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Subtraction is not nourishment: relational opacity as an unintended outcome of quantitative regulation of minors' digital lives. A cross-case reading of Australia, England and Italy

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Abstract: This study examines whether restricting minors' digital access can coincide with reduced adult awareness of continuing practices. A theory-driven secondary analysis compares Australian evaluation evidence, England's SMART Schools study and Italian policy documents. At Australia's three-month follow-up, age-restricted account ownership declined from 52.4% to 42.1%, while use remained high (85.9% to 81.5%); messaging and gaming increased. Among parents of children reporting social-media use, unawareness rose from 23.3% to 33.3%. Measured wellbeing indicators showed no significant population-level change. In England, restrictive school policies were associated with less school-time use, but not lower overall use or better wellbeing. Italian provisions establish restrictions and exceptions without themselves evaluating outcomes. We propose relational opacity as a hypothesis about reduced visibility and discussability of persistent digital practices, not a demonstrated causal effect. Regulation by subtraction is distinguished from digital nourishment, a perspective addressing replacement experiences. The analysis supports evaluation combining exposure, substitution, relational visibility, co-regulation, inclusion and agency.

Keywords: restriction policies; relational opacity; parental mediation; digital well-being[1]

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1. Introduction

Australia's minimum-age legislation requires covered platforms to take reasonable steps to prevent under-16s from holding accounts (Australian Government, 2024). England's guidance promotes phone-free schools (Department for Education, 2026); Italian provisions restrict smartphones in both school cycles with specified exceptions (Ministero dell'Istruzione e del Merito [MIM], 2024, 2025). These interventions regulate different objects and settings.

Their shared premise is nevertheless recognisable: reducing availability should reduce harm. This premise requires evaluation beyond compliance. Account ownership differs from platform use; school-time use differs from total exposure; less exposure does not establish better wellbeing or greater self-regulation. Reviews describe heterogeneous and often weak associations between aggregate digital use and adolescent mental health (Odgers & Jensen, 2020; Orben & Przybylski, 2019; Valkenburg et al., 2022). Such findings do not exclude serious harms. They challenge the use of duration as a sufficient explanation of developmental outcomes.

School restrictions likewise have an uneven evidence base. Campbell et al. (2024) identified 22 studies and no randomised controlled trials in their scoping review. Selwyn and Aagaard (2021) argued that bans should prompt closer examination of distraction, addiction and cyberbullying rather than settle those questions. We extend this concern to the educational relationship: what happens to adults' knowledge of minors' digital practices when access is formally reduced but those practices continue?

We examine relational opacity as a possible unintended outcome through secondary analysis of Australian evaluation evidence, SMART Schools and Italian policy documents, not a new individual-level quantitative study. We ask whether targeted restrictions coexist with persistent or redistributed use and reduced parental awareness, and what this implies for engagement and co-regulation.

2. Conceptual Framework

2.1. Regulation by Subtraction and Digital Nourishment

Regulation by subtraction denotes an intervention that reduces the availability of an account, device or activity without necessarily specifying the educational quality of what replaces it. It can establish legitimate protective boundaries; the term does not imply that all restrictions are ineffective. Its analytical value is to separate an implementation outcome, such as device absence, from a developmental outcome, such as strategic attention, safety or autonomy.

Digital nourishment supplies a complementary pedagogical perspective. The nutritional analogy distinguishes quantity from composition, context and replacement quality. It is neither a clinical model nor a claim that digital activities can be assigned universal nutritional values. A digitally restricted day may support learning and relationships, but it may also displace communication into less visible channels. Conversely, some digital practices support accessibility, collaboration and meaningful participation. The educational question concerns the conditions under which these experiences contribute to development.

We distinguish exposure, activity composition, balance with other needs, substitution, relational visibility and agency. Exposure matters where use displaces sleep or disrupts tasks, but requires contextual interpretation. Digital nourishment is a research perspective, not a validated measurement instrument or a substitute for specific evidence of harm.

2.2. Relational Visibility and Parental Mediation

Parental mediation includes strategies that cannot be reduced to permission or prohibition. Livingstone and Helsper (2008) distinguish forms of restriction, interaction and oversight with different relationships to children's internet experiences. Our concept of relational visibility concerns adults' capacity to recognise practices, discuss their meaning and provide support. It is distinct from access to every message or continuous monitoring. Privacy and increasing adolescent independence remain educationally legitimate.

Relational opacity denotes a reduction in the visibility and discussability of continuing digital practices within a supportive relationship. A child–parent discrepancy about use is a possible indicator, not proof of the entire construct. Opacity may emerge when adults assume prohibition has ended use, when children avoid discussing non-compliance, or when activity migrates to unfamiliar services. Those mechanisms are hypotheses. Reduced awareness alone does not show that secrecy, risk or relational deterioration has increased.

3. Materials and Methods

3.1. Design and Evidence Sources

We conducted a theory-driven comparative documentary analysis of public evidence available by 1 October 2026. Cases were selected for their relevance to quantitative restriction and the availability of primary policy or evaluation material, not as a representative sample of jurisdictions. Australia provides an early longitudinal account of social-media age restrictions; England provides comparative school-policy evidence; Italy provides primary administrative provisions. This asymmetry is part of the analysis. We neither pool effects nor rank the cases on a common effectiveness scale.

The Australian source is eSafety Commissioner's (2026) three-month report. Baseline data were collected in November–December 2025 from 4,121 children aged 10–16 and their parents; follow-up occurred in March–April 2026. Of 1,021 follow-up dyads, 803 children aged 10–15 and their parents formed the comparison sample. We report published percentages, not microdata reanalysis. Item denominators vary. The significance threshold was $p < .01$; for significant differences in average scores, reported Cohen's d ranged from .09 to .27.

For England, Goodyear et al. (2025) studied 1,227 pupils aged 12–15 in 30 secondary schools with restrictive or permissive phone policies. Their cross-sectional SMART Schools analysis used adjusted mixed-effects models to compare school-time and overall use and wellbeing. It cannot establish causal policy effects. The statutory guidance published on 29 June 2026, which schools were expected to follow from 1 September, supplies the later policy context; the earlier study does not evaluate that guidance (Department for Education, 2026).

For Italy, the corpus comprises Note no. 5274 of 11 July 2024 and Circular no. 3392 of 16 June 2025 (MIM, 2024, 2025). These documents establish scope and exceptions, not measured educational outcomes. The comparison therefore distinguishes evaluated patterns from policy intentions. All material is public and aggregate; no participants were recruited and no personal data were processed.

3.2. Analytical Procedure

We charted each case against five dimensions: regulated object and population; spatial and temporal perimeter; implementation indicators; downstream outcomes; and evidence of substitution, adult awareness or unequal effects. We then distinguished targeted outcomes, effects bounded to a setting, redistribution, relational indicators and distal wellbeing. Pattern matching assessed whether reduced formal access coexisted with continuing practices or lower adult awareness. This is an interpretive procedure, not a preregistered systematic review or a statistical mediation analysis.

Alternative explanations include attrition, self-report error, baseline salience, maturation, contextual events and differences between child and parent questions. Relational-opacity inferences require actual awareness indicators; unmeasured outcomes are not classified as unchanged. Table 1 summarises the evidence and permitted inferences.

4. Results

4.1. Australia and the Redistribution of Digital Practices

In the paired Australian sample, ownership of accounts on age-restricted platforms fell from 52.4% to 42.1%, whereas use declined from 85.9% to 81.5% (eSafety Commissioner, 2026). The different changes matter: holding an account and accessing a service are not interchangeable indicators. Among children retaining accounts, 50.2% reported not being asked to verify their age, 37.1% reported an account age of at least 16, and 18.2% reported incorrect age estimation. These implementation findings concern the early period, not the policy's eventual effectiveness.

Daily messaging increased from 40.5% to 52.3% and daily gaming from 26.4% to 29.0%. Use increased for Reddit (6.1% to 9.4%) and Pinterest (16.6% to 21.8%). These changes suggest redistribution, but do not establish restriction-induced or within-person substitution. Sleep, self-esteem, wellbeing, distress and child-reported potentially problematic online use showed no significant population-level change. One parent-reported problematic-use item did improve. Three-month null results neither establish long-term benefit nor permanent ineffectiveness.

4.2. Australia and Parental Awareness

Among parents whose children reported social-media use in the preceding four weeks, unawareness rose from 23.3% to 33.3% (baseline n = 703; follow-up n = 680). Corresponding percentages increased from 20.2% to 33.2% for girls and from 35.4% to 49.1% for ages 10–12 (eSafety Commissioner, 2026). These are conditional proportions, not rates among all parents. They indicate lower awareness of continuing use, not relationship quality, disclosure motives or activity safety.

Parents may have assumed access had ended, children may have disclosed less, or baseline attention may have subsided. Overall family conflict and parental support showed no significant change. Matched measures and interviews must distinguish possible mechanisms. The data do not establish regulation-induced concealment; relational opacity requires validation.

4.3. England and the Boundary of School-Time Effects

SMART Schools found lower school-time phone use in restrictive schools, with an adjusted mean difference of −0.67 hours (95% CI [−0.92, −0.43]), and lower school-time social-media use, −0.54 hours (95% CI [−0.74, −0.36]). Restrictive policies were not associated with lower overall use or better mental wellbeing. The adjusted wellbeing difference was −0.48 points (95% CI [−2.05, 1.06], p = .62) (Goodyear et al., 2025). These are observational associations, subject to school selection, implementation differences and residual confounding.

The study demonstrates the importance of the regulated perimeter: school-time differences need not extend to the whole day. It offers no direct measure of relational opacity and cannot be used as evidence that English pupils concealed their practices. The subsequent statutory guidance provides for context-specific exceptions and communication arrangements (Department for Education, 2026). Those provisions concern implementation and inclusion; their educational effects require evaluation rather than inference from the guidance itself.

4.4. Italy and the Evaluation Gap

The 2024 Italian note restricts smartphone use in the first cycle, including educational use, while recognising specified needs, including those documented in individualised educational or personalised teaching plans. The 2025 circular extends restriction across school hours in the second cycle and retains specified exceptions, including uses necessary for certain technical and vocational pathways (MIM, 2024, 2025). A phone's regulatory status therefore depends partly on educational context and access needs.

The two acts do not themselves provide a national longitudinal evaluation comparable to the Australian report or the SMART Schools study. This observation does not imply that no Italian school has collected local evidence. It identifies the limits of the documents analysed: they establish what schools should regulate, but cannot establish changes in total exposure, attention, wellbeing, relationships or self-regulation. Italy supplies a prospective evaluation opportunity, not a third empirical demonstration of the Australian pattern.

Table 1. Policy cases and permitted inferences

Case	Regulated perimeter	Evidence	Inference boundary
Australia	Under-16 accounts on covered platforms	Three-month paired child–parent survey	Early changes in access, use and awareness; no causal identification
England	Phone use within schools	Cross-sectional comparison of 30 schools	School-time associations; no demonstrated whole-day transfer

Case	Regulated perimeter	Evidence	Inference boundary
Italy	Smartphone use in the two school cycles	Two primary ministerial provisions	Policy scope and exceptions; outcomes not established by the acts

5. Discussion

5.1. From Implementation to Educational Outcomes

The cases support a distinction between achieving a regulatory target and achieving a developmental aim. Australia shows an early reduction in account ownership alongside persistent use, redistribution and reduced parental awareness. England shows school-time differences without an overall-use or wellbeing advantage. Italy illustrates a policy whose effects cannot be read directly from its prescriptions. Taken together, these observations make exposure reduction an insufficient standalone indicator of educational success. They do not establish that restrictions are generally harmful or that the same mechanisms operate across jurisdictions.

Relational opacity adds a question often absent from quantitative regulation: can an intervention weaken the conditions under which adults help children interpret digital experiences? Its educational relevance lies in discussability and timely support, not surveillance. Increased adolescent privacy should not be classified automatically as dysfunction. A valid measure must distinguish legitimate independence from an inability or unwillingness to seek help, and must assess trust, disclosure opportunities and perceived rule legitimacy alongside adult knowledge.

5.2. Co-Regulation and Engaging Education

For Engaging Education, participation concerns the quality of learners' involvement and relationships, not simply compliance with access rules. Protection can support engagement when it reduces disruption and makes purposeful activity possible. Its value also depends on what replaces the restricted experience: meaningful tasks, accessible communication, peer belonging and opportunities to practise regulation. The digital-nourishment perspective directs attention to those conditions rather than treating absence of a device as a complete educational intervention.

Co-regulation entails shared interpretation and gradually increasing responsibility. Families and schools can discuss why a boundary exists, negotiate legitimate exceptions, rehearse responses to unwanted contact and examine how recommendations or notifications affect attention. Such practices are proposed educational components, not outcomes demonstrated by our cases. Their effectiveness should be tested. Dialogue also needs non-punitive opportunities for children to disclose mistakes or uncomfortable experiences without assuming that disclosure will simply trigger further restriction.

The same device can interrupt a task or provide communication, translation and accessibility support. Exceptions must be usable, not merely prescribed. Evaluation should examine who gains protected attention, who loses access and whether replacements enable comparable participation. Average compliance may otherwise conceal unequal costs for learners dependent on authorised digital functions.

5.3. A Multidimensional Evaluation Agenda

Table 2 translates the conceptual perspective into an evaluation agenda. Exposure measures should separate accounts, logged-in or logged-out access, school-time use, whole-day use and particular activities. Relational visibility requires paired questions about the same practice, combined with measures of trust and discussion. Neither parental confidence nor child–parent disagreement alone is an adequate proxy for safety. Interviews can investigate why disagreement occurs; limited and voluntary device data can help assess recall while protecting privacy.

Table 2. Proposed domains for evaluating restriction policies

Domain	Indicative measures	Interpretive safeguard
Implementation	Coverage, enforcement and exceptions	Compliance is not a developmental outcome
Exposure	Accounts, activities and school/whole-day use	Separate availability from actual use
Redistribution	Messaging, gaming and alternative services	Distinguish temporal change from causal substitution
Relational visibility	Matched child–parent awareness, trust and discussion	Respect privacy; do not equate knowledge with safety
Agency and inclusion	Strategy transfer, access and participation	Assess subgroup costs and accommodation fidelity
Distal outcomes	Sleep, wellbeing, learning and belonging	Allow sufficient follow-up; report uncertainty

A prospective Italian study could compare implementation configurations: restriction alone, restriction with explicit self-regulation teaching, and restriction with school–family mediation. A longitudinal multilevel design would require baseline measures, repeated follow-ups, transparent handling of attrition and adjustment for school composition. Assignment and feasible comparison conditions would determine whether causal claims were warranted. Outcomes should include attention and learning, but also discussion, belonging, accommodation fidelity and regulation after external controls are relaxed.

Preregistered outcomes and publication of null findings would reduce selective interpretation. The conditional prediction is that restriction without supportive mediation may make continuing use less discussable. Stable or improved visibility despite persistent use would challenge it. Age, disability and resources warrant subgroup analysis without overinterpreting small samples.

6. Limitations

This selective analysis combines different populations, regulated objects and designs and cannot estimate a shared policy effect. Australian follow-up is short and subject to attrition; the English comparison is cross-sectional; Italian acts do not measure outcomes. Published statistics were not independently recalculated. Redistribution, lower awareness and wellbeing therefore cannot be causally attributed to restriction.

Relational opacity remains unvalidated: awareness discrepancies do not establish mechanisms or consequences. Digital nourishment is not a calibrated index. Future work must test whether these concepts improve explanation beyond established measures of mediation, trust and self-regulation.

7. Conclusions

Quantitative restriction can change targeted practices while leaving other educationally important outcomes unchanged, unmeasured or redistributed. The Australian evidence makes reduced parental awareness a concrete issue for further investigation; it does not prove that all restrictions produce relational opacity. The English and Italian cases clarify the importance of setting and evaluation design. Our proposed digital-nourishment perspective asks whether boundaries preserve supportive relationships, accessible participation and opportunities to develop agency. A defensible educational policy should measure those conditions alongside exposure and compliance.

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