

History of dream research: The dissertation “Entstehung der Träume (Origin of dreams)” of Wilhelm Weygandt published in 1893

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Summary. This article reviews the 1893 dissertation of Wilhelm Weygandt, a pioneer in 19th century dream research that has provided one underpinning of today's sleep laboratory research. The dissertation was supervised by Wilhelm Wundt. Weygandt's claim that all dreams emanate from sensory impressions is no longer valid; nevertheless, Weygandt's careful observations and experiments yielded important results. These results are stimulating for modern dream research, for example, to study the effect of internal stimuli on dream content.

Keywords: Dream content; External stimuli; Internal Stimuli

1. Basic idea of Wilhelm Weygandt's dissertation

Weygandt's dissertation was chosen for review because he collected empirical evidence to support his basic principle which is reflected in the following sentence: “Ich fand, dass alle Träume von Sinneseindrücken ausgehen. (p. 20, “I found that every dream emanates from sensory impressions.)” He divided sensory stimuli into two groups: internal and external stimuli. Internal stimuli included such things as breathing, blood circulation, temperature change, urge to urinate, and uncomfortable position. External stimuli included visual or auditory stimuli. Weygandt asserts that associations (pictures from one's memory) follow the images generated by sensory impression, especially vivid if the stimuli are weak (e.g., breathing or blood circulation). Weygandt's hypothesis is the emotional tone of the sensory impression is the basis for the overall emotional tone of the dream.

2. Background of Wilhelm Weygandt

Wilhelm Weygandt was born in 1870 in Wiesbaden, Germany. He studied German language and literature, philosophy, theology, and pedagogy in Strasbourg and Leipzig. In 1893, Weygandt completed his Ph. D. on the etiology of syphilis under the supervision of the well-known psychophysicologist Wilhelm Wundt (1832-1920). Four (4) years later, Weygandt became a physician in Würzburg. Wilhelm worked several years as a psychiatrist in clinics in Heidelberg, Berlin, and Würzburg, and then became head of the psychiatric clinic in Hamburg-Friedrichsberg. During this time, he was also

a professor at the University of Hamburg. Weygandt published over 300 books and articles on various topics such as aphasia; malaria therapy; hysteria; and mental disorders in adolescents. He retired in 1933, and died in 1939.

3. Summary of his dissertation

3.1. Introduction

In the introduction to his thesis, Weygandt states that psychological research regarding the understanding of dream processes is unsatisfactory. He criticizes the approaches of other scholars who aim at dream interpretation and explaining dream symbolism. He emphasizes that dreaming and waking can not be separated in regard to phenomenology. Instead, they blend together. For example, Weygandt refers to the complex thinking processes that are possible within dreams.

Weygandt also describes himself as a vivid dreamer, and that he experienced lucid dreams. He says he became lucid in nightmares while he was thinking that it was foolish to be frightened because the dream was not real but imaginary. Interestingly, he recounted a dream which included a false awakening, not uncommon in lucid dreams. He states he woke up and lit a candle, but the candle flame was not burning properly and the room looked different. So, he noticed he was still asleep. Weygandt mentioned that one of his predecessors, J. E. Purkinje (1846), was able to wake himself up from a dream because he knew that he was dreaming. Weygandt discussed the problem of low dream recall after the person was awakened early in the night. Weygandt also thinks that no dreaming takes place during the first period of deep sleep.

3.2. Literature review

Weygandt's literature review in his dissertation encompasses 12 books, book chapters, and articles: Binz (1878), Delboeuf (1879-1880), Gießler (1890), Hildebrandt (1875),

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Krauss (1858), Purkinje (1846), Radestock (1879), Scherner (1861), Siebeck (1877), Spitta (1883), Strümpell (1874), and Volkelt (1875). He briefly discusses the claims of the authors regarding whether or not dreams are caused by sensory impressions, or are a result of associations, e.g. Gießler (1890). He also quoted his teacher, Wilhelm Wundt, as saying “Most likely most or even all dreams are illusions that result from weak sensory impressions which never fade during sleep.” (Wundt, 1893).

3.3. Methodology

Over a period of nine months, Weygandt studied his own dreams in two ways: observation and experimental manipulation. For observation, he recorded his own dreams and their accompanying circumstances extensively. Secondly, his assistant, Albert Willner, a medical student, applied different stimuli during Weygandt’s sleep in order to assess their effect on dream content. Weygandt did not give any statistics about the number of awakenings or stimulations, but illustrates his line of thinking with elaborate dream examples (see examples below).

Also within this section, Weygandt discussed a major problem of dream research: the validity of a dream report, which might be a “deficient, extremely meagre copy of the real dream.” He recommended that trained and healthy persons be subjects. He also discussed the problem of low dream recall after awakenings in the first part of the night. He indicated that the stimulus itself, if too strong, might interfere with dream recall.

3.4. Results

Weygandt’s dream examples are presented in two sections: “internal stimuli” and “external stimuli”. These sections are further divided into subcategories: internal stimuli “tiredness”; “Urge to urinate/sexual arousal”; “breathing”; “blood circulation”; “hunger/thirst”; “vestibular system”; and external stimuli “visual/auditory stimuli”; “olfactory/gustatory stimuli”; and “tactile/temperature stimuli”.

Several dream examples appear below to illustrate Weygandt’s research activities.

Dream 1: “I was walking cross country. The paths were barely passable, wet, and steep. In view of this, I volunteered to carry a young lady of our party until the paths improved. She consented and I carried her, not without trouble, for a while. The landscapes were colorful and changing.”

Comment 1: “After waking up, I experienced the same back pain that I had experienced carrying the woman in the dream.”

Dream 2: “I was standing near a broad river, presumably the Rhine, and sensed the urge to urinate. I crossed the river and got into a slim boat that had a leak and was already occupied by an acquaintance. As soon as I boarded the boat, it sank. My acquaintance saved me from the water. Then I walked along a garden path and again intensely felt my full bladder. Eventually, I urinated along the side of the path. I was a little bit embarrassed because I saw a few ladies a short distance away.”

Comment 2: “This dream was caused by an intense urge to urinate.”

Dream 3: “I took a mountain railway. It was a very steep mountain, and the ascent seemed very dangerous. The trip up the mountain became more and more arduous. Eventually, I saw myself on a bicycle approaching the mountain summit, and I was breathing heavily and panting.”

Comment 3: “The asthma from which I have suffered for several years often caused dream images about breathing difficulties.”

Dream 4: “I was in a forest near Wiesbaden, surrounded by thick shrubbery. I was thinking that the forest ranger was chasing me, so I fled as fast as I could. Since I could not run very fast, I got a little desperate. I reached a flank of a hill and threw myself down the hill. Then I reached a pond where I tried to satisfy my thirst by drinking different glasses filled with milk, beer and so on. Again I was chased and fled into the forest.”

Comment 4: “At the beginning of the dream, on the basis of the dream were feelings of anxiety and dizziness. Then, the thirst stimuli intervened.”

Dream 5: “At a family gathering, we played “posing living pictures”. I was thinking about whether or not magnesia lights would enhance the effect of these “pictures”. Next, I saw the pictures in a very bright and intense light.”

Comment 5: “When I woke up, the bright morning sun had broken through the clouds and shown through the window, thus causing the dream images.”

Dream 6: “I was travelling by train up a mountain to a lonely hotel named “Sommerfrische”. I felt that it was getting colder and colder. Eventually, there was so much snow that one could not go outside. Snow flurries were hammering at the windows and I was very cold.”

Comment 6: “When I woke up, I realized that my bedspread had fallen off of me and a cold breeze had blown into the room.”

Dream Experiment 1: “While I was sleeping once, my experimenter began to sing the legend of the grail from the opera, Lohengrin, by Richard Wagner. During the verses “Brought down by a group of angels” sung in forte, I dreamed of beautiful angels floating down from heaven singing those words.

4. Diskussion of Weygandt’s results relevant to modern dream research

Weygandt’s dissertation ended with the assertion that “Dreams emanate from sensory impressions (Die Träume gehen von Sinneseindrücken aus).” This statement is no longer valid in the strictest sense (Schredl, 2008). Modern dream research agrees more with Weygandt’s statement that “impressions of external sensory perception being above the perceptual threshold are merged into the dream images and can give the dream a new turn.” Sleep laboratory studies have shown that external stimuli, (e.g., auditory or tactile stimuli), can be integrated into the dream (Schredl, 2008).

The evidence for the incorporation of internal stimuli into dreams is less clear. Weygandt assumed that all kinds of stimuli (blood circulation, breathing, urge to urinate, sexual arousal, temperature shifts, and uncomfortable posture) can

be the cause of a dream. As these conditions are ongoing bodily functions, it seems difficult to falsify Weygandt's hypothesis. Thirst as a stimuli was, for example, studied by Bokert (1967). Yet, in Bokert's carefully designed study, it was not possible to differentiate between the effect of the internal stimulus (thirst) and the effect of thinking about thirst and drinking before the onset of sleep in the subject (after eating a salty supper as part of the procedure thirst-related thoughts are very likely).

Another line of research investigated the effect of breathing pauses on nightmare frequency in sleep apnea patients (Schredl & Schmitt, 2009; Schredl, et al., 2006), but found no effects of such massive internal stimulus on dream content.

Weygandt mentioned that sexual sensations showed obvious relations to dream images, but he did not give any examples or elaborate on this observation. Since 1944, researchers have observed that phases of erections occurring during sleep (Ohlmeyer, Brillmeyer, & Hüllstrung, 1944) that have later been associated with REM sleep. But the relation between sexual arousal and dream content is not clear (Fisher, 1966). So, the question of whether or not and how strongly internal stimuli like thirst, sexual arousal, breathing pauses affect dream content is still unanswered today.

In his dissertation, Weygandt recounted dreams of his mother after her death, or positive dreams after joyful journeys that support the idea of continuity between waking and dreaming (Schredl, 2003). Weygandt stated that he could very often associate dream emotions with the general day-time mood, which contradicts his statement that the emotional tone of the stimulus is important for various dream emotions. However, Weygandt's association of dream emotions with the general day-time mood is in line with modern research findings (Schredl, 2008). His experiences of lucid dreaming that originate from nightmares or false awakenings are also in accord with today's lucid dream research (Erlacher, 2005).

To summarize, the observational and experimental approach of Weygandt yielded a lot of interesting results which are still worth to be followed up and studied more in depth with up-to-date techniques in the sleep laboratory.

References

- Binz, C. (1878). Ueber den Traum. Bonn: Adolph Marcus.
- Bokert, E. G. (1967). The effect of thirst and a related verbal stimulus on dream reports. New York University: Philosophical Dissertation.
- Delboeuf, J. (1879-1880). Le sommeil et le reve. *Revue Philosophique de la France et de l'étranger*, 8, 329-356, 494-520.
- Erlacher, D. (2005). Motorisches Lernen im luziden Traum: phänomenologische und experimentelle Betrachtungen. University of Heidelberg: Dissertation.
- Fisher, C. (1966). Dreaming and sexuality. In R. M. Loewenstein, L. M. Newman, M. Schur & A. J. Solnit (Eds.), *Psychoanalysis - a general psychology* (pp. 537-569). New York: International Universities Press.
- Gießler, M. (1890). Aus den Tiefen des Traumlebens: Eine psychologische Forschung auf Grund eingehender Beobachtungen. Halle: T. E. M. Pfeffer.
- Hildebrandt, F. W. (1875). Der Traum und seine Verwerthung fürs Leben. Leipzig: Reinboth.
- Krauss, A. (1858). Der Sinn im Wahnsinn. *Allgemeine Zeitschrift für Psychiatrie und psychisch-gerichtliche Medizin*, 15, 617-671.
- Ohlmeyer, P., Brillmeyer, H., & Hüllstrung, H. (1944). Periodische Vorgänge im Schlaf. *Pflügers Archiv für die gesamte Physiologie des Menschen und der Tiere*, 248, 559-560.
- Purkinje, J. E. (1846). Wachen, Schlaf, Traum und verwandte Zustände. In R. Wagner (Ed.), *Handwörterbuch der Physiologie* (III. Band, II. Abteilung) (pp. 412-480). Braunschweig: Friedr. Vieweg.
- Radestock, P. (1879). Schlaf und Traum: Eine physiologisch-psychologische Untersuchung. Leipzig: Breitkopf und Härtel.
- Scherner, K. A. (1861). Das Leben des Traums. Berlin: Heinrich Schindler.
- Schredl, M. (2003). Continuity between waking and dreaming: a proposal for a mathematical model. *Sleep and Hypnosis*, 5, 38-52.
- Schredl, M. (2008). Traum. München: Reinhardt/UTB.
- Schredl, M., & Schmitt, J. (2009). Dream recall frequency and nightmare frequency in patients with sleep disordered breathing. *Somnologie*, 13, 12-17.
- Schredl, M., Schmitt, J., Hein, G., Schmoll, T., Eller, S., & Haaf, J. (2006). Nightmares and oxygen desaturations: is sleep apnea related to heightened nightmare frequency? *Sleep and Breathing*, 10, 203-209.
- Siebeck, H. (1877). Das Traumleben der Seele. Berlin: Karl Habel Verlag.
- Spitta, H. (1883). Die Schlaf- und Traumzustände der menschlichen Seele (2. Auflage). Tübingen: Franz Fues.
- Strümpell, L. (1874). Die Natur und Entstehung der Träume. Leipzig: Veit Verlag.
- Volkelt, J. (1875). Die Traum-Phantasie. Stuttgart: Meyer & Zeller's Verlag.
- Weygandt, W. (1893). Entstehung der Träume. Leipzig: Gröbel & Sommerlatte.
- Wundt, W. (1893). Schlaf und Traum. In W. Wundt (Ed.), *Grundzüge der Physiologischen Psychologie* (4. Auflage) (pp. 534-546). Leipzig: Wilhelm Engelmann.