

Why do owls have it worse? Mediating role of self-perceptions in the links between diurnal preference and features of mental health

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Conflict of interest

The authors declare no conflict of interest.

Abstract

Recent research provides evidence for the negative social perceptions of evening chronotypes and their consequences on mental health. However, there is a lack of studies indicating whether these negative, socially shared beliefs may become internalized in negative self-perceptions of evening-types (E-types). The present article provides a seminal empirical analysis of the role of self-liking and self-competence in the associations between chronotype and both depressiveness and well-being. In the first part of the study, the participants completed the Composite Scale of Morningness (CSM). On the basis of the chronotype cutoff criteria for CSM distribution, 100 individuals were classified as morning-types (M-types) and 66 individuals as E-types. Therefore, 166 participants (80 women and 86 men) aged 18 to 36 years ($M \pm SD$: 29.27 ± 4.81), took part in the second part of the study and completed questionnaires measuring self-liking, self-competence, life satisfaction, positive and negative affect, and depressiveness. Results show that E-types scored lower in self-liking, self-competence, and subjective well-being, and higher in depressive symptoms than M-types. Controlling for age and gender, we obtained significant mediation effects, showing that the relationship between chronotype and subjective well-being might stem from the lower levels of self-liking and self-competence among E-types and that the relationship between chronotype and depressive symptoms might stem from the lower level of self-liking among E-types. Our results suggest that self-liking and self-competence are important factors of lower well-being and higher depressiveness reported by E-types. Socially shared stereotypes of M-types and E-types can be internalized by the extreme chronotypes, which may significantly affect their psychological health.

Keywords: chronotype; self-stigma; self-liking; self-competence; depressive symptoms; well-being

1. Introduction

Chronotype refers to individual preferences for the timing of functioning, especially sleep and wake times. Some individuals have a preference for going to bed and waking up early (Morning-types [M-types]), whereas others prefer a later daily schedule (Evening-types [E-types]). The former are commonly labeled “morning larks” or “early birds,” and the latter are often referred to as “night owls.” However, the vast majority of the human population is intermediate in this regard (referred to as Neither-type [N-types]) and does not display distinct circadian preferences (Adan et al., 2012). Manifestations of chronotype include both sleep timing (i.e., when one prefers to sleep) and preferences for a given time of day for mental and physical performance, whereas sleep duration is considered a different construct (Randler et al., 2017).

In addition to the differences in the sleep–wake patterns, chronotypes differ in many other physiological and psychological features, such as hormone secretion (Maierova et al., 2016), mood (Jankowski & Zajenkowski, 2016), personality (Randler et al., 2017), temperament (Gorgol et al., 2022a), cognitive performance (Facer-Child et al., 2018), burnout (Waleriańczyk et al., 2020), and affective functioning (Gao et al., 2019). Chronotype is also consistently associated with subjective well-being (Gorgol et al., 2022b) and depressive symptoms (Taylor & Hasler, 2018): M-types report greater well-being, and E-types report higher depressive symptoms.

The current literature offers a number of possible explanations for this generally maladaptive picture of consequences of evening preferences. First, the evening chronotype might share some common genetic bases with both depressive cognitions and trait anxiety (e.g., Liberman et al., 2017); however, these effects do not seem to be sufficiently strong to explain the pronounced relationships between chronotype and mental health. Second, because of the morning orientation of the social clock, manifested in most school and work schedules, E-types are often forced to operate at a nonoptimal time of the day. This can lead to various negative consequences, referred to as *social jetlag* (Wittmann et al., 2006), and be associated with worse sleep quality and insufficient sleep duration. Nevertheless, the mechanisms listed above, including social jetlag, seem to explain the links between eveningness and its maladaptive outcomes only partially (see e.g., Rodríguez Ferrante et al., 2023). Recent research suggests yet another process which may be responsible for these results. It shows that the negative consequences of evening preferences may be explained by negative social perceptions about E-types (Dietch et al. 2023; Stolarski & Gorgol, 2022).

The above-mentioned studies indicate that E-types are perceived as less competent and less warm (e.g. less friendly, honest, sincere) than M-types (Stolarski & Gorgol, 2022). Moreover, people generally tend to perceive E-types in a negative manner, describing them as more undisciplined, lazy, unhealthy, and more unpredictable than M-types (Dietch et al., 2023). Another study showed that supervisors tend to perceive their employees who prefer a later start time than others as less conscientious (Yam et al., 2014). Such unfavorable attitudes and stereotypes may lead to widespread prejudices and adverse behaviors toward E-types, which in turn may result in their lower life satisfaction and higher depressiveness. However, there is a lack of research indicating whether these negative, socially shared beliefs may become internalized and consolidated in negative self-perceptions or self-stigma among E-types, and whether this mechanism can explain their elevated depressiveness and lower well-being.

One of the most commonly cited theories providing a conceptual framework for analyzing the content of self-esteem is the one proposed by Tafarodi and Swann (1995). The authors distinguished between two basic dimensions of global self-esteem: self-liking and self-competence. *Self-liking* refers to the experience of oneself as a social being, a good or bad person. It is related to one's general sense of worth as an individual with social significance (e.g., "I feel good about who I am"). *Self-competence* is the experience of oneself as a causal agent who can pursue various desired outcomes. It refers to an overall positive or negative evaluation of oneself as a source of strength and effectiveness (e.g., "I perform very well at a

number of things”). Research indicates that lower self-esteem is associated with higher anxiety, depression (Nguyen et al., 2019), and lower life satisfaction (Du et al., 2017).

Because none of the previous studies used the abovementioned approach for the analysis of self-stereotyping of chronotypes, in this study we attempted to fill this gap. Moreover, we aimed to verify whether self-stereotyping in terms of self-liking and self-competence dimensions can mediate the relationship between chronotype and subjective well-being and depressive symptoms. Therefore, the main aim of this study was to examine the associations between self-liking, self-competence, chronotype, subjective well-being, and depressive symptoms. We hypothesized that:

1. E-types report lower self-liking and self-competence than M-types;
2. E-types report lower subjective well-being and higher depressive symptoms than M-types;
3. Self-liking and self-competence mediate the relationships between chronotype and subjective well-being;
4. Self-liking and self-competence mediate the relationships between chronotype and depressive symptoms.

One may wonder why we decided to treat self-perceptions as a mediator of the link between chronotype and mental health and not the other way around. This decision was supported by the results of numerous longitudinal studies (see Sowislo & Orth, 2013, for a meta-analysis) showing that the quasi-causal effect of self-esteem (which may be treated as a proxy for self-perceptions measured in the present article) on depression was markedly stronger than the effect of depression on self-esteem.

2. Methods

2.1 Participants

The study was conducted in the spring/summer of 2023. The data used in the study were collected exclusively for the purposes of testing the hypothesis mentioned above and were not previously used in any other article.

The first part of the study was conducted with a group of 767 Polish individuals. In this part, the participants completed only the Polish adaptation of the Composite Scale of Morningness (CSM; Jankowski, 2015a) and questionnaire collecting their demographic data (e.g., gender, age, etc.). Then, only the individuals with an extreme morning and evening chronotype were invited to participate in the second part of the study and completed the questionnaires described below. Following the recommendations formulated by Jankowski (2015a), the cutoff for the E-types was 24 or fewer points, and for the M-types was 43 or more points. Using these criteria, 100 individuals from the first part of the study were classified as M-types, and 66 individuals were classified as E-types. Therefore, the second part of the study was conducted on 166 individuals (80 women and 86 men) aged between 18 and 36 years ($M \pm SD: 29.27 \pm 4.81$).

All participants received an invitation via email if they matched the inclusion criteria: Poland was their country of origin, they were between 18 and 36 years old, and they reported a lack of history of physical or mental disorders. All participants were recruited online, using random sampling by a professional company that specializes in panel research, and completed questionnaires (described below) through the Qualtrics platform.

Over 18% of participants lived in a rural area, 7% lived in a small town (up to 19,000 residents), 10% lived in a medium-sized town (20,000–49,000 residents), 14% lived in a small city (50,000–99,000 residents), 28% lived in a medium city (100,000–499,000 residents), and 23% lived in a big city (more than 500,000 residents). Detailed demographic characteristics of the participants are presented in Table 1.

All participants gave written informed consent before taking part in the study. The research was conducted in line with the ethical standards of the Declaration of Helsinki, and the procedure was accepted by the Research Ethics Committee at the Faculty of Psychology, University of Warsaw.

Table 1.

Sociodemographic characteristics of the participants.

Variable	Category	N	%
Gender	Women	80	48%
	Men	86	52%
Education	Primary education	1	1%
	Lower secondary education	1	1%
	Vocational education	9	5%
	Secondary education	73	44%
	University degree	82	49%
Marital status	Single	56	34%
	Non-marriage relationship	43	26%
	Married	63	38%
	Divorced	4	2%

2.2 Measures

Chronotype was measured with the CSM, the Polish adaptation provided by Jankowski (2015a). It consists of 13 items referring to various aspects of circadian functioning. The total CSM score was computed as a sum of responses to all its items; scores range from 13 to 55. The internal consistency of the CSM in our study was $\alpha = .97$.

Self-liking and self-competence were measured with the Self-Liking and Self-Competence scale (Tafadori & Swann, 1995) in Polish translation (see <https://osf.io/hfg7r>). It comprises 20 items (10 indicate self-liking, and 10 indicate self-competence) that assess the degree of agreement with global statements about participants' self-liking and self-competence, scored with a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The total score on each subscale ranges from 10 to 50. The internal

consistency of the self-liking scale in our study was $\alpha = .94$, and that of the self-competence scale was $\alpha = .91$.

Life satisfaction was measured with the Polish language version of the Satisfaction with Life Scale (SWLS; Jankowski, 2015b). It comprises five items that address global cognitive judgments of satisfaction with one's own life, scored with a 7-point Likert scale ranging from 1 ("completely disagree") to 7 ("completely agree"). The total SWLS score was computed as a sum of responses to all its items; scores range from 5 to 35. The internal consistency of the SWLS in our study was $\alpha = .93$.

Positive affect (PA) and negative affect (NA) were measured with the Polish-language version of the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). It consists of 20 items (10 indicate PA, and 10 indicate NA) that assess the degree to which participants experienced each particular feeling or emotion over the past week, scored with a 5-point Likert scale from 1 ("not at all or very slightly") to 5 ("extremely"). The total score in PA and NA ranges from 10 to 50. In our study, the internal consistency of the PA scale was $\alpha = .90$, and that of the NA scale was $\alpha = .86$.

Subjective well-being (SWB) was defined as life satisfaction, feeling more positive emotions, and feeling less negative emotions (Diener et al., 1999). Based on the theoretical definition, SWB was calculated using the SWLS and PANAS scales (see Doğan et al., 2012). To unify the contribution of each questionnaire that has different response scales, we converted the variables into standardized scores (i.e., Z-scored - each individual score was subtracted from the sample mean and divided by the standard deviation of that variable in the sample) before calculating the overall SWB score. Hence, SWB was calculated with the following formula: $SWB = zSWLS + z(PA - NA)$.

Depressive symptomatology was assessed with the Patient Health Questionnaire-9 (PHQ-9) (Tomaszewski et al., 2011) using the Polish translation developed by the MAPI Research Institute. It consists of nine items that assess the frequency of depressive symptoms described in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association) over the past 2-week period, scored with a 4-point Likert scale from 0 ("not at all") to 3 ("nearly every day"). The total PHQ-9 score is computed as a sum of responses to all its items; it ranges from 0 to 27. The internal consistency of PHQ-9 in our study was $\alpha = .89$.

2.3 Statistical analyses

In all the analyses, the M-type category was coded as '1' whereas the E-type category was coded as '2'. First, we calculated descriptive statistics (means and standard deviations). Then, we used *t-tests* to evaluate the differences in self-liking, self-competence, SWB, and depressive symptoms between M-types and E-types. For the estimation of the magnitude of these differences, we computed Cohen's *d* values (Cohen, 1992). Next, we calculated bivariate correlations between all the studied variables. Finally, to verify our main hypothesis and determine whether the associations between chronotype and SWB, as well as between

chronotype and depressive symptoms, were mediated by self-liking and self-competence, we conducted a standard mediation analysis. In all tested mediation models, age and gender were included as covariates.

All statistical analyses were conducted using SPSS for Windows (Version 26.0.0.1), along with Hayes's (2017) PROCESS macro Version 3.5 for mediation analyses (Model 4).

3. Results

3.1 Analysis of the associations between measured variables

The score distributions for self-liking, self-competence, subjective well-being, and depressive symptoms between M- and E-types are depicted in Figure 1. Additionally, Table 2 provides a summary of the statistics, as well as the results of two-sided t-tests comparing the differences between the two chronotype groups. As shown in Table 2, M-types (coded as 1) scored significantly higher on self-liking, self-competence, and subjective well-being compared to E-types (coded as 2), whereas E-types scored significantly higher in terms of depressive symptoms compared to M-types. Following recommendations by Cohen (1992), the observed differences between M- and E-types yield effect sizes of a high magnitude (see Table 2 for details). Therefore, both Hypotheses 1 and 2 were supported.

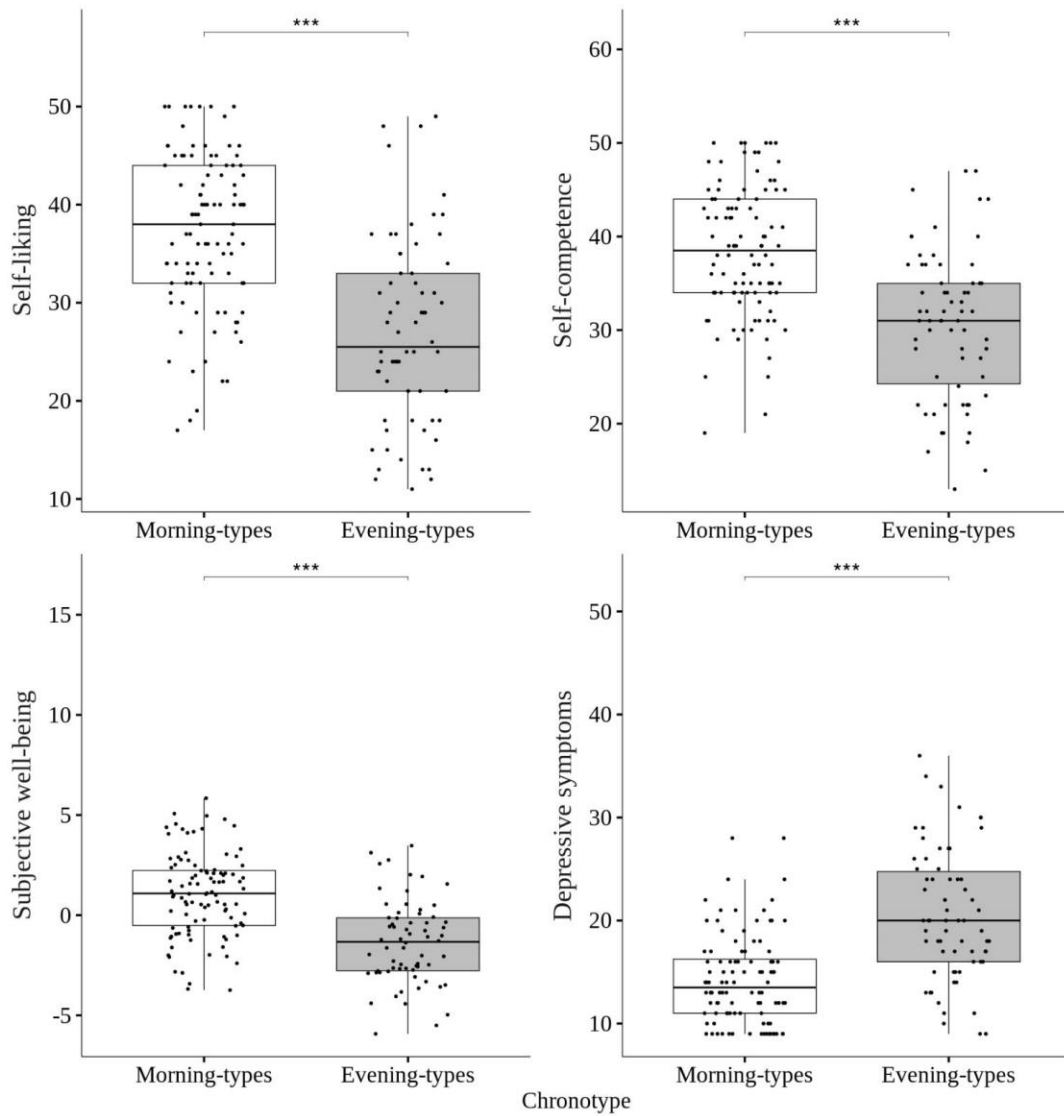


Figure 1. Boxplots for self-liking, self-competence, subjective well-being, and depressive symptoms between morning-types and evening-types (N=100 and N=66 respectively); *** indicates $p < .001$;

Table 2.

Descriptive statistics and two-sided t-test results for differences between morning type (MT) and evening type (ET) chronotype groups

Variable	N _{MT}	N _{ET}	M _{MT}	SD _{MT}	M _{ET}	SD _{ET}	M _Δ	M _Δ 95% CI	t	df	p	Cohen's <i>d</i>	Cohen's <i>d</i> 95% CI
1 Self-liking	100	66	37.28	7.96	27.02	9.48	10.26	[7.57, 12.96]	7.53	164	<.001	1.17	[0.83, 1.58]
2 Self-competence	100	66	38.40	6.90	30.55	7.95	7.85	[5.56, 10.15]	6.75	164	<.001	1.05	[0.75, 1.41]
3 Subjective well-being	100	66	1.03	2.10	-1.37	2.08	2.40	[1.75, 3.05]	7.24	164	<.001	1.15	[0.82, 1.52]
4 Depressive symptoms	100	66	14.26	4.37	20.47	6.35	-6.21	[-7.98, -4.43]	-6.94	105	<.001	-1.14	[-1.50, -0.81]

Note: N_{MT} = MT count; N_{ET} = ET count; M_{MT} = MT mean; SD_{MT} = MT standard deviation; M_{ET} = ET mean; SD_{ET} = ET standard deviation; M_Δ = difference between MT and ET

3.2 Mediation analyses

We conducted two multiple mediation analyses to test whether chronotype was associated with SWB and depressive symptoms, respectively, through both self-liking and self-competence. Age and gender were introduced into the models as control variables. For the bivariate correlations between the variables see supplementary online material (Table S1).

In the first model, chronotype was a direct predictor, self-liking and self-competence were introduced as mediators, and SWB constituted the outcome variable. As shown in Figure 2, both self-liking and self-competence partially mediated the association between chronotype and SWB. The total indirect effect of chronotype on subjective well-being through self-competence and self-liking amounted to -2.03 (95% CI $[-2.69, -1.41]$). The ratio of indirect to total effect amounted to .81; thus, approximately 80% of the effect of chronotype on well-being was explained by self-liking and self-competence.

The mediator effect for self-liking was -1.22 (95% CI $[-1.83, -0.70]$) and for self-competence was $-.81$ (95% CI $[-1.34, -0.39]$). The ratio of indirect to total effect amounted to .49 for self-liking and to .32 for self-competence. The results support Hypothesis 3 about the mediating role of self-liking and self-competence in the relationship between chronotype and SWB.

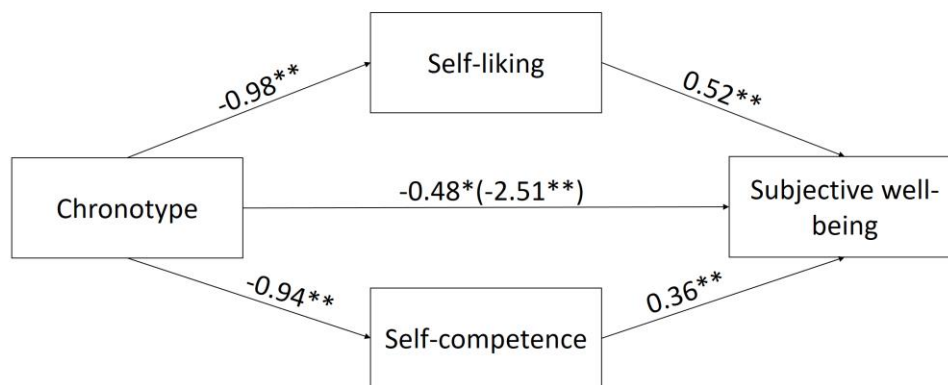


Figure 2. Mediation of the association between chronotype and subjective well-being by self-liking and self-competence (controlling for gender and age).

Note. Chronotype was coded as follows: 1 = M-types, 2 = E-types. The values presented in the figure are standardized effects derived from mediation analysis conducted using the Process software (Hayes, 2017). $*p < .05$. $**p < .01$

In the second model, chronotype was a direct predictor, self-liking and self-competence were treated as mediators, and depressive symptoms constituted the outcome variable. As shown in Figure 3, only self-liking partially mediated the association between chronotype and depressive symptoms. The individual mediator effect was 3.55 for self-liking, 95% CI $[2.04, 5.38]$. The ratio of indirect to total effect for self-liking amounted to .55. The results partially corroborate Hypothesis 4, supporting the prediction about the mediating role of self-liking (but not self-competence) in the relationship between chronotype and depressive symptoms.

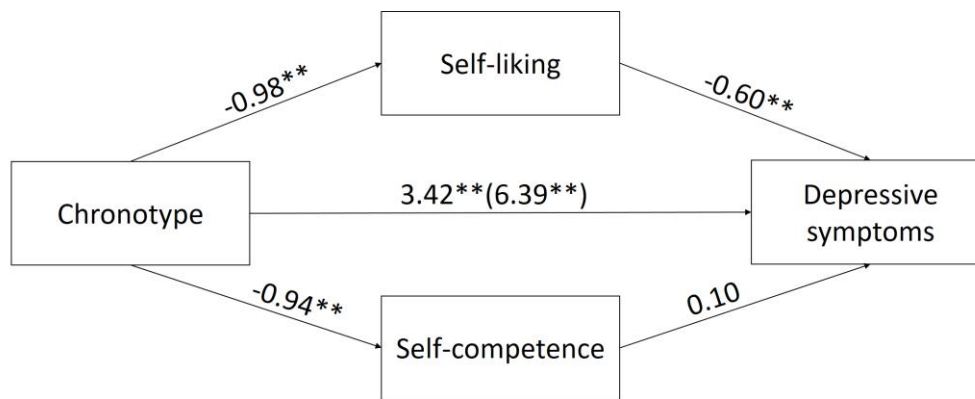


Figure 3. Mediation of the association between chronotype and depressive symptoms by self-liking and self-competence (controlling for gender and age).

Note. The values presented in the figure are standardized effects derived from mediation analysis conducted using the Process software (Hayes, 2017). ** $p < .01$

4. Discussion

In this study, we attempted to provide a seminal insight into the issue of self-perceptions of extreme chronotypes using the self-liking and self-competence dimensions (Tafarodi & Swann, 1995). We also tested whether self-liking and self-competence mediate the relationship between chronotype and SWB, as well as between chronotype and depressive symptoms. To the best of our knowledge, this is the first study to demonstrate how M-types and E-types perceive themselves within the framework of the self-liking and self-competence dimensions.

Research carried out to date has focused mainly on the biological and social bases of the relationship between chronotype and well-being as well as between chronotype and depressive symptoms (Wittmann et al., 2006; Etain et al., 2011), with specific reference to clock gene expression (Jones et al., 2019), natural light exposure (Wright et al., 2013), and misalignment between circadian and social clock (Wittmann et al., 2006) in E-types. Both expressions of clock genes and the natural light–dark cycle can underpin the human chronotype and affect mood and emotion regulation via neurobiological pathways (Blume et al., 2019). Moreover, higher social jetlag in E-types is associated with worse sleep quality and insufficient sleep durations, which have a substantial impact on well-being and depressiveness (Zhai et al., 2018). In the study, we focused on another possible pathway leading to the clearly maladaptive picture of the nomological network among E-types. Recent studies have uncovered a pronounced social stigma attached to E-types, showing that M-types are perceived in a more positive manner, both at implicit and explicit levels (Dietch et al., 2023; Stolarski & Gorgol, 2022). The latter study also shows that M-types are generally perceived as more competent and assertive, while E-types are more often labeled lazy, less conscientious, and less reliable. Here, we attempted to determine whether and to what extent the socially shared beliefs about the nature of extreme chronotypes are shared by themselves and, if they are, to assess the magnitude of the consequences of self-perceptions on the mental health of “morning larks” and “night owls”.

Consistent with our major prediction, we found that M-types scored significantly higher in both self-liking and self-competence. The magnitude of these differences was large (with Cohen's d s > 1.0), additionally indicating the robusticity and meaningfulness of these results. Moreover, we also found that higher self-liking and self-competence partially mediated the link between chronotype and SWB and that higher self-liking partially mediated the link between chronotype and depressive symptoms. Against our expectations, we did not find a mediating effect of self-competence in the relationship between chronotype and depressive symptoms - the results show that self-competence did not predict depressiveness when self-liking was included in the model.

In the correlational analyses, self-competence proved to be associated with both chronotype and well-being; hence, its mediating role in the relationship between the latter two seemed highly probable. The lack of the mediation effect could stem from the high overlap between the self-perception dimensions. On the other hand, in the case of SWB, both features of self-esteem proved significant and meaningful mediators, providing evidence for an incremental mediating effect of self-competence over and above self-liking. We believe that the difference in the set of mediators may stem from the distinct nature of each of these features. The classic Maslow's (Maslow, 1970) hierarchy of needs depicts the need for esteem as one of the *deficiency-needs* (*D-needs*) that elicit motivation to change the current state mainly via the experience of discomfort and negative emotions, which disappears if the need gets satisfied. Above the need for esteem, Maslow placed self-actualization, which has been considered a *being-need* (*B-need*), directing an individual to make the fullest use of their talents and interests. The need for self-actualization itself can never be satisfied; however, pursuing this need can result in deep satisfaction and elevated well-being (Kaufman, 2023). High self-liking may stem from both satisfaction of the need for esteem (allowing one to avoid negative emotions associated with low esteem) and from self-realization (associated with deep personal satisfaction and flow capacity). Hence, its role is twofold: It appears to (1) protect against depressiveness and (2) enhance well-being, which is reflected in its significant mediating role in both tested mediation models. Unlike self-liking, *self-competence* refers to a sense of self-directedness and personal effectiveness. These features may markedly contribute to the sense of realization of personal goals and seem to be vital aspects of self-actualization, leading to greater well-being but not necessarily to lower depressiveness, which may depend more strongly on the satisfaction of the D-needs.

Self-esteem is a crucial factor that affects individuals' self-evaluation (Leary & Baumeister, 2000). It is positively related to SWB (Zhao et al., 2014) and negatively related to depressiveness (Nguyen et al., 2019). In this study, we focused on two dimensions of self-esteem: self-liking and self-competence (Tafarodi & Swann, 1995). In addition to the impact of self-liking and self-competence on mental health, research also shows that they may also be related to cognitive ability and academic achievement (Mar et al., 2006). Moreover, research shows that lower self-esteem may be a predictor of higher depressiveness and poorer sleep quality (see e.g., Conti et al., 2014). Therefore, developing these dimensions e.g., through some clinical interventions or via psychosocial skills training, can contribute to improving sleep

quality, affective functioning, and well-being as well as supporting other aspects of life and functioning, especially among E-types.

The present results seem to extend the previous findings regarding the possible mechanisms responsible for the well-established link between morning chronotype and various features of mental health (Taylor & Hasler, 2018). Nevertheless, it should be noted that our findings might be to some degree redundant to those reported in earlier studies seeking the mediators of the association. First, self-perceptions are markedly associated with personality (and particularly with neuroticism and certain facets of conscientiousness; see Mar et al., 2006). Therefore, the mediating effects of self-perceptions reported here may to some extent overlap with the research in which the effects of morningness on life satisfaction were mediated by neuroticism and conscientiousness (Drezno et al., 2019).

Moreover, recent results highlight the mediating role of social support in the links between morningness and well-being (Gorgol et al., 2022a, 2022b). Although we were not able to find any studies directly linking self-liking and self-competence to social support, Bédard et al. (2014) provided evidence that self-evaluations may impact such outcomes as depression and anxiety via diminished social support. Hence, it is possible that a serial mediation model in which morning chronotype leads to greater perceived social support which in turn translates into more favorable self-perceptions, ultimately leading to elevated well-being and lower depressiveness, would illustrate the actual process responsible for the present results in a more accurate way.

This study has some limitations. First, it had a cross-sectional design; thus, any claims regarding the causality of the studied associations remain speculative. The causal chain assumed by the mediation seems the most intuitive, consistent with the hypothesis of internalization of socially shared beliefs. It has some support in earlier studies (see Gorgol et al. (2022c) for the causal effects of chronotype on depressive symptoms, and the meta-analysis by Sowislo and Orth (2013), for the longitudinal effects of self-esteem on depression). However, it still seems possible that low self-esteem, naturally accompanied by an external locus of control and negative emotions (Yu & Fan, 2016), may result in unhealthy sleeping habits (Rucas & Miller, 2013) and bedtime procrastination (Kadzikowska-Wrzosek, 2018), indirectly leading to a shift toward eveningness. Second, the assessment of measured variables was based on self-report information and thus is subject to a number of potential biases (e.g., social desirability bias). Third, our results are limited only to the Polish context. Investigating the similar effect regarding chronotype-related stereotypes in different cultures could verify whether our major findings are culturally independent and whether they can be broadly generalized. In addition to such cross-cultural replications of the present findings, future research should seek to determine whether the consequences of self-perception biases among extreme chronotypes are also meaningful for other chronotype-related features of adaptation, including educational achievement (Zerbini & Mellow, 2017) or job burnout (Waleriańczyk et al., 2020). Another potentially interesting line of research is the search for protective factors against the negative self-perceptions of E-types. Possible candidate variables for such protective factors could be identified among variables that have been proven to attenuate other

negative correlates of evening preferences (e.g., mindfulness (Gorgol et al., 2022d)) or adaptive correlates of eveningness, such as both cognitive intelligence (Preckel et al., 2011) and certain emotional abilities (Stolarski et al., 2016).

In the light of the present data, it seems crucial to eliminate both the social and individual stigma associated with evening functioning. However, just as in the case of some other stereotypes, certain aspects of the stereotype's content could, in fact, be accurate. Research provides quite strong evidence for higher levels of “dark” personality traits among E-types (Jonason et al., 2013) and greater conscientiousness among M-types (Randler et al., 2017). These differences may be manifested in real-life behaviors and may accumulate in both general social beliefs about extreme chronotypes and their self-perceptions. Nevertheless, such beliefs, even if to a certain degree supported at the group level, often remain harmful and may be fraught with unjust consequences (Yam et al., 2014) for particular individuals.

5. Conclusions

This study provides insight into the self-perceptions of chronotypes using the dimensions of self-liking and self-competence. Our analyses showed that M-types assessed themselves higher on these two dimensions than E-types. Furthermore, self-liking and self-competence proved to be important factors underpinning lower well-being and higher depressiveness reported by E-types. Thus, the self-stigma of E-types is plausibly associated with their poorer mental health. The magnitude of the effects observed in this study suggests that negative self-perception could be an important cause of the negative psychological consequences of an evening chronotype. Enhancing self-liking and self-competence may be especially important for E-types who report lower well-being and higher depressiveness. Nevertheless, socially shared stereotypes associated with diurnal preferences (Dietch et al., 2023; Stolarski & Gorgol, 2022) may markedly hinder such efforts. This study can be a starting point for social and educational programs that would allow the overthrowing of negative stereotypes about E-types.

Author Contributions

JG: conceptualization, methodology, formal analysis, funding acquisition, investigation, writing—original draft, writing—review and editing, visualization, project administration

MS: writing—original draft, writing—review and editing, supervision

JN: formal analysis, visualization, writing—review and editing

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