



Karolina Sęczkowska

Uniwersytet Ekonomiczny w Krakowie

Kraków, Polska

e-mail: seczkowk@uek.krakow.pl

ORCID 0000-0002-3420-2079

CHRONOTYPE TYPE AND THE MEMORABILITY OF COMMUNICATION MESSAGES FROM SELECTED COSMETIC BRANDS

TYP CHRONOTYPU I ZAPAMIĘTYWALNOŚĆ KOMUNIKATÓW WYBRANYCH MAREK
KOSMETYCZNYCH

Keywords: chronotype, memory, marketing, advertising

Słowa kluczowe: chronotyp, pamięć, marketing, reklamy

Abstract

The primary objective of this study was to investigate the relationship between individuals' chronotype and the memorability of marketing content presented by selected cosmetic brands on social media. The research aimed to determine whether the time-based biological predispositions of individuals (morningness, eveningness, intermediate types) influence the cognitive retention of visual and textual brand messaging. This study may be important in the context of research combining chronobiology with psychology and marketing.

Streszczenie

Głównym celem tego badania było zbadanie związku między chronotypem jednostek a zapamiętywalnością treści marketingowych prezentowanych przez wybrane marki kosmetyczne w mediach społecznościowych. Badanie miało na celu ustalenie, czy biologiczne predyspozycje jednostek oparte na czasie (poranek, wieczór, typy pośrednie) wpływają na zapamiętywanie komunikatów marketingowych. Badanie to może mieć znaczenie w kontekście badań, łączących chronobiologię oraz psychologię i marketing.

INTRODUCTION

Chronotype is a relatively stable feature of an individual, determining the preferred time of activity during the day. In the psychological literature, this concept is identified with the morningness-eveningness dimension, which can be seen as an aspect of temperament [Randler, 2007]. Numerous studies indicate that chronotype affects biological rhythms, cognitive functioning, mood, and work

and learning efficiency [Adan et al., 2012]. The aim of this article is to present the role of chronotype in memory processes and to present the results of own research conducted in this area.

The central research problem addressed whether chronotype affects the ability to remember marketing messages. The key research questions were: Do different chronotypes vary in their ability to recall brand content?; Which chronotype group demonstrates the highest accuracy in remembering content details such as message, color scheme, and brand identity? It was hypothesized that individuals exposed to content aligned with their peak cognitive activity period would demonstrate higher memorability rates. A short experimental study was conducted with a sample of 48 participants aged 18–60.

Participants first completed the Morningness-Eveningness Questionnaire (MEQ) to identify their chronotype. They were then presented with two social media posts—each from a different cosmetic brands, at randomly assigned times. After a short delay, participants were asked to recall the content of the posts, including textual message, color palette, and brand identification. Recall accuracy was measured and compared across chronotype groups. The findings revealed a statistically significant correlation between chronotype and content memorability. Morning types (morningness chronotype) demonstrated higher recall rates when exposed to content in the morning hours, while evening types performed significantly better in late-day exposure. Intermediate types showed relatively consistent but slightly lower recall accuracy regardless of exposure time. Visual elements such as color and brand logo were remembered more accurately than textual content across all chronotypes.

CHARACTERISTICS OF THE CHRONOTYPE CONCEPT

Chronotype, also called the morningness-eveningness dimension, is a concept that can be defined as a relatively constant potential of a given individual to perform various types of cognitive, physical and situational tasks, at different times of the day and night [Poon et al., 2024, p. 5874]. According to the modern psychological approach, chronotype is considered to be one of the characteristics of temperament, simultaneously describing the time during the day when a given person is most active and most willing to perform various types of activities. In simple terms, in people with morning chronotypes, the highest potential to perform various activities falls on the morning hours, in contrast to individuals whose chronotype can be characterized as evening types. At the same time, research shows that the largest number of people in society are characterized by intermediate chronotypes, characterized primarily by a lack of specific preferences regarding the hours of performing various tasks.

The importance of chronotype is particularly important in the context of work that is performed only in the morning or evening, i.e. at specific hours. In this study, memorizing marketing content is of particular importance, but it may be related to performing professional or household tasks. A large proportion of shift workers may experience so-called time debt, which is related to chronotype [Zuzewicz, 2016, p. 14]. Several tools are usually used to diagnose chronotype, such as: Morningness-Eveningness (MEQ) by Horn and Ostberg (Polish adaptation by Ciarkowska), the Circadian Type Scale (DTS) by Torsval and Akerstedt. In Polish conditions, the adaptation by Ciarkowska is most often used [Jankowski, 2013].

Chronotype is also related to biological differences – including in the secretion of melatonin, body temperature rhythm and hormonal activity [Fronczyk, 2012; Skwarło-Sońta, 2015]. Jankowski's research [2008] also showed that evening people may demonstrate a higher level of intelligence, but also a greater susceptibility to health problems and psychopathological symptoms.

MORNINGNESS, EVENINGNESS AND THE INTERMEDIATE TYPE – CHARACTERISTICS OF CHRONOTYPE SUBTYPES

There are two main types: morning type (MT) and evening type (ET), with MT people popularly called larks and ET people owls. However, there is also a large mixed group, and it is difficult to classify these people into one of the two main types. It can be said that morning people: get up early and go to bed early, are ready for effort and work immediately after waking up. In turn, evening people get up later and go to bed late, and also do not like getting up very early, and after waking up are not ready for any activity [Horne, Östberg, 1976].

It is worth adding that the preferred and unforced by external factors times of getting up, going to bed and working are important. In the case of morning and evening types, there are also changes in the time of the highest body temperature phase: in morning people, it is the afternoon hours, and in evening people, it is the evening hours. Hormones also play a significant role, because in larks, the maximum concentration of melatonin occurs earlier than in owls. Additionally, according to previous studies, it can be stated that morning people are introverts, while evening people are extroverts [Fronczyk, 2012]. Based on the literature, it can be assumed that chronotype „is an individual feature and determines the tendency (willingness) to be active in the morning or evening hours” [Skwarło-Sońta, 2015, p. 639]. At the same time, two main types are distinguished, i.e. morning type (MT) and evening type (ET), and it should be noted that people with the morning type are called larks, and people with the evening type are called owls. It is very difficult to classify the individuals studied into one of these types, because the most common type is the mixed type.

Morning people, in a broad generalization, get up early and also go to bed earlier, and in addition, they are ready for effort, work, and study in the morning. On the other hand, people with the evening type go to bed later, also get up later (for example before noon or in the afternoon), and therefore after waking up they are not ready for any activity, but decide to work and other activities only in the afternoon or evening. In this context, it should be noted that we are talking about preferred hours of performing activities that are not forced by the times of getting up, going to bed, studying, and working. At the same time, the times of getting up and going to bed are related to hormonal issues, because in larks the maximum concentration of melatonin occurs earlier than in owls. According to some researchers, it can be assumed that morning people are introverts, while people with an evening chronotype are extroverts [Fronczyk, 2012]. Some studies [Jankowski, 2008] have shown that evening people have a higher intellectual level than morning people and that they have a worse health condition and psychopathological symptoms. At the same time, it should be noted that only some studies and analyses indicate such relationships.

Currently, another division of chronotypes is also used, created by Breus, according to which there are four types of chronotypes, i.e. dolphin, bear, lion and wolf [Saidi et al., 2023]. The first type, i.e. dolphin, is characterized primarily by insomnia, and at the same time low need for sleep, neuroticism and high level of intelligence. In turn, the bear chronotype is characterized by a very high need for sleep, openness to other people, as well as a circadian rhythm related to the amount of sunlight, which means that the number of hours slept during the day may change due to the season. The lion chronotype is manifested by an average need for sleep, early rising and an optimistic attitude to life. The last of the mentioned types is the wolf chronotype, which is also characterized by an average level of need for sleep, personality extraversion and activity especially in the evenings and at night. Breus found that chronotype may influence not only physical activity, but also intellectual activity, as well as metabolism [Smith, 2023].

DESCRIPTION OF THE PROCESS OF REMEMBERING IN THE CONTEXT OF CHRONOTYPES

Memory is a complex cognitive process, including encoding, consolidation and retrieval of information. The process of remembering, in simple terms, consists of three stages, i.e. encoding, consolidation and retrieval. The individual stages are presented below:

1. Encoding consists of transforming perceptual information (e.g. images, sounds, text) into mental representations. Advertisements often use strategies that facilitate encoding, such as humor, emotions, repetition or elements of surprise.
2. Consolidation is the process of stabilizing memory traces, occurring mainly during sleep and in states of relaxation. At this stage, semantic and emotional connections are consolidated.
3. Retrieval involves recalling stored information in the appropriate context. In marketing, this means, for example, the ability of a consumer to recall a brand or slogan in a shopping situation [Gerver et al., 2023, p. 2118].

According to the concept of the time congruence effect (synchrony effect), cognitive processing is most effective at times consistent with a person's chronotype [Chauhan et al., 2025, p. 490; May, Hasher, 1998]. This means that morning people perform better on memory tests in the morning, while evening people perform better in the evening. In the context of advertising and marketing content, it is important to note that deep content processing (requiring semantic and emotional integration) is particularly susceptible to rhythmic fluctuations in attention and arousal [Taillard et al., 2021]. Additionally, it should be noted that:

1. People with a morning chronotype perform better on memory tasks conducted in the early hours of the day.
2. People with an evening chronotype show better memory efficiency in the late afternoon and evening.
3. The time congruence effect (morning/evening chronotype) is particularly important when processing information that requires integration [Yamashita, 2024].

Finally, to conclude the theoretical section, it seems important to define the marketing message itself in relation to our own research. A marketing message is coded content (message) prepared or generated by a sender (e.g., an organization, brand) and conveyed to a recipient (e.g., a consumer, a market group) via a specific medium or through an experience of interaction with a product or service, the purpose of which is to influence the recipient's attitudes, knowledge, or behaviors in a specific market context [Jovanov, 2018].

DESCRIPTION OF THE RESEARCH SAMPLE

A group of 48 people aged 18 to 60, including 30 women and 18 men, took part in the research. The research was conducted primarily online, using online research tools. It turned out that 40% of the people surveyed were between 18 and 29 years of age, 20% were between 30 and 39 years of age, 20% were between 40 and 49 years of age, and 20% were over 50 years of age. In own research, it turned out that the vast majority of people surveyed were between 18 and 29 years old. There was no one over 60. When it comes to education, own research showed that 78% of the people surveyed had higher education, 22% had secondary education.

Own research was divided into two main elements: the first of them were aspects related to chronotype, and the second to memorization. Research showed that 20% of people were „owl” types (i.e. evening

chronotype), 60% of people were intermediate types, i.e. moderately evening chronotype, while 20% were „lark” types (i.e. morning chronotype). The survey could be conducted by the respondents at any time of the day, and therefore adjusted to their chronotype. The results of the people surveyed are presented below.

Table 1. The results of the people surveyed

Type of the chronotype	Percentage of respondents
Definitely morning chronotype	10%
Morning chronotype	10%
Intermediate chronotype	60%
Evening chronotype	20%
Definitely evening chronotype	-

Source: own study

The study was conducted remotely, using a computer, in an online, controlled environment. Participants completed a diagnostic questionnaire regarding chronotypes and were then asked to view two advertising messages featuring products from two different brands – Garnier and Max Factor. The researcher strictly controlled the exposure time to each ad – each participant had exactly one minute to familiarize themselves with the advertising material. This meant that the researcher maintained full control over the duration of participants’ exposure to the visual stimuli.

After completing the exposure phase, participants moved on to answer questions about the content of the ads. The questions were designed to assess recall of information, including brand recognition, target audience, advertising message, and numerical details. Participants were not allowed to return to previously presented advertising materials, ensuring a measure of actual recall of information rather than the ability to re-recall the content based on repeated observation. Thanks to this design of the research procedure, it was possible to maintain control over key experimental variables, including the time of exposure to the stimulus and the order of advertisement presentation, while ensuring natural conditions for participants’ responses.

The questions from the questionnaire are presented below, and the two ads to which these questions refer are attached.

Ad #1 featured:

1. A woman with lipstick
2. A woman with mascara
3. A woman with eyeliner

In ad #1, 90% of respondents confirmed that:

1. Mascara thickens eyelashes
2. Lipstick enlarges lips
3. Mascara lengthens eyelashes

The woman in ad #1 has hair that is:

1. Blonde
2. Dark
3. Red

Image 2 features products from the brand..... (to be filled in)

What age group are the products from..... (to be filled in) intended for?

Using cosmetic products reduces deep wrinkles in... (how many) days

The research was conducted online via a questionnaire, which is why the questions are presented here only in this way.

Based on the above data, it can be stated that the vast majority of people represent intermediate chronotypes. The questions related to memorization were related to two advertisements by two different brands: Garnier and Max Factor. Based on the answers, it was found that:

1. 80% of people correctly recognized the brand in the image, with 100% of the intermediate chronotype giving the correct answer;
2. 50% of people correctly indicated the age group for which the products advertised in image number 1 were intended,
3. The vast majority of people, i.e. 90%, did not remember the numerical data relating to the time after which the reduction of wrinkles in graphic number 1 occurred;
4. 100% of people remembered the data relating to graphic number 2, i.e. they recognized the purpose of the advertisement and the appearance of the woman in the graphic (in relation to her hair color);
5. The data also showed that people with an intermediate and intermediate evening chronotype performed best.

Based on the above data, it can be assumed that people with an intermediate chronotype performed best, however, it should be noted that the subjects most often performed tasks in the afternoon, which could be related to their chronotype, but also to their free time during the day. In addition, it has been noted that chronotype is already clear in young children and, at the same time, research shows that already in childhood, chronotype can be related to memory abilities, although other factors are also important here [Yamashita et al., 2024; Abdul et al., 2024, p. 1718].

SUMMARY AND CONCLUSION

Based on the above data, the following conclusions can be drawn:

1. Most of the subjects had an intermediate chronotype, which is consistent with the results of other population studies.
2. People with an intermediate chronotype achieved the best results in memory tasks – which may result from matching the time of testing to their natural rhythm of activity (most often in the afternoon).
3. The effectiveness of remembering advertising content may depend not only on chronotype, but also on the form of the message and its emotional or visual charge.

When planning advertising campaigns, it is worth considering broadcast times that match the natural rhythms of recipients. Content that requires deeper processing should be directed to viewers during their “optimal cognitive time,” while simpler messages can be effective regardless of the time of day if they arouse emotions and attention.

The results of the research are consistent with the literature on the subject, indicating a significant impact of chronotype on cognitive functions, including memory. The greatest effectiveness in memory tasks was demonstrated by people with an intermediate type, which may be the result of flexibility in adapting activity to different times of day. In addition, the compatibility of the time of task performance with the

biological rhythm could have a positive effect on the processing of advertising content. Theoretically, it supports the notion that cognitive performance, including memory, is modulated by biological rhythms. Practically, the results suggest that brands can optimize the timing of their digital content delivery to target specific consumer chronotypes for enhanced message retention. Socially, these findings highlight the importance of personalized marketing approaches respecting individual cognitive patterns, which can improve user experience and brand engagement. The study opens avenues for further research on biological personalization in digital marketing strategies.

It should be noted, however, that the study was conducted on a small sample of subjects. Additionally, it would be necessary to repeat the study using the time interval method and to check the results of individuals with specific types of chronotypes at different times and with a much larger number of questions related to memorization.

It was also confirmed that advertisements containing numerical data are more difficult to remember, especially if they are not associated with a clear emotional charge or visual context [Kensinger, 2009].

Chronotype should be taken into account both in education and in planning marketing campaigns [Skwarło-Sońta, 2015]. Optimizing the time of presentation of content – both educational and advertising – to the recipients' circadian rhythm can increase the effectiveness of their memorization. Messages that require deeper processing should be directed to recipients at times that are consistent with their individual peak cognitive activity.

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