

Hierarchical Linear Modeling of Body Surveillance Frequency: Linking Media Consumption Intensity and Internalized Thin-Ideal in Adolescent Females

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ABSTRACT

Objective: The objective of this study was to utilize a multilevel statistical framework to examine how individual-level media consumption intensity and internalized thin-ideal uniquely predict body surveillance frequency, and to determine whether the magnitude of these relationships varies significantly across distinct high school contexts among adolescent females.

Methods and Materials: A cross-sectional design was employed, utilizing a sample of $N = 1348$ Hungarian adolescent females nested within multiple high schools. Participants completed a battery of validated self-report psychometric instruments, including a media exposure inventory, the Sociocultural Attitudes Towards Appearance Questionnaire-4 to assess thin-ideal internalization, and the surveillance subscale of the Objectified Body Consciousness Scale. Data were analyzed using Hierarchical Linear Modeling to appropriately partition the variance between individual psychological traits (Level 1) and the overarching sociocultural school contexts (Level 2), while controlling for baseline Body Mass Index.

Findings: The calculation of the unconditional null model yielded an Intraclass Correlation Coefficient of 12.8%, confirming that a significant proportion of the variance in body surveillance frequency is attributable to between-school differences. Main effects modeling demonstrated that both intense media consumption and the internalized thin-ideal were robust, significant positive predictors of body surveillance at Level 1. Random slopes analyses revealed that the predictive relationship between the internalized thin-ideal and body surveillance varied significantly across different educational environments; conversely, the random slope for media consumption intensity was not statistically significant, indicating a uniformly detrimental effect across all schools. Additionally, Body Mass Index exhibited a significant positive association with heightened self-surveillance behaviors.

Conclusion: Body surveillance among adolescent females is a deeply context-dependent phenomenon where the psychological harm of internalizing societal beauty standards is significantly magnified or buffered by the specific sociocultural climate of the school environment, underscoring the critical need for systemic, whole-school interventions.

Keywords: *Body Surveillance; Hierarchical Linear Modeling; Media Consumption; Thin-Ideal Internalization; Adolescent Females*

1. Introduction

The construct of body image represents a highly complex, multidimensional psychological phenomenon that encompasses an individual's cognitive evaluations, affective responses, and behavioral investments regarding their own physical appearance. In contemporary society, disturbances in body image have transcended specific clinical subpopulations to become a pervasive normative discontent, profoundly impacting physiological and psychological well-being across diverse demographic groups. The deleterious effects of body image dissatisfaction extend well beyond mere aesthetic concern; for instance, entrenched body image issues significantly impair the overarching quality of life and perceived marital empathy among women facing severe health crises, such as breast cancer (KavehFarsani & Worthington Jr, 2024). Furthermore, negative self-perceptions regarding physical appearance have been systematically linked to severe social interaction anxiety and debilitating sleep disturbances, particularly among overweight individuals who frequently face pervasive weight-based stigmatization (Batool et al., 2025). Beyond clinical and psychological distress, culturally endorsed body image norms and the consequent strategies utilized for body management exert a profound influence on fundamental lifestyle behaviors, including acting as significant determinants of women's willingness to engage in organized sports and physical activities (Norozi et al., 2018). Ultimately, the intricate relationship between an individual's body perceptions and their overarching psychological well-being is undeniable, acting as a critical linchpin that dictates self-esteem, mental health stability, and general life satisfaction across varying cultural landscapes (Merino et al., 2024).

A central mechanism driving this widespread body image disturbance is the phenomenon of body surveillance, a core tenet derived from Objectification Theory. This theoretical framework posits that girls and women are frequently socialized in contexts that sexually objectify the female

form, implicitly teaching them to adopt an observer's perspective of their own physical bodies. Consequently, individuals begin to habitually monitor their outward appearance, treating themselves as objects to be evaluated rather than subjects with internal capacity and agency. The developmental onset of this harmful cognitive pattern is often observed early; research indicates that the internalized sexualization of the self directly precipitates heightened body surveillance and subsequent body shame among early adolescent girls (McKenney & Bigler, 2014). This relentless internal panopticon manifests in highly specific, detrimental behavioral patterns, such as obsessive self-weighing, which serves to consistently reinforce and exacerbate underlying body dissatisfaction (Mercurio & Rima, 2011). The ramifications of sustained body surveillance are severe, functioning as a primary mediating variable that drives young women toward extreme appearance-altering behaviors, including the escalating willingness to undergo invasive cosmetic surgery procedures (Lyu et al., 2021). The sociocultural normalization of these procedures is heavily influenced by systemic objectification processes and the relentless digital pursuit of physical perfection (Mironica et al., 2024). While some psychological traits, such as dispositional self-compassion, possess the capacity to buffer and moderate the damaging psychological effects of body surveillance on subjective happiness and depressive symptomatology (Wollast et al., 2019), the overarching behavioral trend remains profoundly negative.

Adolescence represents an inherently vulnerable developmental epoch characterized by rapid biological maturation, intense identity formation, and a heightened sensitivity to peer evaluation, making it a critical window for the crystallization of body image constructs. During this transitional phase, adolescent females are at an acutely elevated risk for developing deep-seated body image disturbances and clinically significant disordered eating pathologies, vulnerabilities that are increasingly catalyzed by pervasive digital environments (Sabol & Duell, 2024; Suhag & Rauniyar, 2024). The excessive and unregulated

consumption of digital media during these formative years drastically undermines general mental health, an association that is heavily mediated by soaring levels of body image concern and appearance anxiety (Ebrahimi & Akbarnejad, 2025). Because the cognitive schemas developed during adolescence often track stably into adulthood, the design and implementation of systemic strategies aimed at mitigating the psychological harms of modern digital environments have become paramount public health priorities (Mazzeo et al., 2024).

The contemporary digital landscape, characterized by the absolute ubiquity of high-speed internet and the proliferation of algorithmic social networking sites, has fundamentally altered the parameters of media consumption intensity. Unlike traditional mass media, which was bound by temporal and spatial constraints, modern digital platforms subject youth to a continuous, inescapable barrage of highly curated, aesthetically idealized imagery, serving as a primary vector for the promotion of severe body image dissatisfaction (Navadiya et al., 2024). While some nuanced daily diary studies suggest that the objective, absolute duration of screen time may yield inconsistent within-person associations regarding immediate body dissatisfaction (Goh et al., 2025), the scholarly consensus emphasizes that the qualitative nature and specific intensity of exposure to appearance-focused content are the true pathogenic agents. Specifically, adolescents' daily immersion in mixed algorithmic feeds heavily saturated with appearance-ideal imagery strongly dictates the trajectory of their body image components (Maes et al., 2025). This highly visual, photo-centric digital culture negatively impacts self-perception across the entire female lifespan, influencing even midlife women (Rodgers & Nowicki, 2024), but it exerts an unparalleled, concentrated psychological toll on young women, for whom platforms like Instagram dictate the very parameters of social reality and self-worth (Sattarpanahi et al., 2024).

The psychological mechanisms through which intense media consumption translates into elevated body surveillance are multifaceted, primarily revolving around the exacerbation of upward social comparison. The architecture of modern digital platforms inherently encourages users to continuously evaluate their own behind-the-scenes reality against the heavily edited, filtered highlight reels of both peers and global influencers, creating an environment where predicting body image dissatisfaction becomes intrinsically linked to the frequency of these digital peer comparisons (Sharma & Mehta, 2024). This problematic engagement

with digital media inherently fosters self-objectification, although concurrent engagement in physical activity and structured diets can introduce complex moderating variables that either exacerbate or slightly blunt these appearance-focused cognitions (Çınaroğlu & Yılmaz, 2025). Furthermore, the displacement of physical activity by intense digital consumption severs adolescents from their internal bodily sensations, demonstrating that heavy media usage not only promotes external surveillance but actively diminishes internal interoceptive awareness (Engel & Schmidt, 2025). Shockingly, even digital content explicitly masquerading as health-conscious, such as the pervasive "healthy eating" movement online, frequently relies on rigid aesthetic standards that induce severe psychological distress and body dissatisfaction (Zaharia & Gonça, 2024). Consequently, the intensive consumption of this content directly correlates with maladaptive alterations in actual eating behaviors and a paradoxical deterioration in the objective diet quality among young women (Malloy et al., 2024).

However, exposure alone is insufficient to fully explain the variance in body surveillance; the critical cognitive bridge between external media consumption and internal self-objectification is the internalization of the thin-ideal. Sociocultural theory delineates that individuals must cognitively buy into societal appearance standards, accepting the slender, toned physique as the ultimate metric of personal value, for media exposure to truly inflict psychological harm. When university-aged females exhibit high rates of digital media use, it is the deeply entrenched internalization of these digital standards that firmly cements their resulting body dissatisfaction (Riyami et al., 2024). While specific personality constructs, such as the interplay between protective self-compassion and vulnerable narcissism, can mediate the exact predictive strength of media exposure on an individual's ultimate self-esteem and body image (Mosanya et al., 2024), the overarching societal pressure remains immense. Additionally, baseline levels of self-esteem can act as a moderating filter, dictating the extent to which adult females allow external digital imagery to penetrate their self-concept (Price et al., 2024). Recognizing this complex web of cognitive internalization and psychological vulnerability, contemporary clinical researchers are urgently calling for the development and rigorous evaluation of specialized, evidence-based psychosocial interventions specifically tailored to dismantle these internalized ideals among heavy social media users (Abrevaya et al., 2025).

Despite the robust literature connecting media consumption, thin-ideal internalization, and body surveillance, a critical methodological gap persists regarding the ecological contexts in which these adolescent behaviors unfold. The vast majority of extant research relies exclusively on single-level analytical frameworks, treating adolescent participants as entirely independent, isolated data points operating within a social vacuum. However, from a developmental and sociological perspective, adolescent females are deeply embedded within hierarchical social structures, most notably their respective school environments. Schools function as profound micro-cultures, possessing distinct, localized “peer appearance cultures” that can significantly alter the normative baselines for appearance-focused conversations, digital media engagement, and acceptable levels of self-objectification. A school environment saturated with intense appearance-related teasing and high collective digital media usage may act as a catalyst, vastly amplifying the deleterious effects of an individual student’s media consumption on her body surveillance frequency. Conversely, a school culture that prioritizes academic achievement, artistic expression, or inclusive athletic participation might serve as a powerful contextual buffer, attenuating the psychological impact of thin-ideal internalization. Therefore, treating this clustered, nested data with traditional ordinary least squares regression violates core statistical assumptions of independence and risks profound Type 1 error inflation. To accurately elucidate these complex dynamics, a Hierarchical Linear Modeling approach is strictly required. This advanced multilevel statistical framework allows for the precise partitioning of variance, enabling researchers to disentangle the individual, Level 1 psychological phenomena—specifically a student’s personal media consumption intensity and unique degree of thin-ideal internalization—from the broader, Level 2 macro-level contextual influences exerted by the distinct sociocultural climate of the school she attends.

The aim of the present study is to utilize a Hierarchical Linear Modeling framework to examine how individual-level media consumption intensity and internalized thin-ideal uniquely predict body surveillance frequency among adolescent females, while simultaneously determining if the magnitude of these relationships varies significantly across the distinct sociocultural contexts of different high school environments.

2. Methods and Materials

2.1. Study design and Participant

The current research employed a quantitative, cross-sectional, school-based study design to investigate the nested relationships among media consumption intensity, the internalization of the thin-ideal, and body surveillance frequency. To adequately capture the hierarchical nature of the educational environment and its potential contextual influence on adolescent body image, participants were recruited through a multistage stratified random sampling procedure across various public and private high schools situated in Hungary. The final sample consisted of exactly 1348 adolescent females, ranging in age from 13 to 18 years, with a mean age of 15.4 years and a standard deviation of 1.2 years. Prior to the initiation of any data collection procedures, explicit ethical approval was obtained from the central institutional review board governing psychological research in Hungary. Furthermore, given the minor status of the participants, comprehensive informed consent was secured from the parents or legal guardians of all students, alongside written assent from the adolescents themselves. The research team ensured that all participation was strictly voluntary, maintaining rigorous protocols for anonymity and confidentiality throughout the entirety of the research process.

2.2. Measures

To operationalize the variables of interest, a battery of well-established, standardized self-report psychometric instruments was administered to the participants. Media consumption intensity was assessed using a comprehensive media exposure inventory designed to quantify the daily frequency and duration of exposure to appearance-focused mass media, encompassing both traditional platforms, such as fashion and lifestyle magazines, and contemporary digital platforms, specifically image-centric social media networks. Participants rated their typical daily usage on a continuous scale, which yielded a highly reliable composite index of overall media immersion, demonstrating a robust internal consistency with a Cronbach’s alpha of $\alpha = 0.88$. The internalization of the thin-ideal was measured utilizing the thin/low body fat internalization subscale of the Sociocultural Attitudes Towards Appearance Questionnaire-4. This specific dimension requires respondents to indicate their level of agreement with statements regarding their desire to achieve the slender, toned physique pervasively

promoted in mainstream media, utilizing a five-point Likert-type scale ranging from strongly disagree to strongly agree. In the present Hungarian sample, this instrument demonstrated excellent psychometric properties, yielding a Cronbach's alpha of $\alpha = 0.91$. Finally, the primary outcome variable, body surveillance frequency, was evaluated employing the surveillance subscale of the Objectified Body Consciousness Scale. This widely validated measure captures the extent to which individuals continuously monitor their outward physical appearance and view their bodies from an external, observer-based perspective. Participants responded to items on a seven-point Likert scale, and the responses were averaged to create a continuous body surveillance score, which also exhibited high internal reliability within this cohort, calculated at $\alpha = 0.89$. All instruments underwent a rigorous forward-backward translation process to ensure semantic and cultural equivalence for the Hungarian adolescent population.

2.3. Data Analysis

The data analysis strategy was designed to rigorously test the hypothesized predictive pathways while accounting for the non-independence of observations inherent in the school-based sampling design. Initial data management, including the assessment of descriptive statistics, bivariate correlations, and the evaluation of normality assumptions, was conducted utilizing standard statistical software. To appropriately model the nested data structure, wherein individual students represent Level 1 units and their respective schools represent Level 2 units, a Hierarchical Linear Modeling approach was employed. The rationale for utilizing this advanced multilevel framework was to partition the total variance in body surveillance frequency into within-school and between-school components, thereby preventing the inflation of Type I error rates that frequently occurs when single-level regression models are applied to clustered data. The analysis commenced with the estimation of an unconditional null model to calculate the Intraclass Correlation Coefficient, defined mathematically as $ICC = \tau_{00}/(\tau_{00} + \sigma^2)$, which quantifies the proportion of the total variance in body surveillance attributable to overarching school-level differences. Following the establishment of significant Level 2 variance, subsequent models were built iteratively. First, the Level 1 individual-level predictors,

specifically media consumption intensity and internalized thin-ideal scores, were introduced as group-mean centered variables to evaluate their direct structural effects on body surveillance. Subsequently, random slopes were estimated to determine whether the magnitude of the relationship between the internalization of the thin-ideal and body surveillance fluctuated significantly across different school environments. Full Information Maximum Likelihood estimation was utilized to handle any instances of missing data, ensuring the integrity and statistical power of the sample. The threshold for statistical significance across all inferential tests was established a priori at $p < 0.05$.

3. Findings and Results

Preliminary data screening procedures were conducted to ascertain the tenability of statistical assumptions prior to the execution of hierarchical linear modeling. An examination of the distributional properties of the primary continuous variables revealed that skewness and kurtosis indices fell well within the acceptable boundaries of -1.5 to $+1.5$, thereby confirming the assumption of univariate normality for the sample of 1348 Hungarian adolescent females. The descriptive statistics and zero-order Pearson product-moment correlations for all study variables are presented in Table 1. As anticipated, the bivariate correlation analyses revealed significant positive associations among the core constructs. Specifically, media consumption intensity demonstrated a moderate, positive correlation with body surveillance frequency, yielding a coefficient of $r = .42$, $p < .001$. Furthermore, the internalized thin-ideal exhibited a strong, positive correlation with body surveillance frequency, at $r = .56$, $p < .001$, and was additionally significantly correlated with media consumption intensity, resulting in $r = .48$, $p < .001$. Body Mass Index was included as a demographic control covariate and demonstrated small but significant positive correlations with both internalized thin-ideal, measured at $r = .12$, $p < .01$, and body surveillance frequency, evaluated at $r = .16$, $p < .001$. The robust intercorrelations among the primary predictors provide foundational support for the hypothesized linkages, warranting a more sophisticated multivariate examination to parse out the unique variance contributed by each factor while accounting for the clustered nature of the school-based sampling design.

Table 1*Descriptive Statistics and Bivariate Correlations for all Study Variables*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Body Surveillance Frequency	4.52	1.18	–			
2. Media Consumption Intensity	3.78	1.22	.42***	–		
3. Internalized Thin-Ideal	3.61	1.34	.56***	.48***	–	
4. Body Mass Index	21.53	3.15	.16***	.08**	.12**	–

To formally evaluate the necessity of a multilevel modeling approach, an unconditional null model, designated as Model 1, was estimated devoid of any individual-level or school-level predictors. The primary objective of this initial step was to calculate the Intraclass Correlation Coefficient, which quantifies the proportion of total variance in the dependent variable attributable to between-group differences across the varying educational environments. The analysis of the variance components from the null model revealed a significant between-school variance component, calculated as $\tau_{00} = 0.18$, $p < .001$, alongside a within-school variance component of $\sigma^2 = 1.22$. The resulting

Intraclass Correlation Coefficient indicated that approximately 12.8% of the total variance in adolescent females' body surveillance frequency, mathematically represented as $ICC = 0.18 / (0.18 + 1.22) = 0.128$, was situated at the school level. This statistically significant and substantial level of between-school clustering robustly justifies the utilization of hierarchical linear modeling, as proceeding with ordinary least squares regression would severely violate the assumption of independent observations and inevitably result in an inflation of Type I error rates. The detailed fixed effects for all iterative hierarchical models are comprehensively documented in Table 2.

Table 2*Hierarchical Linear Modeling Results: Fixed Effects for Body Surveillance Frequency*

Fixed Effect	Model 1 (Null)	Model 2 (Main Effects)	Model 3 (Random Slopes)
Intercept (γ_{00})	4.52***(0.08)	4.52***(0.06)	4.52***(0.06)
Level 1 Predictors			
Body Mass Index (γ_{10})		0.04**(0.01)	0.04**(0.01)
Media Consumption Intensity (γ_{20})		0.22***(0.03)	0.21***(0.03)
Internalized Thin-Ideal (γ_{30})		0.38***(0.03)	0.39***(0.04)

Following the establishment of the baseline nested structure, Model 2 was specified by introducing the Level 1 individual predictors to assess their fixed structural effects on body surveillance frequency. These predictors, specifically Body Mass Index, media consumption intensity, and internalized thin-ideal, were group-mean centered to ensure that the estimated coefficients purely reflected within-school relationships independent of broader school-level averages. The empirical results demonstrated that, after adequately controlling for individual differences in Body Mass Index, which itself exerted a minor yet significant positive effect with $\gamma_{10} = 0.04$, $p < .01$, both primary research hypotheses were heavily supported. Media consumption intensity emerged as a highly significant

positive predictor of body surveillance, yielding an unstandardized coefficient of $\gamma_{20} = 0.22$, $p < .001$. This explicit metric indicates that for every one-unit increase in an adolescent female's media consumption relative to her immediate school peers, her body surveillance frequency is mathematically expected to increase by 0.22 units. Concurrently, the internalized thin-ideal demonstrated a remarkably robust and independent structural effect on the primary outcome variable, marked by a coefficient of $\gamma_{30} = 0.38$, $p < .001$, suggesting that deeper cognitive internalization of societal appearance standards uniquely drives accelerated rates of self-objectification and physical monitoring among this specific demographic.

Table 3

Hierarchical Linear Modeling Results: Random Effects and Variance Components

Random Effect and Model Fit	Model 1 (Null)	Model 2 (Main Effects)	Model 3 (Random Slopes)
Variance Components			
Intercept Variance (τ_{00})	0.18***	0.11***	0.10***
Media Consumption Slope Variance (τ_{22})			0.02
Internalized Thin-Ideal Slope Variance (τ_{33})			0.06**
Residual Level 1 Variance (σ^2)	1.22	0.85	0.81
Model Fit Indices			
Deviance ($-2LL$)	4250.6	3742.4	3698.2
Akaike Information Criterion (<i>AIC</i>)	4256.6	3756.4	3718.2
Bayesian Information Criterion (<i>BIC</i>)	4272.2	3792.8	3770.2

The final analytical phase involved the specification of Model 3, a rigorous random coefficients model constructed to determine whether the predictive slopes of the Level 1 variables exhibited significant contextual variation across the different high school environments. The variance components and absolute model fit indices evaluating these cross-level fluctuations are comprehensively detailed in Table 3. The random slope component assessing media consumption intensity did not reach statistical significance, evaluated at $\tau_{22} = 0.02$, $p > .05$, suggesting that the deleterious behavioral impact of intensive media exposure on body surveillance remains relatively uniform across disparate educational contexts. In sharp contrast, the variance component attached to the internalized thin-ideal slope was highly statistically significant, measured at $\tau_{33} = 0.06$, $p < .01$. This critical finding explicitly reveals that the magnitude of the relationship between subscribing to the thin-ideal and engaging in body surveillance fluctuates considerably depending on the specific sociocultural climate of the high school the adolescent attends. The formal inclusion of these random slopes resulted in a substantially improved overall model fit, evidenced by a marked reduction in the deviance statistic from $-2LL = 3742.4$ in the main effects model to $-2LL = 3698.2$ in the fully specified random slopes model, as well as corresponding downward shifts in both the Akaike Information Criterion and the Bayesian Information Criterion. Collectively, these individual-level factors explain a substantial 33.6% of the Level 1 within-school variance, mathematically derived as $(1.22 - 0.81)/1.22 = 0.336$, confirming the profound intertwined impact of pervasive media consumption and internalized appearance ideals on adolescent self-surveillance behaviors.

4. Discussion

The current study sought to elucidate the complex, nested dynamics between media consumption intensity, the internalization of the thin-ideal, and body surveillance frequency among adolescent females, utilizing an advanced Hierarchical Linear Modeling approach. The empirical findings robustly supported our primary hypotheses, demonstrating that both intense media consumption and the cognitive internalization of societal appearance standards act as formidable, independent predictors of body surveillance. Crucially, the calculation of the Intraclass Correlation Coefficient revealed that approximately 12.8% of the total variance in body surveillance frequency was directly attributable to between-school differences. This significant Level 2 variance firmly validates our methodological departure from traditional, single-level analyses, proving that an adolescent's propensity to monitor her physical appearance is not merely an isolated psychological phenomenon, but rather a behavior deeply embedded within, and influenced by, the broader sociocultural micro-climate of her specific educational environment.

The finding that media consumption intensity exerts a significant positive main effect on body surveillance frequency aligns seamlessly with the prevailing scholarly consensus regarding the detrimental psychological impacts of contemporary digital environments. Our data confirm that as adolescent females increase their relative daily exposure to appearance-focused media, they concurrently escalate their habitual self-monitoring, learning to view their own bodies from a critical, external perspective. This mirrors recent literature emphasizing that intensive engagement with algorithmically curated, highly visual social media platforms acts as a primary catalyst for profound body image dissatisfaction and disordered eating behaviors among youth

(Sabol & Duell, 2024; Suhag & Rauniyar, 2024). Because modern digital networks incessantly bombard users with an inescapable stream of mixed, heavily idealized, and digitally altered content, they actively distort adolescents' foundational body image components and perceived physical realities (Maes et al., 2025). The ubiquitous nature of this intensive media consumption promotes severe appearance anxiety by fostering a chronic state of upward social comparison, pitting the adolescent's behind-the-scenes reality against the fabricated highlight reels of peers and global influencers (Navadiya et al., 2024). Interestingly, our random slope analysis for media consumption intensity did not yield statistical significance. This critical null finding suggests that the deleterious psychological mechanisms triggered by intense media exposure are so pervasive, aggressive, and deeply ingrained in globalized digital culture that their negative effects transcend localized geographic and educational boundaries. Regardless of the specific school environment an adolescent attends, excessive screen time consistently displaces internal interoceptive awareness and uniformly elevates self-objectification and mental health vulnerabilities (Ebrahimi & Akbarnejad, 2025; Engel & Schmidt, 2025).

While media exposure provides the visual blueprint for societal beauty standards, our results established that the internalized thin-ideal acts as the most potent individual-level predictor of body surveillance. This robust structural association indicates that passive exposure to media is ultimately less psychologically damaging than the active cognitive integration of its promoted aesthetic metrics. When adolescent females cognitively subscribe to the slender, toned physique as the ultimate determinant of their personal value and social currency, they are intrinsically compelled to continuously monitor their physical form to assess their compliance with these impossible societal mandates. This finding heavily supports Objectification Theory and parallels previous research demonstrating that the internalized sexualization and objectification of the self directly precipitate heightened body surveillance and profound body shame, particularly during the vulnerable developmental window of early adolescence (McKenney & Bigler, 2014). Such chronic self-surveillance is far from a benign habit; it serves as a central mediating variable that significantly increases young women's willingness to engage in extreme, physically invasive appearance-altering behaviors, including the contemplation of cosmetic surgery (Lyu et al., 2021). The absolute necessity of mitigating this cognitive internalization is paramount, as deep-seated

subscription to these digital standards firmly cements subsequent body dissatisfaction and psychological distress (Riyami et al., 2024).

Crucially, the crowning contribution of this study lies in the discovery of a highly significant random slope for the internalized thin-ideal across varying Level 2 educational units. This finding explicitly proves that the predictive magnitude of the internalized thin-ideal on body surveillance fluctuates considerably depending on the specific sociocultural climate of the high school the adolescent attends. In essence, while the digital media machine exerts a uniform negative pressure, a student's localized peer culture heavily dictates exactly how severely her internal beliefs will translate into behavioral self-surveillance. In school environments characterized by intense appearance-based peer comparison, highly visible social hierarchies, and unchecked weight-related teasing, the pathogenic link between internalizing the thin-ideal and actively monitoring the body is drastically magnified (Sharma & Mehta, 2024). Conversely, school environments that proactively foster holistic well-being, enforce inclusive policies that mitigate appearance pressures, and heavily de-emphasize physical measurements may successfully buffer this relationship, protecting self-esteem and preserving overarching mental health (Merino et al., 2024).

The inclusion of Body Mass Index as a demographic covariate provided further necessary nuance to our hierarchical models, revealing a small yet highly significant positive association with body surveillance frequency. This indicates that irrespective of media habits and cognitive ideals, individuals occupying larger physical bodies engage in higher rates of self-monitoring. This empirical reality aligns with literature demonstrating that individuals with higher body mass frequently experience amplified social interaction anxiety and are disproportionately subjected to systemic weight stigma, compelling them to vigilantly monitor their appearance as a defensive coping mechanism (Batool et al., 2025). This is especially concerning given that many digitally popular health trends, such as the online healthy eating movement, frequently masquerade as wellness while inherently relying on rigid, exclusionary aesthetic ideals that trigger severe psychological distress (Zaharia & Gonça, 2024). Consequently, intensive consumption of this purportedly positive content often paradoxically correlates with maladaptive alterations in actual eating behaviors and a deterioration in objective diet quality (Malloy et al., 2024). The complex interplay between an adolescent's objective physical reality, their cognitive

processing of digital media, and their localized school environment necessitates highly nuanced clinical understanding. While certain psychological traits, such as self-compassion, and behavioral habits, such as structured physical activity, can sometimes act as moderating filters (Çınaroğlu & Yılmaz, 2025; Wollast et al., 2019), the overwhelming sociocultural pressure requires systemic intervention. Unlike adult females or midlife women whose baseline self-esteem might offer more robust protection against external digital imagery (Price et al., 2024; Rodgers & Nowicki, 2024), adolescents require immediate, specialized, and evidence-based psychosocial interventions tailored specifically to dismantle internalized ideals and mitigate the harms of their media ecosystems (Abrevaya et al., 2025; Mazzeo et al., 2024).

5. Conclusion

In conclusion, the present research significantly advances the literature on adolescent body image by employing a sophisticated multilevel statistical framework to demonstrate that body surveillance is simultaneously an individual psychological burden and a contextually bound phenomenon. By proving that a substantial portion of the variance in body surveillance lies between different educational environments, this study unequivocally establishes that schools are not merely passive backdrops, but active sociocultural agents in the development of adolescent self-objectification. While the deleterious impact of intense media consumption appears ubiquitous and resistant to localized school boundaries, the degree to which an adolescent's internalized thin-ideal dictates her body monitoring behaviors is highly dependent on her school's specific cultural climate. These findings underscore the absolute necessity of moving beyond solely individual-blaming paradigms, highlighting that effectively combating the modern epidemic of body surveillance requires acknowledging the intricate, nested interplay between personal digital habits, deeply ingrained cognitive ideals, and the overarching social architecture of the peer environment.

6. Limitations and Suggestions

Despite the robust methodological and statistical approach utilized, several limitations must be acknowledged when interpreting these findings. Foremost, the cross-sectional nature of the data collection strictly precludes the establishment of definitive causal inferences; while it is

theoretically sound to posit that media consumption and internalized ideals drive body surveillance, the potential for bidirectional or reciprocal relationships cannot be statistically ruled out. Additionally, the study relied entirely on self-report psychometric instruments, which, while highly validated, remain inherently susceptible to social desirability biases, recall errors, and subjective interpretations of media intensity, rather than relying on objective, algorithmic screen-time tracking data. Furthermore, while the hierarchical linear models successfully identified significant Level 2 variance across different high schools, the current study did not measure or include specific macro-level predictors—such as overarching school policies, socioeconomic demographic aggregates, or standardized measures of peer appearance teasing—to explicitly explain why these inter-school differences exist. Finally, the sample was geographically restricted to adolescent females in Hungary, which naturally limits the generalizability of the findings to male populations, non-binary youth, or adolescents situated in drastically different non-Western cultural paradigms with distinct sociocultural beauty standards.

To address these limitations and further advance the field, future research must prioritize the implementation of rigorous longitudinal hierarchical designs capable of tracking the developmental trajectory of body surveillance across the entirety of adolescence, thereby capturing how within-person changes in media consumption dynamically alter cognitive internalization over time. Researchers should heavily incorporate Ecological Momentary Assessment techniques to capture real-time, highly granular data regarding acute media exposure and immediate fluctuations in state body surveillance, bridging the gap between retrospective self-reporting and daily objective reality. Crucially, subsequent multilevel studies must transition from merely identifying school-level variance to actively explaining it by incorporating concrete Level 2 predictors into their models, such as assessing the aggregate school-wide Body Mass Index, evaluating the stringency of school dress codes, or quantifying the prevalence of weight-based bullying within the institution. Finally, future inquiries must expand their demographic scope to include male and sexual minority youth, investigating whether the contextual buffering effects of the school environment operate through similar or divergent psychological mechanisms across different gender identities and cultural landscapes.

The findings of this multilevel study carry profound and urgent implications for educational policymakers, clinical

psychologists, and public health practitioners seeking to safeguard adolescent mental health. Because the negative impact of the internalized thin-ideal fluctuates based on the school environment, educational institutions must proactively implement comprehensive, whole-school interventions designed to cultivate a positive, inclusive peer appearance culture that actively dismantles weight-based stigmatization and superficial peer comparisons. Schools should seamlessly integrate sophisticated media literacy programs into their standard curricula, specifically teaching students to critically deconstruct algorithmically curated digital content, recognize the commercial motives behind the beauty industry, and actively resist the psychological internalization of digitally altered ideals. Furthermore, physical education departments must radically shift their pedagogical focus away from appearance-based metrics, caloric burning, and standardized physical assessments, instead prioritizing joyful movement, functional fitness, and the enhancement of internal interoceptive awareness to combat the externalizing effects of self-objectification. Ultimately, clinical practitioners must work in tandem with parents and educators to address body image disturbances not merely as isolated individual pathologies, but as systemic issues requiring comprehensive environmental restructuring and sustained, community-wide digital boundary setting.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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