

An Exploratory Account of Gerard Heymans' Differential Psychology

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Abstract

Psychological literacy has enjoyed a spike in popularity during the last decade. However, there is very little consensus about what is important in psychology, and it is therefore difficult to reasonably justify any sort of curriculum to advance the psychological literacy rates of society. Incidentally, a historical figure, Gerard Heymans, pleaded for psychological literacy, albeit without using the term, since the 20th century. He believed differential psychology should become standard for the curriculum, which, due to its breadth may satisfy the curricular requirement of being high in explanatory power. In this paper I have provided an account of the theories and concepts that lay central to Heymans' *Introductie tot de Speciale Psychologie*.

Keywords: Temperamental typology, Historical Analysis, Gerard Heymans, Differential psychology

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In science it is commonly understood that we stand on the shoulders of giants. This philosophy is institutionalized in the form of references and citations. Indeed, why would we re-invent the wheel for each wheel-associated invention we venture to make? It is only by the virtue of leaning on the work done by those before us that we are able to propel ourselves to the heights that we reach today. Indeed, we may forego the long and arduous process of inventing that wheel, so the time and energy this saved for inventions that involve that wheel. It is for this reason that, as scientists, we are taught to take in all the research that is available to us before we do our own, report societal relevance, and describe how our own research adds to the body of research. The harsh reality is that our time, energy, and other resources are limited, and it is often impossible to take in all the research available to us. In practice this means that some people's work never sees the light of day, others' are misrepresented, and still others' are simply forgotten. This means a lamentably vast amount of effort and resources are allowed to be wasted away. That is detrimental, because by virtue of leaning on the work done before us, science will generally progress forward over time. It is for this reason we ought to turn to historians. It is for this reason I do not want to add anything to the currently existing iceberg of research. Rather, I wish to guide people to the treasures of knowledge and understanding that can be found beneath the surface, which would aid them in their endeavors, or were ignorantly attempting to invent on their own. Some truths do not expire.

Introduction

Psychological literacy has recently become a popular topic. The term was first coined 30 years ago by Boneau (1990), but about 80% of publications are from 2010 and on. Academics have not yet settled on what the concept entails exactly, but it seems to be defined by what we currently believe people should know about, how they interact with, and what they think of psychological science. An early advocate for psychological literacy was Gerard Heymans. In his oration at the end of his term as *Rector Magnificus* at the Rijksuniversiteit Groningen (RUG) he shared his vision of a world in which everyone would have a basic understanding of psychological science. He envisioned that, in a few centuries, psychology would progress to such a state that all those have enjoyed decent schooling would possess sufficient psychological knowledge so that they may know their current place in the world, which paths lay available to them, and which one they want to take (Heymans, 1909). He dedicated a large portion of his life to this end (cf. Heymans, 1932), and in light of the increased popularity of psychological literacy, it is of value to review Heymans' work.

Gerardus (Gerard) Heymans was born in 1857 (University of Groningen, 2022). He studied philosophy and law. He founded the first psychological laboratory of the Netherlands in Groningen, and became the country's first psychology professor. As such, he was the founder of psychology in the Netherlands. At the Rijksuniversiteit Groningen (RUG) he taught psychology, as well as philosophy, from 1890 to 1927. Heymans had a productive career, having written twenty-odd monographs and published hundred-odd articles. He contributed to and was influential in several areas, such as criminal anthropology or women psychology. But his most important work was in the field of differential psychology: his temperamental typology. To develop his temperamental typology, he performed a qualitative examination of 110 biographies, as well as a quantitative examination of observations collected via a questionnaire conducted across a sample of 2,523 subjects (Heymans, 1932, p. 17). He was the first in the field of psychology to employ correlational methodology, and his and his research methods, although over a hundred years old, are of such high quality that the data it is still re-used in research decades later (van der Werff, 1985) up until today."

The temperamental typology was the cornerstone of the psychology that he thought could improve society (Heymans, 1909). His reasoning was as follows. The human psyche is dictated both by universal laws, as well as laws that lead to individual differences. A common notion is that humans are unique, and therefore cannot be categorized. However, while the number of variations of the human psyche is vast and may seem to draw from an infinite pool of combinations, in actuality the number of variations is finite. It should therefore be possible to find similarities between individual differences. Just as biologists have been successful in categorizing different animal species and cataloging the variations in their characteristics, tendencies, and physiology, psychological science should be able to map out the psychological laws that govern individual differences (Heymans, 1932, p. 186-187). Understanding and knowledge of these laws would allow people to recognize what personality they have and what are the implications of that. Therefore, insight into their own character, enhanced by scientific understanding, would help people find their place in society (Heymans, 1909, p. 18).

In line with his vision to disseminate psychological literacy, Heymans valued accessibility of science. To this end, he published multiple articles in a magazine called *De Gids*. His publications are characterized as accessible to laypeople, yet informative to experts (Derksen, 1999). During his lectures students from other faculties would often attend (Brugman, 1930). It was even recounted that on a day Heymans had given a lecture you could overhear people talking about the subject matter when you would walk through the city of

Groningen at night. Two years before his death in 1930 he wrote a textbook called *Introductie tot de Speciale Psychologie* (1932). According to himself this was mostly a summary of what he had taught about differential psychology over the course of his career. The contents are a culmination of his life experience as a scholar. Furthermore, since it was written for a broader audience, this textbook represents the selection of contents on differential psychology he would choose to disseminate across society. In light of these considerations, I will dedicate this thesis to investigate the contents of Heymans' *Introductie tot de Speciale Psychologie*.

Curricular Considerations

To reiterate, Heymans' vision was that everyone should become literate in differential psychology. According to Revelle et al. (2010) the field of differential psychology includes 'the study of affect, behavior, cognition, and motivation as they are affected by biological causes and environmental events'. As they put it: 'it includes all of psychology'. Scientific ideas are often counter-intuitive and difficult to internalize, and thus one needs to be selective in the ideas that are taught. Education ought not be for the sake of education itself, but for enhancing the effective power with which one can act within the world. What, then, is worth teaching in science?

Tyler (1949) notes that few individuals will become a scientist, and those exceptions will not become an expert in more than one or two fields. Curriculums should therefore be designed in such a way that those who will not become specialists still derive value from their science education. Whitehead (1974) posits that teachers should teach only a few "general ideas which illuminate the whole" and draw on subsidiary facts that provide substance to those general ideas. Chamblis and Calfee (1998, as cited in Chamblis, 2002, p.53) propose that education should "help young people to acquire the special lens of the expert." Heymans seems to have the right idea:

"While naturally developed insight of character will never be completely replaced by abstract science, it would be advantageous if these skills are guided by scientific knowledge. Think of the student who graduated from agricultural college, who still needs to gain 'real-life' knowledge and understanding in order for them to be able to learn how to apply what they have learned. This student will be able to acquire 'real-life' knowledge much more efficiently than those who did not attend such a study" (Heymans, 1909, p. 18).

Chamblis and Calfee (2002, p. 54) conclude that "the well-designed textbook would be organized around a small number of illuminatory ideas, the seminal theories, models, or

concepts in the domain. It would present practical examples, activities, models, and analogies to exemplify the illuminatory ideas.”

If one is to teach anything from their particular field, what should that be? For biology this would likely be genetics and evolution; for physics, special relativity and quantum mechanics; for mathematics, algebra and geometry. What might the illuminatory ideas be for psychology? From personal communication with students, graduates, and professors I got a strong impression there is none. Prof. dr. Iris van Rooij (NIAS, 2022) acknowledges this notion. She suggests the current replication crisis is indicative of a deeper problem: a theory crisis. That is, we generate theories in order to explain particular effects, but there is no strong fundamental underlying basis to connect all these disparate theories, effects, and phenomena with each other to make a coherent whole.

Boneau (1990) asked himself a question similar to mine and set out to ask specialists of their respective fields to rate which concepts their students should definitely know after graduating in order to compile a psychology top 100. Surprisingly, long-term memory is the only concept from cognitive psychology that made the list. Perhaps jarring to some, the largest part of the list was made up of 43 methodology-related concepts. Zechmeister and Zechmeister (2000) conducted a similar study. First, they analyzed 10 introduction to psychology textbooks. Out of 2,505 distinct terms and concepts highlighted in their glossaries only 197 (7.7%) were found across the majority of the sample (8 out of 10 books). Then, they asked introductory psychology instructors to rate how important it is these terms and concepts appear in an introductory course. On a scale from 1 (not important) to 5 (very important) the 197 terms and concepts which appeared in most textbooks were rated 4.14 on average ($SD = .52$), which suggests some level of convergent validity. However, more than a fourth of the highest rated terms appeared in only 3 or fewer glossaries. This implies there is little consensus on which ideas are important.

The evidence so far suggests the field of psychology might perhaps not lend itself to any useful generalities, and that the endeavour of identifying illuminatory ideas – and by extension enhancing psychological literacy – is unviable. However, Matarazzo (1987) asserts that, although there is the perception that the different subfields have become increasingly specialized, the overall subject matter of psychology has remained the same since 1890. His evidence is that chapter titles of the most prominent textbooks over the course of a century have remained virtually the same. Thus, while there is little consensus on what concepts are important, there does seem to be consensus about what subject matter is important. This suggests generalities that remain robust over time do exist in psychology, which means it

might indeed be possible to find concepts and theories that are high in explanatory value, and are applicable to a broad span of day-to-day experiences and phenomena.

My aim is to find these concepts and theories. As mentioned before, Heymans' vision was to enhance psychological literacy via education of differential psychology. Differential psychology is extremely broad, and, incidentally, Heymans' expertise was thought to be extremely broad as well. It is therefore not unlikely that Heymans' intellectual work would indeed satisfy the criterion of being high in explanatory value across a wide range of phenomena. The analysis of this historical figure's intellectual work will mainly be of exploratory nature. My aim is to provide an overview of his most important concepts and theories within the domain of differential psychology. I will do so by providing an account of the contents of his textbook. My research question is thus as follows: What are the main ideas Heymans puts forward in the *Introductie tot de Speciale Psychologie*? If successful, interest in these ideas may be rekindled, explored further, and might eventually aid the psychological literacy movement.

Analysis

How, then, should we help people to acquire the lens of the expert, Heymans? A quick reading of the *Introductie tot de Speciale Psychologie* (Heymans, 1932) will make it evident his writings are elaborate, comprehensive, and highly cohesive; many ideas and concepts rely on other concepts and ideas described in the book. As I alluded to before, according to many, Heymans' most prominent contribution is his temperamental typology (e.g., Revelle (2010); Strelau, 1998). They describe it similar to how Heymans introduces it in chapter 3 of the book. Hence, I will use this chapter to provide a brief overview of the typology. Additionally, in the interest of saving space, all subsequent citations and quotations that provide a page number but no source may be assumed to correspond to Heymans' textbook.

The typology consists of three dimensions, which can be represented visually as a cube. Each dimension represents one of three characteristics: emotionality, activity, and secondary function. A person can be categorized as low (nE) or high (E) in emotionality, low (nA) or high (A) in activity, and is either functioning primarily (P) or functioning secondarily (S). Each combination of characteristics represents an archetype. In the chapter, Heymans provided the following single-sentence descriptions of each characteristic (p. 190), along with references to earlier parts of the book, where he describes the typicalities of individuals on one of either side of each singular dimension.

Emotionality refers to the frequency and intensity of their emotions, relative to their causes.

“We all know people who are *overly sensitive*, for whom emotions, relative to their causes, occur much more easily and far more intensely than for others, and manifest themselves in various manners of ‘expressions’ (facial expression, gesturing, strong terms, crying and laughing; inhibition of the regular course of thought and cognition); conversely, there are those who remain cold and indifferent towards everything, and always maintain their composure” (p. 111).

Activity refers to the muchness and vigour of their actions, relative to their motives.

“Some people give us the impression that, even though they feel strongly about a matter that is in their own or another’s interest, they have difficulties in acting on those matters, while others care far less, but readily do a lot of work and exert great effort. In other words, by a motive of a given emotional value, one person will be brought into motion more easily, another with more difficulty, and thus we may distinguish on one side the active, labourious -, on the other side the non-active, sluggish natures” (p. 149).

Finally, secondary functioning refers to the extent to which perceptions, mental representations, and emotions retain their effect on a person, even if they left consciousness, relative to their importance.

“We all know, on the one hand, ‘people of the moment’, for whom every impression, regardless of how strongly they may have captivated their consciousness, will not only be immediately supplanted by another, but its effects will be completely deactivated as well; and conversely, those of a more grounded nature, for whom everything, once it has entered consciousness, sticks, in such a manner that it, even without reappearing in one’s memory, will make its commensurate contribution to all subsequent thinking, feeling and doing” (p. 30).

The information given so far is sufficient to recognize what any of the main characteristics entail, how to recognize them in a person, and thus how to categorize a person. We are able to describe a person using the cube, and it would be possible to look up the elaborate descriptions Heymans’ provided for each corresponding complex type. From the information given so far it is not clear how exactly the temperamental traits would express themselves, nor is it clear how they are associated with each other. To exploit the full explanatory power of the cube more information is needed.

Out of the 488 pages of text, what information would be needed to acquire Heymans’ perspective? To figure this out, we should understand how his character descriptions are organized. A brief reading will give the impression that only those things that seemed to be to

notable are covered. Amongst other things, certain topics may be covered in a different order, whilst some topics are covered for one type and not for another. For example, for ‘neurotics’ he covers both ‘formal –’ and ‘material inclinations’, whilst in the description of ‘sentimentals’ the word ‘inclination’ is not even used once. Still, it is possible to identify some manner of organizing principles in this chapter. Firstly, Heymans introduces each pair of archetypes that differ only in their secondary functioning (e.g., neurotics and sentimentals; phlegmatics and sanguinici), acknowledging each dyad’s temperamental traits and describing in what noteworthy way the traits generally express themselves in these types. Secondly, the descriptions of each type can be distinguished as belonging to one of four domains, which had been alluded to in chapter 2.6, each of which corresponds to a chapter title from chapter 2 (2.2 Waarnemen en voorstellen; 2.3 Intellectuele functies; 2.4 De aandoeningen; 2.5 Willen en handelen). Emotionality, activity, and secondary functioning are covered more in-depth in chapters 2.4, 2.5, and 2.1, respectively.

This has broadened (and then narrowed) the scope to 153 pages. How should we select the ideas that are essential to understanding the cube? Revelle (2008, as cited in Revelle et al., 2011) divides research in differential psychology into affect, behavior, cognition, and motivation (desire). These four domains are labeled the ‘ABCDs of Personality’. It will be this approach that I will employ to order my summary of the concepts Heymans puts forth in his book.

Cognition

2.1.1 Centraal bewustzijn

Heymans begins his discussion of the psychological functions broadly, by talking about consciousness. The chapter title is *Centraal bewustzijn*, which translates to central consciousness. It refers to something we would call ‘our lived experience’. Heymans describes that it makes up only a small selection of the human psyche. He lays out the distinction between the central consciousness, which contains everything we are currently conscious of, and the peripheral consciousness, which contains everything we “know” or “have in our mind” without currently “thinking of those things”. The contents of the central and peripheral consciousness are similar in nature. Furthermore, when the psychological contents within the central consciousness have transitioned to become part of the peripheral consciousness, they maintain many of the same functionalities and features. He puts forth an analogy akin to the central spotlight paradigm: let us imagine walking around in a dark warehouse (entire consciousness) with a flashlight, it is possible to only see a small portion (central consciousness) of the warehouse, but everything we do not see (peripheral

consciousness) could be made visible if we shine our flashlight on those things. Although central and peripheral consciousness may serve intuitive understanding for a layperson, the terms ‘central’ and ‘peripheral’ imply spatial relations. In reality, thoughts cannot move through space, like a box could within a warehouse. Conceptually, it will therefore make more sense and be more consistent with Heymans’ subsequent subject matter to think of the human psyche as a complex system, consisting of a constellation of interconnected subsystems organized according to particular principles, functioning according to certain laws. The psyche, along with its subsystems, manifests itself as a landscape of psychological energy. That is, psychological energy is a function of the system, and its momentary organization may be referred to as a mind state. If a certain perception, idea, thought, emotion manifests itself into one’s conscious experience, this is because a sufficient level of psychological energy, relative to others, is focused on those ideas. Depending on the mind state, then, certain things will be conscious, whilst others are not. Henceforth, I will replace the terms central consciousness and peripheral consciousness with consciousness and subconsciousness, as it would better capture this manner of thinking about the psyche.

Heymans goes on to describe that, consecutively and alternately, all contents of the subconsciousness can manifest themselves into consciousness; but only a small part of the contents can manifest at any one time. He notes this is often thought of as ‘the limited capacity’ of the consciousness. We cannot think of any arbitrary number of things at once; when new impressions capture our attention, they supplant or reduce attention that was currently present. Hence, the number of things that can manifest in one’s consciousness at any one time is inversely related with the intensity of the given contents of consciousness. Therefore, if, for example, a person is highly concentrated on some task, little capacity or attention remains for impressions irrelevant to the task at hand, and they are therefore less distractable. This may seem like an objectively good thing, but this would also mean they are less receptive to things that occur in their environment. Heymans provides the amusing example of needing to ask a question twice or thrice before it penetrates their consciousness; he cites Gladstone, that you need to “wake them from their work as if it were from their sleep”.

2.1.2 Secundaire Functie

Otto Gross, as cited by Heymans, coined the terms primary and secondary function. The primary function of one’s mental contents refers to the functionality of the psychological contents in one’s consciousness; conversely, the secondary function refers to the functionality of the mental contents as they leave a trace into the subconscious. From the perspective of

viewing the psyche as a complex system, the psychological energy that manifests as a conscious experience leaves a trace by making a more or less permanent change in a selection of the subsystems within the psyche. In still other words, the psyche adapts according to the inputs it receives, allowing for cognition and learning; the secondary function is therefore, in a sense, the memory of the system.

Why would we then not simply call the secondary function long-term memory? Strictly speaking, in the broadest sense of the term, this may make sense. But long-term memory is commonly conceptualized as memories lying dormant in one's psyche until they are retrieved. This would preclude the possibility of mental contents maintaining functionality, other than providing supplementary information, as they become subconscious. Furthermore, rather than passive and supplementary, they play an active role in determining the dynamics of the psychological landscape. A pertinent example of the active role the secondary function plays is something Heymans calls '*voorstellingsverloop*'. This is the psychological function that is covered next.

2.2.2 *Voorstellingsverloop*

An apt translation of '*voorstellingsverloop*' would be 'stream of consciousness'. However, the word 'stream' probably does not immediately convey a correct idea of the particular temporal or dynamic nature of the phenomenon at hand. Therefore, in addition to the more eloquent translation, I will provide a literal one as well, namely: 'course of representations'. 'Course' refers to the fact that the contents of our consciousness alternate consecutively; at one time we think of one thing, and subsequently, we think of another. A colloquialism for the type of phenomenon we are talking about here would be 'shower thoughts'. Typically, these occur when we are not doing anything, or are doing a task that typically requires very little concentration, such as waiting at the drug store, driving down a familiar and quiet road, or taking a shower.

What determines which thoughts manifest themselves into our consciousness, then? This depends on three factors, of which the first two work via laws of association: experiential and similarity. Both laws are based on the assumption that the contents of our consciousness activates the functionality and increases the probability of any associated thoughts or concepts. Associations through experience depend on the fact that thoughts and representations are associated by occurring together. For example, hearing the first few notes of a song can activate the memory of the rest of the song. Associations through similarity depend on the fact that thoughts and representations can be associated by being similar in

some way. ‘Merely through a single hidden feature they are comparable.’ These types of associations play a role in symbolism, comparisons, analogies, or metaphors.

A third factor is ‘own strength’, which we may understand in modern terms as accessibility. Within the context of this paper, we could say these concepts, thoughts, or representations, are heightened in their level of activation and functionality. According to Heymans their ‘strength’ can either be enhanced more temporarily, or more permanently. An example of a temporarily enhanced strength are experiencing an event with a negative emotional charge, such as a break-up. This tends to affect one’s mood for a while, and if one’s attention is not captivated by any activity of some sort, thoughts about event will typically find their place back into consciousness without requiring the aid of an association. Another, more light-hearted example would be that of an earworm; a song that seems to be stuck in our head for some reason. Examples of the longer term are somewhat more habitual in nature. Namely, the repeated use of certain words, with which people may characterize you with. Or the repeated engagement in certain bodily movements, such as stroking one’s beard, or making particular hand gestures.

2.3 Intellectuele functies

Thus far, the concepts consciousness, secondary functioning, and stream of consciousness were covered. These three basic psychological functions, along with some others, are required for intellectual processes and engaging in intellectual performances. I would not to be explain what Heymans means with intellectual performances than he himself. Hence, I will simply provide a translation here.

“In the most general sense we speak of an intellectual achievement when a person , using the information available to them, made the correct inferences; be it consciously or subconsciously, with or without help of others; whether they have formulated these inferences into words, merely thought about their relevant substance, or perhaps immediately acts upon them without any further deliberation. So, when someone finds their way out of a difficult situation, solves a mathematical problem or even understands the solution presented, correctly judges a person’s worth at first glance, makes an accurate medical diagnoses based on a few symptoms, brings a set of unconnected or distinct facts under a single encompassing perspective, invents a machine, finds suitable words and manner of speech to calm down a recalcitrant boy or an aroused crowd, puts their opponent in a tight spot during a debate –, then we can undoubtedly speak of intellectual achievements for all of these cases. What these achievements have in common, is that the person involved, using knowledge acquired

from the present and the past, came to insights regarding the truth of a certain premise or the purposefulness of a certain way of acting upon or within the world, which turned out to be able to stand the test of real-world application. And, insofar these insights are of such nature, the individual whom has come to those, to which others did not or would not have come, given the same information, we shall not hesitate, to qualify the former in comparison with the latter as more intelligent.” (p. 78).

Individual differences in intellectual performances. What, then, is different in an individual who qualifies as more intelligent relative to others? As alluded to earlier, an intellectual achievement is defined through a person’s utilization of knowledge. The first source of individual differences lies in their consideration of knowledge. Individuals can vary in possessing less or more complete and accurate information, which affects intellectual performance even when two people are similar in intelligence. Although this is relatively straight-forward, this difference is often overlooked. Another manner in which individuals can vary is the extent to which they take the knowledge they possess into account. This has to do with the availability of attentional resources. They may be momentarily unavailable, because a person may be preoccupied with something that captivates their attention, such as the anticipation of something exciting, or being overtaken by emotion during a conflict. The unavailability of attentional resource could also entail something more permanent. This would be the case for someone who is highly partisan or prejudiced, which would make one see only one side of an issue and make them blind for other points of view. Note that this person would still not be qualified as being less intelligent; the inferences they make is based on less complete knowledge than that of others.

Even if two individuals possess the same knowledge, and are equally receptive to said knowledge, they may still differ in their intellectual performances. This is a matter of differences concerning the intellectual process itself. Here, three factors are of note: i) interestedness, ii) richness and fluidity of the mind, and iii) possession of a well-developed secondary function.

Interest. Interest is associated with mental resource management or effort allocation. Good intellectual performance requires a proper level of engagement with the given issue, problem, or task at hand. Firstly, momentaneous concentration on the information relevant to the task is required. If there is a lack of interest, the information, upon which making the correct inferences depends, will not be concentrated upon strongly and exclusively enough, in order for the information develop and enact its full functionality in consciousness and the rest of the psyche, and inhibit interference of foreign elements.

On a broader level, if one lacks interest, it is not improbable that, as they assess their solution, someone would be satisfied with a general feeling of plausibility. In a similar vein, to reach great levels of intellectual achievement the development of a broad theory, that would require sustained engagement, sustained interest over a longer period of time, such as the case would be for a scholar who develops a theory, is necessary.

Imagination. Heymans notes that we generally think of imagination and intellect as opposites, but he argues that imagination is essential for doing academic work. Imagination is an essential component for creativity, which is required for art and storytelling, but also for science. To be intellectually creative, one must be able to take apart existing ideas, and reorder and recombine their constituent elements. To be creative is to disassemble what has never been apart, and to assemble what has never been together.

Secondary function. Lastly, a well-developed secondary function is required. Heymans provides three reasons for this. First, in engaging in a problem of a great level of complexity, it is not possible to keep all relevant pieces of information in one's consciousness. The knowledge required to formulate an argument, theory, or solution to a problem, needs to be organized and developed to such an extent, that it acquires or possesses a level of functionality capable of aiding one's conceptualization from the subconscious, without making a person lose the thread of their thought.

Secondly, the fact that the secondary function is required to guide our fantasy. As mentioned before, coming up with a solution depends on the consecutive alternation of multiple concepts and ideas in one's consciousness over time. These manifest themselves, just like other imaginations in one's stream of consciousness, through associative processes. However, an important difference here, is that when one chooses to engage in a problem, an associate center manifests itself as a goal-representation. This associative centre, enhances activation of thoughts, concepts, and memories that are associated with the objective, and inhibits activation of others. This makes it so that the results of one's imaginative processes stay on track.

Finally, one's idea is judged for its suitability. This is a decision-making process, in which each idea is evaluated consecutively on whether to accept, reject, adjust or adapt, or hold the idea for further investigation and evaluation. How does one know which decision to make? This depends, besides the goal-representations, on numerous other ideas hidden within the subconsciousness. When an idea of an inference or solution is activated strongly enough for it to manifest itself in the consciousness, it enhances activation of other information or ideas in the subconsciousness. Although the ideas and combinations of ideas are too weak to

manifest themselves into the consciousness, together they are able to produce a feeling of correctness in the consciousness. When this feeling reaches consciousness, it becomes possible to test one's idea consciously. And, one final caveat Heymans adds, is that the more difficult the problem at hand is, the better organized the secondary function must be with respect to the relevant information representations. Because chapters 2.3 and 2.5 cover concepts that are similar in nature, chapter 2.4 will be postponed until after 2.5

Behaviour and Motivation

2.5 Willen en Handelen

Heymans covers willing and acting, which fall under the domains of motivation and behaviour, respectively, in chapter 2.5. The process of willing and acting is highly analogous to the process of an intellectual performance. My approach to cover this chapter will be as follows. First, I will provide Heymans' definition of 'actions' and explain it, in order to provide a brief overview of the central idea of this chapter. Next, just like for intellectual performance, I will first cover individual differences 'before the process', and then individual differences 'during the process'. The definition is as follows:

“Of the different processes, which occur in our body or our mind, we label actions as those, which we have willed; that is, those of which we have more or less clearly imagined the outcome of beforehand and accepted as our objective.” (p. 126).

The former part of the definition, before the semicolon, refers to the necessity of will for actions. In this context, 'actions' refers to volitional actions. This would therefore exclude behaviour, such as reflexes, as well as non-volitional actions, such as startle responses or conditioned responses. Furthermore, actions can be both mental and physical. For example, deliberately tempering one's emotions or drinking a glass of water can be considered as volitional mental and physical actions, respectively.

The latter part, after the semicolon, refers to will. This depends on three things. Within the stream of consciousness different *potential actions* present themselves. These potential actions manifest themselves in conjunction with *imagined outcomes*. These outcomes can vary in how well thought-out they are. For example, one could deliberate on the outcomes for a shorter or longer period of time. Or, one could have more or less experience in a particular domain. The voorstellings-complex of the potential action and imagined outcomes will be referred to as a *motive*. Finally, a person's will manifests itself when a motive that enters the stream of consciousness is decided to be accepted as one's objective. This decision-making process is a decision of the will. In other words, we must first think of a potential action and

its imagined outcomes, and if this action-outcome complex is accepted as one's objective, a person will act.

2.5.1 Before the Process (Motives). Just like the intellectual process, the decision-making process of will depends on knowledge or information. After all, the action that is taken depends on one's motives, which contain the expected outcomes of one's actions, which requires knowledge in order for them to be predicted and imagined. Thus, people can differ in the knowledge they possess.

Then, the accessibility or taking into account of the knowledge in one's possession will be discussed. This is best done through the concepts 'will causality' and 'automatic causality', which, in turn, is easiest explained through an illustrative example Heymans provided. Let us imagine two scholars. They are in the process of preparing a lecture, and an idea that appears to be useful for the solution of a scientific problem not directly relevant to the task at hand pops into their consciousness. If they then quit their preparation, in favor of using their full attention on developing their idea, this could, generally speaking, occur in two ways. The first scholar became completely captivated by their new idea. They completely forgot about their work, and they later realize, to their shock, they still have unfinished business left to do. The second scholar did not forget about their work. In fact, they considered whether enough time to finish their work would remain if they work out their idea first, to which their answer was 'yes'. The first manner in which the situation played out is a case of involuntary attention, whilst the latter would be a case of voluntary attention.

What could explain the difference between these situations? Both scholars find it important their preparation is done in time. Some may be inclined to judge the first scholar for their tardiness, and that fulfilling their duties is not important to them. If this were the case, why would they feel shock when they find out they completely forgot about their preparation; they clearly regret the way they acted. The difference between the two scholars can be explained according to the secondary function: a generally weak secondary function leads to a partial orientation of attention, whilst a generally strong secondary function leads to a holistic orientation of attention.

At any given moment, as thoughts alternate between consciousness and subconsciousness, there is a chance a particular motive captivates the consciousness in its entirety. Individuals with a strong and well-developed secondary function take into account motives that are momentarily displaced from the consciousness. In practice, this could manifest itself as a vague feeling of something that conjures up resistance against the imagined potential action. This resistance leads to the postponing of the decision of will, until

that “something” is brought to clear consciousness and confronted with the motives given earlier. Conversely, primary functioning individuals tend to make their decision of will and its execution immediately; when their consciousness is captivated, their secondary function is too weak for motives outside of the consciousness to affect the person’s psyche.

Herein lies the difference between automatic causality and will causality. We may think of automatic causality when a person fails to take into account all relevant aspects of the intended action; vice versa for will causality. According to Heymans, only when a person takes into account all aspects of a decision we can say that a person truly acts according to what they truly want, and thus only in those situations we will see a person’s true character be expressed.

2.5.2 During the Process (Decision of Will). After the motives are taken into account, a decision of will occurs. Individual differences that are possible for this decision-making process can be described according to general characteristics and specifying characteristics. General characteristics include i) activity, ii) resoluteness, and iii) perseverance, which affect the ease, speed, and duration of decisions of will.

The first and most prominent general inclination is activity vs. non-activity. Activity refers to the ease a person engages in actions, relative to the emotional value of a motive. Heymans had described a number of illustrative features, of which I will provide a few of. An active person tends to enjoy being active. At times, they even experience it is a need; the smallest level of motivation is required for them to engage in a task, whether it is of value or not, such as disentangling a knot or repairing a useless thing. Conversely, a non-active person tends to have an aversion for being active. They experience a strong psychomotoric and psychological inhibition; to move, they must overcome resistance; nothing seems to go naturally, and for each of the elements a particular action consists of, an additional exertion of effort is required. All of these tendencies of activity and non-activity are manifest on both a physical and mental level, be it thinking, speaking and writing, or acting externally. The other general inclinations are resoluteness vs. indecisiveness (refers to the quickness with which a person resolves conflicting motives), and perseverance vs. fickleness (refers to the duration of commitment to one’s decision of will).

Finally, the decision-making process depends on specifying characteristics. These are labeled ‘neigingen’, which translates to inclinations. This term refers to the type of motives a person is receptive to. Heymans believes a person’s character is defined by the commensurate strength or psychological energy of the collective of all inclinations. Heymans cites Paulhan, who suggested organizing the breadth of inclinations according to four groups: vital,

egotistical, social or altruistic, and abstract or supra-social. I will not elaborate on these groupings, but hopefully their labels will prove to give a better idea of what one should think of when thinking about specifying characteristics.

Affect

The concept related to affect is Heymans' *aandoeningen*, which is the substantive of 'aangedaan zijn'. This Dutch word refers to emotions. In emotion literature affect is distinct from emotions. Affect is often thought of as a broad term that encompasses both emotions and mood, and is either positive or negative. Emotions are distinctive, short-term, and aimed at a source. Heymans describes what he means with 'aandoeningen' or emotions as follows.

"Emotions refer to a distinct group of phenomena of consciousness, which do arise from other psychological functions (perceptions, imaginations, attitudes, satisfied or unsatisfied desires), but cannot be reduced to these. This category contains the experiences of joy and anguish, hope and fear, anger, tenderness, love etc., of which one realizes immediately, that they contain a new quality, that cannot be found in these other phenomena. This new quality is always characterized by the fact it always contains elements of desire or suffering, and liking or disliking, and perhaps associated with still others as well." (p. 110).

According to Heymans, in respect to emotions there are three important ways in which interindividual differences exist. The first is receptiveness for emotions: the intensity and frequency with which individuals experience emotions, relative to their causes. Incidentally, this is the definition of the first temperamental characteristic. Secondly, course over time: the quickness or slowness with which emotions arise into consciousness and are maintained. Heymans paraphrases Bain, who proposed that intensity and duration of emotion are linked. If one's emotions are intense, it must be difficult to get over them; if a person quickly gets over their emotions, they must not have been intense. Heymans argues there are examples in which this is not the case. For example, children often experience their emotions intensely, crying loudly at one moment, laughing and playing with their friends the next. Indeed, some people experience and express intense emotions, but they get over them quickly. Others may have feelings of low intensity, but they can harbour them for a significantly longer duration over time.

The third way in which individuals may vary is the general direction of their emotions. That is, people can differ in their receptiveness of particular types of emotions. One dimension of this characteristic is, in the words Heymans cites from Schopenhauer, *eukolysm* versus *dyskolysm*. The affixes *eu-* and *dys-* mean well and bad, respectively. Hence, *eukolysm* refers to a general receptiveness for positive emotions, whilst *dyskolysm* refers to a

receptiveness for negative emotions. Another way of differentiating is by identifying the source or object at which emotions are aimed. Herein the following dimensions are notable: physical versus mental pleasures or displeasures; the different extents in which the past, present, and future affect one's emotions; the extent to which emotions are related to egocentric or allocentric interests; and finally, whether they generally face the world in more of an agreeable or rather more of an antagonistic manner.

Discussion

My aim was to provide an overview of his most important concepts and theories within the domain of differential psychology. My research question was: what are the main ideas Heymans (1932) puts forward in his *Introductie tot de Speciale Psychologie*? I have done so in the hopes of finding theory that is high in explanatory power, so that we may use these ideas to make a psychological literacy movement viable.

At this point, I ought to ask myself: have I provided a good account? It is not unlikely that I have missed certain ideas, theories, or important and illustrative elaborations on those ideas. This has to do with the approach taken here. Firstly, I have centralized my account around the temperamental typology. Due to the scope of Heymans' work, it was of importance that I would base my approach off something familiar. This would be a useful centralization point to which all concepts would naturally relate, and therefore have cohesion with each other. However, this also means I have skipped over parts that are not useful for understanding the typology, in which interesting ideas could have hidden themselves. It is evident that using this approach was a limiting factor, as my account did not cover the second part of the book. Secondly, the account is highly subjective, as the criteria for inclusion were "importance" and "noteworthiness". This, however, is only natural, as there are rules one can follow to determine the theoretical value of a concept or an idea. It is therefore for the reader to decide whether they do or do not trust my authority on the subject at hand.

Despite its limitations, my account is much more in-depth and wider in scope, in terms of intellectual work covered, than most other accounts (e.g., Strelau, 1983; Revelle, 2010). Is more and bigger also better? The point of translating and summarizing Heymans' work is that his theory could prove to be useful in acquiring the 'lens of the expert'. He has provided elaborate explanations of each of the archetypes defined by his typology. And while, in theory, it is extremely likely one could come much closer to the same insights Heymans had with a more elaborate understanding of his differential psychology, it is the question whether laypeople would be able to understand and readily apply this much more complicated understanding. Indeed, I may find the temperamental typology far more useful now that I

understand the mechanisms with which the temperamental traits are associated, but this is because I specialize in the field of psychology. Again, the point is to help laypeople acquire the lens of the expert. The only way in which this, and by extension my account of his work, be evaluated properly, is via empirical research, in which the insightfulness of laypeople who have and who have not studied the psychological functions is tested and compared.

Finally, we ought to reflect on the explanatory power of Heymans' differential psychology. To reiterate, Revelle et al. (2011) described the study of differential psychology to include affect, behavior, cognition, and motivation as they are affected by biological causes and environmental events. My summary has demonstrated Heymans has covered each domain comprehensively. In Chapter 6 he goes over the development of character, including the biological basis of the development of character in 6.1, and the effects of the environment (e.g., self-influence, social influences, and the self-made character) in 6.2. Admittedly, these latter chapters are admittedly meagre compared to the rest of his analysis, but this means he did touch upon every single domain of differential psychology. Not only did he touch upon each domain, he also integrated them wherever it was justified to do so. I believe, just as I thought before, that because of their all-encompassing nature, Heymans' theories and ideas can be of great utility for the non-specialist, and are therefore very relevant for the psychological literacy movement.

Concluding Remarks

Finally, the field of differential psychology was only 25 years old when the book was written, which means there is probably some merit to saying that the ideas are perhaps a little bit primitive or outdated. But, hopefully, I have been able to give the impression through my summary, that almost all of Heymans' theories and ideas presented here are conceptually sound according to today's standards have parallels with the theories from contemporary psychology.

I have three specific suggestions for future labour and thought surrounding the current topic. First, Heymans' *Introductie tot de Speciale Psychologie* should be digitalized. He is considered to be father of Dutch psychology (Brugmans, 1930), and this textbook is the culmination of all of his experience as a scholar and a differential psychologist; the current lack of its accessibility is a shame. Second, throughout the project, I have gotten the strong impression many of Heymans' psychological theories are still valid and useful today, and overlap heavily with modern psychology. Is this indeed the case, and if so, what is it that made his theorizing stand the test of time so well? Third, Heymans was known for his

multidisciplinarity (Brugmans, 1930); how is he able to be so broad, comprehensive, yet integrative and cohesive in his approach?

In conclusion, I share Heymans' ideal of enhancing psychological literacy of the public. But we cannot do so if we do not know what to teach, and we will not be able to know what to teach if the field remains split. Heymans' textbook provides us with a unique opportunity. Let us learn from Heymans' example, engage in interdisciplinary theorizing, integrate findings from other fields, and aim for a more unified psychology.

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