Frequently receiving perceptual information about the same cultural artefacts causes one to generate predictions about the function or meaning of such artefacts, in turn causing one to classify future sensory data about these artefacts in accordance with these expectations.

The result of all this bottom-up and top-down information-processing is an internal representation of the external world. It is this representation of the world that informs our behavior and determines our subjective experience of the world, not the external world itself. Thus, cognitive psychologists argue that a lot of mental processing precedes our awareness and perception of the external environment. Knowledge and perception of the world is therefore always indirect and inferential.

Over the years, many cognitivists have investigated which mental processes are involved in handling visual information, and which rules, cues and feature detectors dictate our mental representations. The assumptions that our perception is based on a mental representation of the world, where the world exists independently of the organism, and that this mental representation is based on an impoverished and heavily processed stimulus, have rarely been challenged within cognitive psychology (Blau & Wagman, 2022).

A Cognitivist's Explanation of Perceptual Confusion

Now that the principles of cognitivism have been explained, it is time to explore what cognitivists can tell us about perceptual confusion during cultural displacement and its consequences for one's interaction with the environment. In a nutshell, cognitive psychologists argue that the interactions between representational processes in the brain are responsible for the final percept. It is this representation that guides our interaction with the environment. If the representation is flawed, incomplete or incorrect, this can either be blamed on stimulus being so poor and uninformative that the well-functioning cognitive processes inside the brain are unable to 'fix' the percept (i.e., the root of the problem lies outside the subject), or the cognitive processes in the perceptual system are dysfunctional so the brain cannot produce a coherent and understandable representation (i.e., the root of the problem is internal to the subject). Since the perceptual difficulties experienced by the sojourner are not experienced by natives in the same environment, the stimulus (i.e., the environment) itself cannot be the root of the problem. This leaves one possibility: the internal, perceptual system of the sojourner is dysfunctional upon arrival in a new socio-cultural environment: the cognitive processes inside the sojourner are unable to interact properly with one another to produce a coherent representation. Let us explore the plausibility of this explanation.

Consider the sojourner's inability to perceive very basic features of the environment. Such basic feature detection, e.g., color detection, edge detection, etc., happens in the early stages of information processing in the visual cortex of the brain (Anderson, 2014). Yet, there is no evidence that these lower visual areas of the sojourner's brain are damaged upon arrival in a new socio-cultural environment. Without such brain damage, the sojourner should be able to discern colors and shapes as natives do.

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differences in internal structures are the cause of ethnic conflicts. Unfortunately, Wexler is not clear on what these internal structures biologically or neurologically consist of.

On a similar note, the inability to recognize complex or even simple objects, also called *agnosia*, can normally be blamed on brain damage in early and otherwise higher sensory areas (Anderson, 2014). Yet, there is no evidence for brain damage in sojourners and there is no reason to assume that they suffer any kind of physical trauma to the brain upon arrival in a new socio-cultural environment. Therefore, it seems unlikely that damage to the sensory information-processing areas in the brain will be the cause of perceptual confusion.

Thus far, I have only considered possible dysfunctionalities in bottom-up processing, i.e., the parts of the information processing system that analyze the stimulus for relevant information. As discussed, this tells only one half of the cognitive psychology story. Dysfunctionalities in the other half, top-down processing, i.e., the part of the information processing system dedicated to filling in the blanks of internal representations with 'stored' contextual or general knowledge, could also be responsible for perceptual confusion.

As the sojourner enters a new socio-cultural context, they are unfamiliar with many of the cultural artefacts they perceive. The complete newness of the perceptual stimuli implies that there is no representational knowledge regarding these cultural artefacts already 'stored' in the internal structures of the sojourner's brain. The mental reconstruction of the unfamiliar external objects must almost completely rely on the cognitive bottom-up processing of the 'impoverished' visual stimulus itself, and the sojourner has no perceptual expectations regarding the artefact.

In fact, it seems that Hoffman herself also suggests that problems in top-down processing are responsible for her perceptual difficulties. Consider, once again, her description of perceptual confusion: "The city's unfocused sprawl, its inchoate spread of one-family houses, doesn't fall into any *grid of mental imagery*, and therefore it is a strain to see what is before me" (Hoffman, 1989, p. 135, emphasis added). She has no representational recollection of any visual information, or, in other words, no "*mental imagery*" that is remotely related to what she currently witnesses in this new environment. Because Eva grew up in a different cultural environment, with different architectural conventions, she has not developed the right *internal structures* or internal *expectations* about the perceptual input she receives in this new environment to influence the processing of this information. The importance of such internal expectations she describes a few sentences later: "You can only keep your eye on the ball, it seems if you have a *rough a priori idea* of its trajectory" (p. 135, emphasis added), suggesting that with the right internal predictions of the football's trajectory, she would have been able to make the right eye movements in the direction she expects to perceive the ball.

As previously discussed, through frequent interaction with the same cultural artefacts one learns to attribute certain meanings or functions to representations of artefacts. The lack of internal structures regarding the current external stimulus therefore also complicates the formation of a mental representation that is informative about opportunities of interaction with the stimulus, because the sojourner cannot attribute any function or meaning to the internal representation. There is no internal top-down information available on how to interact with what is perceived. Since cognitivists argue that it is exactly this mental representation that should inform us on possibilities for interaction with the environment, the sojourner's lack of context-relevant internal structures could cause difficulties for interaction with the environment.

To summarize, the cognitivist would thus likely argue that the sojourner's inability to perceive the environment and grasp ways to interact with the environment is caused by a lack of internal expectations about the environment, which complicates the formation of action-informative mental representations of the environment. Importantly, the cognitivist explanation of perception and action is always mediated by (flawed) internal representations.

In the next two sections, I will discuss a different psychological approach to perceptual confusion that rejects the need for such extensive representations.

Ecological Psychology of Perception

The ecological approach to perception started with the work of James Gibson (1979), who challenged the cognitivist view and proposed it as an alternative (Costall, 1984). In his rejection of cognitive psychology, Gibson questions the representational nature of perception, the organism-environment distinction, and the assumption of the impoverished stimulus. Instead, Gibson argues that perception is always direct, active and action-oriented. Moreover, instead of relying on internal computational mechanisms, ecological psychologists shift the focus towards explanations based on organism-environment dynamics (Sanches de Oliveira & Raja, 2018). What does this all entail?

Firstly, ecological psychologists believe that perception is not mediated by mental representations or 'copies' of the environment. This means that the retina does not produce a 'bad copy' of the environment, nor is it some kind of projector. The retina is merely a combination of light-sensitive cells. Ecological psychologists argue that one has direct perceptual access to the information in our environment, because the light that enters the eye already carries a lot of information about the object that reflected that light. When light is reflected by an object with a certain texture, shape, color, etc., it is structured in such a way that it will always be reflected by an object at that moment with those properties. If any of the properties of the object were different, the light reflected from that object would be different. The reflected light is thus *unique* to that object. So, the stimulus is not impoverished but carries all the required information to uniquely identify an object (Blau & Wagman, 2022, pp. 37-40).

Secondly, according to ecological psychologists, perceiving is not the passive taking in of sensory data, which is then actively and internally processed. Perceiving is something organisms *do* with their whole body, or parts thereof. One actively searches for relevant information in the environment to guide behavior. When one is hungry, one searches food. When one is sitting in the dark, one searches for a light switch. This involves moving around in one's environment, turning one's head and moving one's eyes. Perception is thus the bodily act of detecting behavior-relevant information that is readily available in the environment to be picked up.

This active aspect of perception is also expressed, for example, in the need to walk closer to a painting to see the direction of the painter's brush strokes. Or in the need to turn one's head to the left and right to see whether it is safe to cross the road. Even in the small saccadic movements of one's eyes, i.e., the rapid eye movements between fixation points, to see clearly. Without such movements the clarity of one's vision would quickly disappear. Perception thus requires several bodily abilities of the perceiver, namely the ability to walk, the ability to turn one's head, and the ability to move one's eyes. Interestingly, we perform many of such skilled movements without explicit deliberation. We seem to have developed some kind of *skilled intentionality* that allows us to perform such behavior without consideration (Bruineberg & Rietveld, 2014).

This skilled intentionality does not merely apply to the acts we perform in order to perceive, it also applies to the perceiver's ability to respond to what we perceive. According to ecological psychologists, we do not first perceive features of objects which are then internally combined to mental representations which, finally, inform motor areas on action opportunities to be decided on. Many ecological psychologists argue that what we perceive are so-called *affordances*. Affordances are agent-relative properties (or relations between environment and observer) that define action opportunities (for a discussion on the ontology of affordances, see, e.g., Chemero, 2003; Stoffregen, 2003). For example, I perceive that the

banana next to me affords eating, my chair affords sitting on, and this article affords reading. The agent-relative nature of the perceived affordances is determined by the agent's concerns and skills required to act on that action opportunity: this article does not afford reading to someone who cannot read English.

Affordances do not only depend on the skills of the perceiver but are also dependent on one another and the context in which they exist (Rietveld & Kiverstein, 2014). Some affordances only exist in certain contexts because they require the presence of certain resources. For example, the humidity, soil, and temperatures in an area only afford certain forms of agriculture. Similarly, local circumstances also afford building houses from only specific materials. Socio-cultural context is also relevant here. Having a mailbox only affords receiving mail in societies with a mail distribution system. Likewise, the rules of the card game you're playing determine which card affords playing next. The played card and the rules of the game determine again which card affords playing to the next player. (Cultural) affordances thus interact with one another, and together they determine one's *field of affordances*, i.e., all the organism-specific and situation-specific affordances in the environment of an organism that stand out and invite the organism to interact with them (De Haan et al., 2013).

Thus, what we perceive are sets of action-opportunities, the *field of affordances*, which depend on the observer's abilities and the context. The affordances that truly invite us to act on them, because they would fulfill our concerns and suit our preferences, are called *solicitations*. They solicit us to interact with them and are bodily potentiating (Dreyfus, 2002; Rietveld, 2012). Despite the often-complex combinations of muscle contractions required to respond to affordances, we generally respond to available affordances without explicit deliberation, just like we perform the perceptual movements described before. Upon perceiving a red light, we stop our car. Upon hearing the doorbell ring, we get up and open the door. These kinds of daily interactions do not require conscious awareness of the fact that the doorbell rang, explicit awareness of where one's body is, and awareness of which muscle contractions it takes to open the door. If such awareness arises, it is only after our body has activated to respond to these affordances. We perform these movements almost automatically in response to the affordances we perceive in our environment, in a skilled and unreflective manner (Rietveld, 2008).

While organisms, including most animals, respond to perceived affordances unreflectively, appropriately, and skillfully in many situations, this is not the case in situations that are new to the organism. One needs to *recognize* that certain objects and certain environments afford certain actions. Through the development of skills via practice, imitation, training, and experience, one learns to perceive which affordances fulfill one's needs and concerns. This requires frequently encountering environments with similar resources and socio-cultural practices. One learns the skills that are relevant to respond to affordances in one's ecological *niche*[4]. Local socio-cultural conventions and values are also part of one's niche and, therefore, determine at least partially which skills one develops to respond to the cultural affordances in one's environment (Heft, 2020). For example, in literate societies, one learns how to read at a young age. Similarly, in multilingual societies, one learns to speak and write in all the national languages.

Thus, ecological psychologists believe that a sufficient explanation of perception requires considering the environment, the body and the abilities and needs of the observer, not

[4] The notion 'niche' does not so much refer to where an organism lives, but *how* an organism lives (Gibson, 1979). Whereas an environment always involves many different organisms with each different ways of life, the ecological niche of an organism always implies the form of life of that specific organism. The eco-niche of an organism thus includes all the biological, social, cultural, material factors that support that organism's particular biopsychosocial way of life (Manning et al., 2022).

merely looking at the mental processes inside the observer. This is exactly what the term 'ecology' denotes in ecological psychology, which is the study of the dynamics between organism and environment (Blau & Wagman, 2022, p. 40). Defining and understanding the organism requires looking at the environment of the organism. Conversely, the environment always includes the organism. They are part of the same system (Blau & Wagman, 2022, pp. 49-50; Michaels & Palatinus, 2014). Ecological psychologists thereby discard the distinction between organism and environment that is fundamental to cognitive psychology.

One may argue that ecological psychology still needs to accept some kind of representational storage. How else can one store and remember information about past experiences that are no longer visible to us now? Still, ecological psychologists argue that previous experiences can directly change the way in which one acts without requiring any kind of representational storage (Blau & Wagman, 2022, pp. 204-207; Michaels & Palatinus, 2014). The need for storage in the cognitivist's account of perception comes from the strong distinction between perception and remembering. This distinction is due to the assumption of the impoverished stimulus which requires a lot of unconscious processing before we become conscious of our percept. To ecological psychologists, the stimulus is already very informative and most ecological information on affordances can be directly picked up by the senses. Therefore, perception never ends. Perception is a continuous process of detecting observer-relative information as the organism interacts with the environment, which continues to reveal more affordances to the organism over time. Since this is a continuous process, there is no clear distinction between seeing and remembering information: they are continuous with each other (Blau & Wagman, 2022, p. 207-208).

To summarize, ecological psychology rejects the need for mental representations, the need for computation, the distinction between organism and environment, and the separation of action and perception. Instead, perception involves the detection of action-relevant information in the environment, which is always relative to the agent's abilities and the current environmental context. This information can be directly picked up from the environment.

An Ecological Affordance-Based Account of Perceptual Confusion

As previously discussed, the available resources in the environment are for a significant part socio-culturally determined, and so are the abilities of the perceiver. Moreover, affordances do not exist independently of one another, but are essentially interwoven in the local socio-cultural structure. One is skilled in dealing with and responding to affordances in environments that one frequently encounters, but not in environments that are new to the perceiver. In these new environments, the sojourner does not immediately grasp how the local artefacts afford certain interactions, because these affordances require skills and resources that were not developed or unavailable in their home environment. Perceiving these affordances not only requires relevant skill development, but also require understanding the holistic socio-cultural structure of affordances, and the practices and conventions they are subject to. This significantly complicates the sojourner's interaction with the new environment.

To illustrate, consider Eva's description of seeing her first football game again:

> A few years later, when I am taken to my first football game, I have the same experience of my sight going awry. Since I don't know the rules of the game, and don't know what to look for, I can never see where the ball is. You can only keep your eye on the ball, it seems if you have a rough a priori idea of its trajectory. (Hoffman, 1986, p. 135)

The football does not only afford tracking to someone who has the cognitive ability to see the shape of the football and who can keep up with the speed at which the ball is played. As Hoffman writes, "[s]ince I don't know the rules of the game, and don't know what to look for, I can never see where the ball is". Perceiving the football requires familiarity with the rules and tactics of the game. It requires understanding that the player never *just* kicks or throws the ball, they always try to direct the ball in such a way that it will improve their chances of winning the game. The ball, the trajectory of the players, and even the yelling of the supporters, are all subject to the rules of the game and the significance of the game to the Canadian culture. As Eva is unfamiliar with these, she has not developed skills required to see that these aspects afford tracking the football.

One might argue that ecological psychologists may explain the inability to perceive complex affordances in a new socio-cultural environment, such as the game of football, but this explanation still fails to explain the sojourner's inability to discern very basic features of the environment, such as colors and shapes. It is difficult to see how an affordance-based account, in which perception is based on picking up behavior-relevant information, can explain the inability to perceive such seemingly behavior-irrelevant features as colors or odors. Especially since the perceptual abilities of the sojourners have not changed during the transition: the eyes still pick up the reflected light.

Yet, let us take colors as an example. Even though the ability to perceive and distinguish colors is universal, there are quite significant cultural distinctions in representing and communicating the color spectrum (Kay, 2005). This is due to environmental differences influencing the frequency of a certain color appearing in certain environmental contexts. This, in turn, affects the terminology and meaning of certain colors in these socio-cultural environments (Gibson et al., 2017). Some colors are therefore more relevant to a certain culture or have certain cultural connotations that do not exist in other environments. For example, Indian brides usually wear red during their wedding because it is symbolic of fertility, prosperity and luck and has certain Hindu connotations. Wearing white or black is frowned upon, as these colors are the colors of mourning, whereas white is the preferred color of the wedding dress in most Christian societies where it signifies purity and virginity (Zoi & Maria, 2014). Colors thus signal different meanings and connected socio-cultural affordances in different cultural contexts.

Majid's research on smell discrimination demonstrates a similar ecological principle behind the ability to discriminate between and name odors. Environments with more potential smells, e.g., where the air is not as polluted as in most industrialized societies, natives are more likely to develop the ability to discriminate between many odors (Majid, 2021). Due to the variety of odors in such environments, specific odors can come to carry relevant information to the natives in these societies. Certain odors can signify danger, and therefore motivate to leave. Environments in which there is less variation in odors, e.g., in big cities, the need to develop the ability to pick up information from odors is less, because the lack of variety in odors make them less informative. As a result, natives of industrialized societies do not develop such extensive odor-discriminating abilities and are also unable to pick up such relevant, and behavior-guiding information from scents in odor-rich environments.

The following quote by Hoffman can thus be interpreted quite literally:

> "[…] it is impossible to perceive the meaning of any one thing without knowing the pattern of the surrounding things. Without the color spectrum, there is no yellow or blue, and without seeing its colors, how can one be touched by the beauty of the world?" (p. 151).

In a sense, Eva really is unfamiliar with the color spectrum of her new environment. The colors, patterns, shapes, and smells do not afford meaning, feelings, or value to Eva like they do to the natives who have attributed certain connotations to the color spectrum and the shapes and patterns of their niche. As a result, Eva does not 'pick up' or perceive the same information from the environment as the natives do, even though, perceptually the color has the same light-reflecting qualities to both.

The inability to perceive aspects of the environment is thus the inability to perceive what the current environment affords, whether this applies to colors, patterns, or more complex objects. The sojourner is unable to grasp these affordances because the nature of affordances is largely culturally determined, firstly, because each environment has different resources with different cultural connotations, and, secondly, because the resources and cultural practices in one's home environment determine which perceptual skills are relevant to develop. Moreover, grasping the affordances in the new environment is further complicated by the interdependency of culturally determined affordances, making it difficult to grasp them one by one. This would also explain the persistence of perceptual confusion for several months.

Occam's Razor

In the previous sections, I have explored two theoretically distinct accounts of perceptual confusion during cultural displacement, each based on different perceptual principles. How can one determine which explanation is the better one?

One principle that is often used to judge the value of an explanation is the renowned principle of explanatory parsimony, also called *Occam's razor*. This principle, put plainly, suggests that simpler explanations should be preferred over complex ones, where explanatory complexity is often added by superfluous concepts, variables, or explanatory steps. If these additions are unnecessary to explain a phenomenon, they should be 'shaved off'. In this case, which explanation, the cognitive or the ecological, is the most parsimonious of the two?

To answer this question, we need to look closely at what perceptual confusion is. At first sight, it seems that perceptual confusion is merely the inability to represent objects or aspects of objects in the perceptual field, because Eva describes how she misses the "a priori" knowledge and "mental imagery" to construct a good image of what is in front of her. If that is what is at stake, then it seems a clear-cut case for the cognitivist, whose perceptual account relies on the formation of internal representations of the external world based on predictive top-down information.

However, as one looks closely at what these expectations entail, then they do not necessarily concern the formation of a comprehensive truthful internal representation of the outside world, but the predictions mostly concern the opportunities for action she perceives in the environment and its resources. Eva perceives the "inchoate spread of one-family houses" (p. 135) but does not see how the architectural conventions of these houses and the city bring structure to Vancouver. She watches the football game, but cannot see how the interplay of the rules, the players, and the ball afford keeping one's eye on the ball. Perceptual confusion does not necessarily affect the ability to pick up sensory information from external objects, but more so the ability to pick up the information on what to *do* with this information. The perceptual information the sojourner receives has no function or meaning to them in the way that the perceptual information has function or meaning to the locals. Therefore, the sojourner is unable to grasp what behavior the environment affords.

While both cognitive and ecological psychology explain this inability to pick up and respond to behavior-relevant information, namely by means of behavior-uninformative internal representations or by the inability to perceive cultural affordances, respectively, ecological psychology provides the more parsimonious explanation. Since perception and

action are always interconnected in the ecological account, namely via the notion of affordances, the ecologist can explain in one step why the change in socio-cultural context disrupts both perception and action. The change in socio-cultural context immediately affects the sojourner or migrant's perceptual skills to pick up information about affordances, because their available perceptual skills are not always applicable to picking up behavior-relevant information in the new environment with different resources.

By directly addressing how the change in the dynamic relation between organism and environment leads to perceptual confusion, ecologists prove the redundancy of mental representations for explaining perceptual confusion. If one accepts the principle of parsimony, then one should prefer the direct ecologist's account over the indirect, representational account of the cognitivist.

Concluding Remarks

Over the course of this article, I have tried to explain a curious perceptual phenomenon by means of two popular psychological frameworks of perception: cognitive and ecological psychology. Cognitivists argue that perception and action are always mediated by internal representations. Therefore, they firstly need to explain how a change in socio-cultural environment affects the internal representations before they can account for changes in the interaction with the environment. Ecologists, on the other hand, argue that perception and action are always connected, and that we can directly pick up action-relevant information, *affordances*, in the environment. We are in fact very skilled at doing so until we find ourselves in unfamiliar situations. In these new contexts, we cannot grasp the affordances, because the affordances offered by the environment are different and the perceiver lacks the skills and knowledge required to perceive them.

I concluded that ecological psychology of perception provides a simple, direct, and comprehensive explanation of this phenomenon and is therefore preferable over the indirect cognitive explanation. That is not to say that cognitive psychology of perception is incorrect. Over the years, cognitive psychologists have done marvelous revelations about the perceptual mechanisms inside organisms. It would be too hasty to discount cognitive psychology completely. Instead, this case study should be illustrative of the fact that not all perceptual problems can be reduced to what happens inside one's mind, and that explanations focused on the perceiver's abilities and contextual factors are sometimes more effective.

Although it seems that ecological psychology of perception can provide quite a comprehensive explanation for perceptual confusion during cultural displacement, this does not mean that the work is done. Quite the contrary! For example, it would be interesting to analyze the literature from developmental psychology, biology, and anthropology to investigate how one's home culture affects the affordances one perceives, and more specifically, whether some affordances that are more susceptible to cultural influences than others. The perceptibility of these kinds of affordances would likely be the first to be affected by long-term cross-cultural travel.

Secondly, it might be insightful to determine how long-term cross-cultural travel changes one's field of affordances. I argued in this article that the sojourner's field of affordances is likely to change in the new environment but did not specify how. It may thus be illustrative to look for opportunities to model the field of affordances from a sojourner's perspective. De Haan et al. (2013) made an interesting first attempt at an affordance-based model of the field of affordances from the perspective of a normal person, a person suffering from depression and a person suffering from OCD. They modelled the field of affordances in three dimensions: height (i.e., the saliency/affective appeal of the perceived affordances), width (i.e., the scope of perceived affordances), and depth (i.e., pre-reflective, anticipatory awareness of future affordances). By means of empirical methods, e.g., interviews or

questionnaires, it is possible to model the field of affordances of migrants or sojourners in a similar fashion. This would allow one to compare the sojourner's field of affordances with the field of affordances of a local from the new environment or their old environment, illustrating precisely how cross-cultural transition affects each dimension of the field.

Ultimately, the ecological approach to perception does not only provide a reasonable and simple account of a curious perceptual phenomenon, but it also opens several fascinating lines of research on the dynamic relation between culture, perception, and action.

References

Anderson, J.R. (2014). *Cognitive Psychology and its Implications* (8th edition). Worth Publishers.

Arnett, J. (2008). The neglected 95%: Why American Psychology needs to become less American. *American Psychologist, 63*(7), 602-614.

Blau, J.J.C., & Wagman, J.B. (2022). *Introduction to Ecological Psychology*. Routledge.

Boduraglu, A., Shah, P., & Nisbett, R.E. (2009). Cultural Differences in Allocation of Attention in Visual Information Processing. *Journal of Cross-Cultural Psychology, 40*(3), 349-360.

Bruineberg, J., & Rietveld, E. (2014). Self-organization, free-energy minimization, and optimal grip on a field of affordances. *Frontiers in Human Neuroscience, 8*, 599

Chemero, A. (2003). An outline of a theory of affordances. *Ecological Psychology, 15*, 181-195.

Chomsky, N. (1980). Rules and Representations. *Behavioral and Brain Sciences, 3*(1), 1-15.

Costall, A.P. (1984). Are Theories of Perception Necessary? A Review of Gibson's Ecological Approach to Visual Perception. *Journal of the Experimental Analysis of Behavior, 41*(1), 109-115.

Coxon, M., & Upton, D. (2017). *Cognitive Psychology*. Sage Publications, Inc.

De Haan, S., Rietveld, E., Stokhof, M., & Denys, D. (2013). The phenomenology of deep brain stimulation-induced changes in OCD: an enactive affordance-based model. *Frontiers in Human Neuroscience, 7*, 653.

Dreyfus, H.L. (2002). Intelligence without representation – Merleau-Ponty's critique of mental representation. *Phenomenology and the Cognitive Sciences, 1*, 367-383.

Furnham, A. (2012). Culture Shock. *Journal of Psychology and Education, 7*(1), 9-22.

Furnham, A. (2019). Culture Shock: a review of the literature for practitioners. *Psychology, 10*, 1832-1855.

Gibson, E., Futrell, R., Jara-Ettinger, J., Mahowald, K., Bergen, L., Ratnasingam, S., Gibson, M., Piantadosi, S.T., & Conway, B. R. (2017). Color naming across languages reflects color use. *Proceedings of the National Academy of Sciences*, *114*(40), 10785-10790.

Gibson, J.J. (1979). *The Ecological Approach to Visual Perception*. Houghton Mifflin.

Hart, E.T. (1999). *Barefoot Heart: Stories of a Migrant Child*. Bilingual Review Press.

Heft, H. (2020). Ecological Psychology as Social Psychology? *Theory and Psychology, 30*(6), 813-826.

Henrich J., Heine S. J., & Norenzayan A. (2010). The weirdest people in the world? *The Behavioral and Brain Sciences, 33*(2–3), 61-83.

Hoffman, E. (1989). *Lost in Translation: Life in a New Language.* Pinguin Books.

Kay, P. (2005). Color Categories are not Arbitrary. *Cross-Cultural Research, 39*(1), 39-55.

Kincaid, J. (2002). *Lucy.* Farrar Strauss.

Kwok, J. (2010). *Girl in Translation.* Riverhead.

Manning, N., Birk, R., & Rose, N. (2022). Niche Sociality: Approaching Adversity in Everyday Life. *Sociology, 57*(1), 72-95.

Majid, A. (2021). Human Olfaction at the Intersection of Language, Culture, and Biology. *Trends in Cognitive Sciences, 25*(2), 111-123.

Mafid, A., Burenhult, N., Stensmyr, M., de Valk, J., & Hansson, B.S. (2018). Olfactory language and abstraction across cultures. *Philosophical Transactions of the Royal Society B, 373*(1752), 20170139.

Masuda, T., & Nisbett, R.E. (2001). Attending Holistically versus Analytically: Comparing the Context Sensitivity of Japanese and Americans. *Journal of Personality and Social Psychology, 81*(5), 922-934.

Michaels, C., & Palatinus, Z. (2014). A Ten Commandments for Ecological Psychology. In L.A. Shapiro (Ed.), *The Routledge Handbook of Embodied Cognition* (pp. 19-28), Routledge.

Nisbett R. E., & Miyamoto Y. (2005). The influence of culture: holistic versus analytic perception. *Trends in Cognitive Sciences, 9*(10), 467–473.

O'Meara, C., & Mafid, A. (2016). How changing lifestyles impact Seri smellscapes and smell language. *Anthropological Linguistics, 58*(2), 107-131.

Regier, T., Kay, P., & Cook, R.S. (2005). Focal Colors are Universal After All. *Proceedings of the National Academy of Sciences USA, 102*(23), 8386-8391.

Rietveld, E., & Kiverstein, J. (2014). A Rich Landscape of Affordances. *Ecological Psychology, 26*, 325-352.

Rietveld, E. (2012). Bodily intentionality and social affordances in context. In F. Paglieri, *Consciousness in Interaction* (pp. 207-226), John Benjamins Publishing Company.
Rietveld, E. (2008). The skillful body as a concernful system of possible actions. *Theory & Psychology, 18*(3), 341-363.
Sanches de Olivieira, G.S., & Raja, V. (2018). The Cognition-Perception Distinction Across Paradigms: An Ecological View. In T. T. Rogers, M. Rau, X. Zhu, & C. W. Kalish (Eds.), *Proceedings of the 40th annual conference of the cognitive science society* (pp. 2403–2408). Austin: Cognitive Science Society.
Saulton, A., Bülthoff, H.H., de la Rosa, S., & Dodds, T.J. (2017). Cultural Differences in Room Perception. *PloS ONE, 12*(4), e0176115
Segall, M.H., Campbell, D.T., & Herskovits, M.J. (1966). *The Influence of Culture on Visual Perception.* Bobbs-Merrill Co.
Stoffregen, T.A. (2003). Affordances as Properties of the Animal-Environment System. *Ecological Psychology, 15*(2), 115-134
Ward, C., Bochner, S., & Furnham, A. (2001). *The Psychology of Culture Shock* (2nd edition). Routledge.
Wexler, B.E. (2006). *Brain and Culture: neurobiology, ideology and social change*. MIT Press.
Zoi, A., & Maria, G. (2014). The traditional evolution of style and especially of color of bridal dresses in different cultures during the centuries. *Journal of Educational and Social Research*, *4*(4), 264-269.

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Research Proposal

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1. Title of the Project

Perceptual Confusion during Cultural Displacement: Mapping the Field of Affordances

2. Summary of the Theme and Aim of the Project

Anecdotal evidence suggests that sensory perception is sometimes seriously impaired shortly after cross-cultural migration. Migrant memoirs describe the inability to discern several perceptual features of the environment. Such perceptual information informs our everyday behavior, meaning that the consequences of this perceptual disability can be severe. This research project brings this phenomenon, perceptual confusion during cultural displacement, to scientific attention for the first time.

The proposed research project exists of three complementary stages. The first stage aims at defining what perceptual confusion during cultural displacement entails. The second stage aims to obtain a better understanding of how culture affects sensory perception. For that purpose, the project will take an ecological affordance-based perspective on perception which defines perception in terms of fields of affordances, implying that what we perceive are context-specific and agent-relative action opportunities that invite the agent for interaction. It is hypothesized that the influence of socio-cultural practices is twofold: affecting the available environmental resources and the skills of the agent. The final stage combines the findings of stage 1 and 2 and aims to determine how cross-cultural transition changes one's field of affordances.

3. Description of the Proposed Research

See following pages

Perceptual Confusion during Cultural Displacement

Mapping the Field of Affordances

1. The problem

Sensory perception is essential for our everyday activities. What we perceive informs our interaction with the environment. Anecdotal evidence suggests that sensory perception may be disrupted when traveling to unfamiliar cultures for longer periods of time (Hoffman, 1989; Kincaid, 2002). As a result of this perceptual confusion, sojourners are unable to discern several basic features (e.g., colors, shapes, etc.) and more complex features (e.g., objects) of their perceptual field. Although this experience seems to vanish after a while, it is serious enough to affect the sojourner's interaction with the environment for a significant amount of time. By means of this research project, I will contribute to research on perception by revealing how (changes in) our socio-cultural environment affect(s) our sensory perception. Additionally, findings concerning the sojourner's difficulty with interacting with the environment can provide an incentive to review the way we teach migrants and long-term travelers to cope with their new environment, and possibly develop more effective strategies.

In previous work (Hesen, 2023, unpublished), I proposed that affordance-based ecological approaches to perception (e.g., Blau & Wagman, 2022; Gibson, 1979) could provide a plausible account of perceptual confusion. I argued that perceptual confusion during cultural displacement seems to target a person's interaction with the environment, and not necessarily the internal processing of perceptual information itself. Affordance-based ecological approaches to perception argue that what we perceive are *fields of affordances*, i.e., the context-specific opportunities for interaction with the environment that stand out to the agent (De Haan et al., 2013). The affordances that stand out to the agent are determined by the abilities, preferences and needs of the agent, and the available resources in the current environment. In both cases, local socio-cultural practices are assumed to be key determinants of the perceptual process (Bruineberg & Rietveld, 2014).

If cultural displacement affects the sojourner's perceivable affordances, then it would be insightful to map out exactly how the sojourner's field of affordances deviates from a 'normal' field of affordances. De Haan and colleagues (2013) developed a method to model the phenomenological changes in the field of affordances of people suffering from obsessive compulsive disorder (OCD) in three dimensions ('height', 'width', and 'depth'). I believe this method can be useful to assess the changes in the field of affordances of sojourners in a new socio-cultural environment. This model can be a first step towards the development of a tailored approach to target perceptual confusion. The aim of this PhD-project is threefold:

1. Define and clarify the nature of perceptual confusion during cultural displacement.
2. Develop an affordance-based ecological theory of perception that includes the relevance of socio-cultural factors for the perceptual process.
3. Determine how cultural displacement affects the 'height', 'width', and 'depth' of one's field of affordances by example of De Haan et al. (2013).

2. Philosophical and Scientific Background

2.1 Perceptual Confusion during Cultural Displacement

'Culture shock' refers to feelings of cultural displacement, i.e., any disorienting affective response to entering a culture (or group) that does not share one's own perspectives,

behaviors, or experiences (Furnham 2012; 2019). The term is commonly used to define the experience of migrants or sojourners traveling cross-culturally for longer periods of time but can also denote any other transition to a new social environment or a different way of life.

Research on the popularized notion 'culture shock' (Oberg, 1960), and the acculturation-process more generally, largely commenced in the 1950s. Most psychological research focused on identifying the stages of the acculturation process (e.g., Gullahorn & Gullahorn, 1963; Lysgaard, 1955; Oberg, 1960) and explaining which factors contribute to the large variety in the intensity and duration of this often-depressive experience (e.g., Argyle & Kendon, 1967; Bowlby, 1969; Rotter, 1966). The most recent theoretical model of 'culture shock' developed by Ward and colleagues (2001), the ABC-model, distinguishes between affective, behavioral, and cognitive aspects of cross-cultural encounters and the various factors that play a role in these aspects (Zhou et al., 2008). However, due to the large variety in types and motives for cross-cultural transitions, and, consequently, the diversity in responses to such experiences, the term 'culture shock' is far from unambiguous. This likely contributed to the loss of scientific interest in this topic, whereas cross-cultural travel continues to increase, and, inevitably, cases of 'culture shock' as well.

One aspect of culture shock that has escaped scientific interest, but which is widely present in migrant's memoirs (e.g., Hoffman, 1989; Kincaid, 2002), is the phenomenon of perceptual confusion during cultural displacement. Upon arrival in a foreign country, authors describe their inability to discern basic aspects, such as colors and shapes, and more complex aspects, such as complete objects. "I could not see anything clearly on the way in from the airport, even though there were lights everywhere" (Kincaid, 2002, p. 3). "I walk through those streets not seeing anything clearly, as if a screen has fallen before my eyes, a screen that obscures and blurs everything in my field of vision" (Hoffman, 1989, p. 135).

Considering the vital importance of sensory perception for our everyday behavior and the omnipresence of cross-cultural travel in our society, this curious phenomenon requires scientific attention. Unfortunately, the only evidence for this phenomenon is anecdotal, coming from immigrant novels. It is thus necessary to investigate the nature of this phenomenon amongst sojourners. This constitutes one of the aims of this PhD project.

2.2 Affordance-Based Ecological Psychology of Sensory Perception

Ecological psychology started with the work of James Gibson (1979), who was displeased with the focus on the interaction of internal and representational processes that was central to cognitivist's explanations of perception (Costall, 1984). Gibson argued that explanations of perception should shift the focus from internal mechanisms to decentralized organism-environment dynamics. Perception should be considered direct, active, and action-oriented, thereby discarding the need for extensive internal representations and excessive internal stimulus processing. Since Gibson, several ecological theories of perception have been developed with commitments to the mentioned principles (and several others, see Michaels & Palatinus, 2014) (e.g., Reed, 1996; Rietveld & Kiverstein, 2018; Turvey, 1992; 2019).

In ecological theories of perception, one frequently comes across the notion 'affordance'. Affordances are the perceived agent-relative properties of the environment (or relations between environment and observer, see Chemero, 2003) that define action opportunities (Gibson, 1979; Rietveld & Kiverstein, 2014; 2018; Stoffregen, 2003; Turvey, 1992). These are agent-relative because the opportunities for action offered by the environment depend on the needs, preferences, skills, and abilities of the agent. For example, this proposal only affords reading to those who can read English.

An important aspect of our human nature is the fact that humans engage in socio-cultural practices (Wittgenstein, 1993), and, moreover, that those socio-cultural practices shape our environments (Rietveld & Kiverstein, 2014). The affordances offered by the

environment are therefore also largely determined by the local socio-cultural context. Besides, someone's socio-cultural context also determines for a large part the skills and abilities that someone developed to survive and flourish in an environment (Ingold, 2000/2011; Wexler, 2006). Since the perceivable affordances are relative to the concerns of the agent, the socio-cultural context someone grew up in determines to a significant extent the affordances perceivable to them in any environmental context (Solymosi, 2013). A further aim of this project is therefore to determine to which extent and what kind of affordances are determined by someone's socio-cultural development.

2.3 Mapping the Field of Affordances

If one's *field of affordances*, i.e., the context-specific affordances in the environment that are relevant to and visible to an individual and invite the perceiver to interact (De Haan et al., 2013; Bruineberg & Rietveld, 2014), is influenced by the socio-cultural structure of the environment one grew up in, then the wide variety of resources in *new* socio-cultural environments may not be immediately visible to persons that lived most of their lives in different socio-cultural contexts. As a result, the sojourner's field of affordances could appear limited. Yet, how can one determine the scope of one's field of affordances?

De Haan et al. (2013) made a first serious attempt at mapping the field of affordances specifically for individuals suffering from OCD. By means of semi-structured interviews they captured the phenomenological changes these patients experienced immediately after undergoing deep-brain stimulation. The changes in perceived affordances were measured in three dimensions: width, depth, and height. The 'width' of the field refers to the broadness of the scope of affordances that one perceives at one point in time, in other words, the amount of action options that one perceives at that moment. The 'depth' of the field of affordances reflects the temporal aspect of the field of affordances. It shows the someone's pre-reflective, anticipatory awareness of future affordances. Finally, the 'height' of the field signifies the relevance, salience and/or affective appeal of a certain affordance. In other words, it signifies how attractive the affordance is to act on and how bodily potentiating the affordance is to the individual (Rietveld, 2012; Rietveld et al., 2013).

The comparison of the maps of individuals suffering from OCD with maps of the field of affordances of 'normal' individuals illustrated vividly the phenomenological differences between these individuals. Given the hypothesis that new socio-cultural environments can significantly change the field of affordances for sojourners, the method developed by De Haan et al. (2013) provides a suitable means of determining what these changes amount to. This is the final aim of this PhD-project.

3. The Research Project

Stage 1: Defining the Problem

The first stage of this project is directed at assessing the nature of perceptual problems amongst sojourners. Thus far, this phenomenon has only been mentioned in migrant memoirs, meaning that its descriptions are purely anecdotal. It is therefore essential to structurally define this phenomenon by investigating the migrant literature and confirming its incidence amongst sojourners. This subproject is divided in two steps.

Step 1 consists of analyzing the autobiographical migration literature for descriptions of experiences of perceptual confusion that resemble the previously mentioned descriptions by Hoffman (1989) and Kincaid (2002). This literature study should result in a list of defining primary and secondary features of perceptual confusion during cultural displacement. This allows me to give a comprehensive definition of the phenomenon.

In step 2 of this subproject, I will use the definition formed in step 1 to compile a set of questions for a questionnaire that will be distributed amongst organizations in several different countries that have access to sojourners and migrants (e.g., International Offices at universities, the EU Erasmus Program, embassies, etc.). These questionnaires will ask the respondents that have resided in the host-country for no longer than one month whether they have experienced one or more aspects of perceptual confusion as defined in step 1. This step verifies the incidence of perceptual confusion amongst sojourners and confirms the list of essential features as compiled in step 1. Additionally, the respondents will be asked whether they would like to participate in the final stage of this study.

Stage 2: Affordances and Culture

The aim of the second stage is to develop an affordance-based ecological theory of perception that includes socio-cultural context as a significant determinant of one's field of affordances. Specifically, this stage involves an extensive, multidisciplinary literature study to systematically review and summarize what is known about the influence of culture on affordances. This literature study allows me to determine more precisely what affordances may be affected by cross-cultural transition. Moreover, the information obtained at this stage of the project can be used for the preparation of the interview questions in stage 3.

Rietveld and colleagues frequently emphasized the relevance of socio-cultural practices in niche-construction and skill-development in their ecological *Skilled Intentionality Framework* (Kiverstein & Rietveld, 2018; Rietveld & Kiverstein, 2014). Their work will therefore be the starting point of this stage of the research project. However, I would like to extend their work by painting a clearer picture on the kind of affordances that are affected by cultural context by investigating not only the philosophical literature, but also the psychological, anthropological, and sociological literature on culture, skill-development, and niche-building (e.g., Billet, 1994; Cantor et al., 2021; Maynard et al., 2008; Osher et al., 2020; Vaughan et al. 2021; Wexler, 2006). These findings are not only essential to the other stages of this project but can also be considered a valuable extension to the Skilled Intentionality Framework.

Stage 3: Mapping the Field of Affordances

By this stage of this project, it should be clear what perceptual confusion during cultural displacement amounts to, and how one's socio-cultural development influences one's field of affordances. The final stage combines these findings to determine how a change in one's socio-cultural environment affects the field of affordances. The methodology of this subproject follows closely the methodology of the study by De Haan et al. (2013).

Approximately ten of the respondents that indicated in the questionnaires that they would be open to participate in this stage of the project will be invited for interviews, provided that their questionnaires revealed some degree of perceptual confusion. During the interview the participants will be asked about their experience of perceptual confusion to validate the answers in their questionnaire, and they will be asked about affordances found to be culturally determined in stage 2 of this project and that are expected to be affected by their transition. Specifically, they will be asked about experienced changes in the saliency or apparent relevance of these affordances (to determine the 'height' of their field of affordances), changes in the number of affordances perceived at one point in time (to determine the 'width), and about changes in their ability to perceive affordances at different points of time (e.g., now, in an hour, a week, a year, etc.) (to determine the 'depth' of the field). The interviews will be semi-structured, meaning that there is a pre-established set of topics to be covered but the questions will be broad and open, allowing the participant to stay as close to their experience as possible. The information collected at these interviews will be

used to create an approximate model of the field of affordances from the perspective of sojourners (such as the one in De Haan et al. 2013) illustrating how cross-cultural transition affects each dimension of their field of affordances.

4. Philosophical, Scientific and Societal Impact

The proposed research project will:

- Complement ecological affordance-based accounts of perception, e.g., the Skilled Intentionality Framework, by integrating findings from developmental psychology, anthropology and sociology that emphasize the importance of socio-cultural context for the development of the agent's abilities and defining more precisely what these socio-cultural influences amount to in such accounts.

- Clarify the nature of a phenomenon that is widely described but not scientifically acknowledged.

- Reintroduce 'culture shock' to the scientific agenda in a world where cross-cultural travel inevitably increases.

- Illustrate how the field of affordances modelling strategy developed by De Haan et al. (2013) can be applied to cases of phenomenological changes in organism-world dynamics outside of psychopathology.

- Stimulate the scientific and public debate on how to cope with cases of perceptual confusion during cultural displacement and 'culture shock' more generally.

Word Count: 2.497 (incl. in-text references, excl. title)

4. Key Words

Cultural Displacement; Sensory Perception; Field of Affordances; Ecological Psychology; Skilled Intentionality Framework

5. Timetable

Year 1

- Submit application for ethical approval for stage 1 and 3
- Analyze the migrant literature and note the descriptions of perceptual confusion during cultural displacement
- Combine the descriptions in the previous step to one definition of perceptual confusion
- Prepare the questionnaire for stage 1
- Distribute the questionnaire amongst organizations

Year 2

- Analyze the data from the questionnaire
- Write and publish a paper on the nature of perceptual confusion during cultural displacement
- Read the work by Rietveld and Kiverstein (and colleagues) on ecological affordance-based theories of perception
- Gather and read literature on culture and niche construction (including philosophical, psychological, anthropological, and sociological literature)
- Gather and read literature on culture and development of skills/abilities (including philosophical, biological, psychological, anthropological literature)
- Prepare interview questions for stage 3

Year 3

- Complete stage 2 of the project
- Write and publish a paper on the influence of culture on affordance-based sensory perception
- Interview 10 participants
- Transcribe the interviews

Year 4

- Model the field of affordances of the participants in stage 3
- Complete stage 3
- Write and publish dissertation
- Present findings at an international conference

6. Summary for non-specialists

Door middel van zintuigelijke perceptie nemen wij de wereld waar. Deze informatie maakt interactie met de wereld mogelijk. Het waarnemen van het glas water naast mij zorgt ervoor dat ik het glas regelmatig oppak om eruit te drinken. Het waarnemen van het toetsenbord van mijn laptop zorgt ervoor dat ik de juiste woorden typ. Zintuigelijke waarneming is dus cruciaal voor ons gedrag.

Enkele autobiografieën van migranten omschrijven situaties waarin zintuigelijke waarneming misgaat. Vlak nadat zij zijn gearriveerd in hun nieuwe sociaal-culturele omgeving beschrijven ze hun onvermogen bepaalde aspecten van hun gezichtsveld te kunnen waarnemen. Het gaat om kleuren, vormen, maar ook hele objecten. Dit perceptueel probleem blijft tot enkele maanden na aankomst aanhouden.

Helaas bestaat er momenteel enkel anekdotisch bewijs voor dit fenomeen. Gezien de mogelijke ernst van het probleem voor iemands interactie met de omgeving en de aanhoudende toename van interculturele migratie, is het essentieel dat het fenomeen onder de wetenschappelijke aandacht wordt gebracht. Dit onderzoeksproject beoogt voor de eerste keer de aard van dit probleem op een wetenschappelijke manier te onderzoeken, en te begrijpen hoe culturele verschillen onze waarneming beïnvloeden.

Dit onderzoeksproject bestaat uit drie delen. Het eerste deel van het onderzoek stelt vast wat het perceptuele probleem onder migranten precies inhoudt. Hiervoor analyseer ik de migranten-literatuur voor beschrijvingen van dit fenomeen. Deze beschrijvingen worden gebruikt voor het opstellen van een questionnaire die migranten vraagt naar hun ervaringen met perceptuele moeilijkheden. Dit onderzoek levert een lijst op met belangrijke eigenschappen van perceptuele moeilijkheden tijdens interculturele migratie en is tevens het eerste wetenschappelijke bewijs zijn voor het bestaan van dit fenomeen.

Het tweede deel van het project onderzoekt welke invloed cultuur heeft op onze zintuigelijk waarneming. Hiervoor neem ik ecologische theorieën van waarneming op basis van 'affordances' als uitgangspunt. Deze theorieën stellen de dynamische verhouding tussen mens en wereld centraal en veronderstellen dat wij 'affordances' waarnemen. 'Affordances' zijn handelingsmogelijkheden die opvallen omdat ze relevant zijn binnen de huidige context en voor waarnemer zelf, omdat diegene deze handelingen *kan* uitvoeren en ze aansluiten bij de voorkeuren en behoeften van de waarnemer. De lokale cultuur beïnvloedt de waarneembare 'affordances' door direct de omgeving zelf te beïnvloeden, bijvoorbeeld de gebouwen, materialen en gereedschappen die er te vinden zijn, of de waarnemer zelf, doordat bepaalde vaardigheden of eigenschappen relevanter zijn in bepaalde culturen dan andere. Het tweede deel van het onderzoek gaat na welk soort 'affordances' sterk worden beïnvloed door de lokale cultuur.

Het laatste deel van het onderzoek brengt de ondervindingen uit deel 1 en 2 van het onderzoek samen. Dit deel van het onderzoek probeert door middel van interviews vast te stellen hoe interculturele transitie de waarneembare 'affordances' beïnvloedt. Naar voorbeeld van het onderzoek van De Haan en collega's wordt hierbij expliciet gekeken naar hoeveel 'affordances' iemand waarneemt, in hoeverre de waarneembare 'affordances' uitnodigen tot interactie, en de termijn waarop iemand 'affordances' kan waarnemen. Met deze informatie kunnen eenvoudig de waarneembare 'affordances' van een migrant worden vergeleken met die van een lokale bewoner.

7. Bibliography

Argyle, M., & Kendon, A. (1976). The experimental analysis of social performance. In L. Berkowitz (ed.), *Advances in Experimental Social Psychology* (volume 3, pp. 55-91). Academic Press, New York.

Billet, S. (1994). Searching for Authenticity: a Socio-Cultural Perspective on Vocational Skill Development. *The Vocational Aspect of Education, 46*(1), 3-16.

Blau, J.J.C., & Wagman, J.B. (2022). *Introduction to Ecological Psychology*. Routledge.

Bowlby, J. (1969). *Attachment and Loss*. Hogarth.

Bruineberg, J., & Rietveld, E. (2014). Self-organization, free-energy minimization, and optimal grip on a field of affordances. *Frontiers in Human Neuroscience, 8*, 599.

Cantor, P., Osher, D., Berg, J., Steyer, L., & Rose, T. (2021). *Malleability, Plasticity, and Individuality*. Routledge.

Chemero, A. (2003). An outline of a theory of affordances. *Ecological Psychology, 15*, 181-195.

Costall, A.P. (1984). Are Theories of Perception Necessary? A Review of Gibson's Ecological Approach to Visual Perception. *Journal of the Experimental Analysis of Behavior, 41*(1), 109-115
De Haan, S., Rietveld, E., Stokhof, M., & Denys, D. (2013). The phenomenology of deep brain stimulation-induced changes in OCD: an enactive affordance-based model. *Frontiers in Human Neuroscience, 7*, 653.
Furnham, A. (2012). Culture Shock. *Journal of Psychology and Education, 7*(1), 9-22.
Furnham, A. (2019). Culture Shock: A Review of the Literature for Practitioners. *Psychology, 10*, 1832-1855.
Gibson, J.J. (1979). *The Ecological Approach to Visual Perception*. Houghton Mifflin.
Gullahorn, J.T., & Gullahorn, J.E. (1963). An Extension of the U-Curve Hypothesis. *Journal of Social Issues, 19*, 33-47.
Hesen, J. (2023). Perceptual Confusion during Cultural Displacement: an Argument for Ecological Psychology. *Unpublished*.
Hoffman, E. (1989). *Lost in Translation: Life in a New Language.* Pinguin Books.
Ingold, T. (2011/2000). *The Perception of the Environment: Essays on Livinghood, Dwelling and Skill.* Routledge.
Kincaid, J. (2002). *Lucy.* Farrar Strauss.
Kiverstein, J., & Rietveld, E. (2018). Reconceiving Representation-Hungry Cognition: An Ecological-Enactive Proposal. *Adaptive Behaviour, 26*(4), 147-163.
Lysgaard, S. (1955). Adjustment in a Foreign Society: Norwegian Fulbright Grantees Visiting the United States. *International Social Science Bulletin, 7*, 45-51.
Maynard, A.E., Greenfield, P.M., & Childs, C.P. (2008). Culture, History, Biology, and Body: Native and Non-Native Acquisition of Technological Skill. *Ethos, 27*(3), 379-402.
Michaels, C., & Palatinus, Z. (2014). A Ten Commandments for Ecological Psychology. In L.A. Shapiro (Ed.), *The Routledge Handbook of Embodied Cognition* (pp. 19-28), Routledge.
Oberg, K. (1960). Culture Shock: Adjustments to New Cultural Environments. *Practical Anthropology, 4*, 177-182.
Osher, D., Cantor, P., Berg, J., Steyer, L., & Rose, T. (2020). Drivers of Human Development: How Relationships and Context Shape Learning and Development. *Applied Developmental Science, 24*(1), 6-36.
Reed, E.S. (1996). *Encountering the World: Toward an Ecological Psychology*. Oxford University Press.
Rietveld, E. (2012). Bodily intentionality and social affordances in context. In F. Paglieri, *Consciousness in Interaction* (pp. 207-226), John Benjamins Publishing Company.
Rietveld, E., de Haan, S., & Denys, D. (2013). Social affordances in context: What is it that we are bodily responsive to. *Behavioral and Brain Sciences, 36*(4), 436.
Rietveld, E., & Kiverstein, J. (2014). A Rich Landscape of Affordances. *Ecological Psychology, 26*, 325-352.
Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs, 80*(609).
Solymosi, T. (2013). Against Representation: A Brief Introduction to Cultural Affordances. *Human Affairs, 23*, 594-605.
Stoffregen, T.A. (2003). Affordances as Properties of the Animal-Environment System. *Ecological Psychology, 15*(2), 115-134.
Turvey, M.T. (1992). Affordances and Prospective Control: An Outline of the Ontology. *Ecological Psychology, 4*(3), 173-187.
Turvey, M.T. (2019). *Lectures on Perception: an Ecological Perspective.* Routledge.
Vaughan, J., Mallett, C.J., Potrac, P., López-Felip, M.A., & Davids, K. (2021). Football, Culture, Skill Development and Sport Coaching: Extending Ecological Approaches in Athlete Development Using the Skilled Intentionality Framework. *Frontiers in Psychology, 12*, 635420.
Ward, C., Bochner, S., & Furnham, A. (2001). *The Psychology of Culture Shock* (2nd edition). Routledge.
Wexler, B.E. (2006). *Brain and Culture: neurobiology, ideology and social change*. MIT Press.
Wittgenstein, L. (1953). *Philosophical Investigations.* Blackwell.
Zhou, Y., Jindal-Snape, D., Topping, K., & Todman, J. (2008). Theoretical models of culture shock and adaptation in international students in higher education. *Studies in Higher Education, 33*(1), 63-75.

8. Curriculum Vitae

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Address	Akkerweg 38, 5802 AH Venray
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Academic Education

2020 – 2023 (expected)	*Master of Arts (Research) Philosophy (track: Philosophy of Mind)* Radboud University Nijmegen
2020 – 2021	*Master of Science Psychology (track: Cognitive Neuroscience) (graduated Summa Cum Laude)* Maastricht University Thesis Title: Influence of AI-assistance on Intentional Binding in Action-Monitoring Tasks: A State-of-the-Art Review
2016 – 2020	*Bachelor of Arts Philosophy* University of Groningen Thesis Title: Connectomics and Psychology: On the Compatibility of Reductive Physicalism and Multiple Realizability
2019 – 2020	*Minor Neuroscience and Behavioral Neuroscience* University of Groningen
2018 – 2019	*Erasmus Exchange Student* Trinity College Dublin

Grades

Philosophy, track Philosophy of Mind, MA (research), Radboud University (2020 – present)

Course	**ECTS**	**Grade**
Philosophy of Mind and Language	10.0	8.0
Philosophical Research: Methods & Skills 1	10.0	8.0
Philosophical Research: Methods & Skills 2	10.0	8.0
Social and Affective Neuroscience*	7.5	8.7
Neurophilosophy of Mind and Consciousness*	7.5	8.0
Ethics and Social and Political Philosophy 1	10.0	7.0
Capita Selecta (individual course)	5.0	8.0
State of the Art	10.0	Pass
Thesis	30.0	Submitted
Grade Point Average		7.92

*Courses from the research master Neuroscience and Cognition at Utrecht University

Psychology, track Cognitive Neuroscience, MSc, Maastricht University (2020-2021)

Course	**ECTS**	**Grade**
Perception and Attention	4.0	8.5
Auditory and Higher Order Language Proc.	4.0	9.0
Practical Training: EEG and ERP	2.0	9.0
Sensorimotor Processing	4.0	8.5
Neuroimaging: functional MRI	4.0	10.0
Practical Training: fMRI	2.0	10.0
Research Proposal	5.0	Pass
Research Internship ungraded	15.0	Pass
Research Internship graded	10.0	9.0
Master's Thesis	10.0	9.0
Grade Point Average		9.05

Academic Experience

April 2021 – August 2021 — *Research Intern*
Supervised by prof. B. Jansma
Faculty of Psychology and Neuroscience
Maastricht University

February 2020 – April 2020 — *Teaching Assistant*
Philosophy of Cognitive Science
University of Groningen

Extracurricular Courses & Activities

May 2022 – October 2022 — *Member of the Anti-Racism Awareness Group*
Radboud University

2019 – 2020 — *Member of the Faculty Council*
Faculty of Philosophy
University of Groningen

2019 – 2020 — *Member of the Advisory Council*
STUFF Groningen

February 2020 – July 2020 — *Course: Statistics I and Statistics II*
Faculty of Arts
University of Groningen

2017 – 2018 — *Board member: Commissioner of Internal Affairs*
STUFF Groningen

2017 – 2018 — *Mentor of first-year students*
Faculty of Philosophy
University of Groningen

April 2017 – July 2017 — *Honours Course: Effective Teamwork in English*
University of Groningen

2016 – 2017 *Member of Introduction Camp Committee; Travel Committee; Activity Committee*
STUFF Groningen

Skills

Statistical Software (R)
Academic Writing
Analytical Thinking
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