

# Study Report

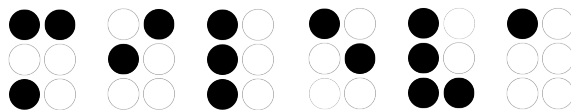
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A background image featuring a complex network of dark blue lines and nodes, resembling a molecular structure or a digital network, set against a light blue gradient.

## **Enhancing News Media Literacy and News Engagement through Game-Based Learning:** An Experimental Study with the Boardgame NewsMaker

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## **Abstract**

This study examines the effects of a game-based learning intervention on adolescents' news media knowledge and motivation to engage with news. Using a quasi-experimental between-subjects design, data were collected from N = 129 lower secondary school students (ages 11–16) in Switzerland. Participants completed a standardized questionnaire either before or after playing *NewsMaker*, an educational board game simulating key aspects of journalistic work, including news selection, source evaluation, and media financing.

Results indicate relatively low baseline levels of news media knowledge, pointing to substantial gaps in adolescents' understanding of journalistic processes and media structures. Participation in the intervention was associated with significant increases in both objective news media knowledge and news engagement motivation. While socioeconomic resources were positively related to these outcomes, they did not moderate intervention effects. In contrast, attitudes toward journalism significantly shaped knowledge gains, with stronger effects among participants holding more positive prior views.

These findings suggest that game-based interventions can effectively strengthen adolescents' understanding of journalism while also increasing motivation to engage with news. At the same time, the results indicate that learning outcomes depend less on structural resources than on attitudinal predispositions, highlighting important boundary conditions for media literacy interventions.

## **1 Aims & Research Questions**

News consumption among young adults has been declining for years (fög, 2025). This trend poses risks to democratic processes: without regular access to journalistic content, citizens lack a foundation for making informed decisions, for example in referendums or elections (Castro et al., 2022). Moreover, low levels of news media literacy increase susceptibility to disinformation and populist communication strategies (Amazeen & Bucy, 2019). Policymakers, researchers, and media practitioners therefore face the question of how news can regain greater public interest.

This article focuses on educational games as a thus far underexplored format for fostering engagement with news. Three arguments support this approach. First, games rank among young people's most popular leisure activities (Külling-Knecht et al., 2024). Second, serious games have been shown to enhance cognitive abilities, motivation, and problem-solving skills (Clark et al., 2016; Noda et al., 2019). Empirical studies also demonstrate positive effects of game-based interventions on the detection of fake news (Basol et al., 2020; Chang et al., 2020). Third, a fictional game setting allows for a less confrontational engagement with journalistic processes, without direct exposure to real-world content that may be perceived negatively.

Against this background, the educational board game *NewsMaker* was developed to simulate central functional mechanisms of journalism, including news selection processes, resource constraints, and the management of uncertain or unreliable sources. By placing adolescents in the role of journalists and editors, the game seeks to foster a playful yet reflective engagement with journalistic practices and contemporary news production. Building on research on game-based learning and news media literacy, the present study addresses two central research questions. First, it examines how playing an educational board game about the functioning of journalism affects adolescents' knowledge about news production, media structures, and journalistic roles (RQ1). Second, it investigates how participation in the game influences adolescents' motivation for news consumption (RQ2).

## **2. Theoretical Background and Hypotheses**

### **2.1 News Media Knowledge**

A central goal of news media literacy is to foster citizens' understanding of how journalism operates, including knowledge about news production processes, institutional structures, and professional roles. Such structural and procedural knowledge is considered a key prerequisite for critically evaluating news content and navigating contemporary information environments. Game-based learning has been identified as a particularly promising approach to fostering complex forms of knowledge acquisition. By engaging participants in interactive and

experiential learning environments, educational games enable active exploration and simulation of real-world systems. Meta-analytical evidence suggests that such environments can facilitate learning outcomes, particularly when they require players to actively apply knowledge and make decisions within rule-based systems (Wouters et al., 2013; Clark et al., 2016).

Building on these insights, the present study examines the effects of a board game designed to simulate journalistic processes. Through role-taking, decision-making, and exposure to system constraints, participants are expected to develop a deeper understanding of how journalism functions.

**H1:** Participants will demonstrate higher levels of knowledge of news production, media structures, and journalistic roles after the intervention compared to before the intervention.

While game-based learning environments can enhance motivation and facilitate access to complex topics, their effectiveness is unlikely to be uniform across individuals. Learning outcomes are shaped not only by instructional design but also by individual characteristics and predispositions that influence how information is processed. To account for this variability, the present study considers socio-economic status, domain-specific motivation, and attitudes toward journalism as key moderating factors:

First, differences in socio-economic status (SES) are expected to shape knowledge acquisition. Drawing on the knowledge gap hypothesis (Tichenor et al., 1970), individuals with higher SES are generally better equipped to acquire and process new information due to differences in prior knowledge, cognitive skills, and access to informational resources. These advantages should also manifest in game-based learning contexts, where the ability to integrate new information into existing knowledge structures is crucial. Accordingly, individuals with higher SES are expected to benefit more strongly from the intervention.

**H1.1:** The positive effect of the intervention on knowledge of news production, media structures, and journalistic roles will be stronger among participants with higher socio-economic status than among participants with lower socio-economic status.

Second, individual differences in motivation are likely to influence engagement with the intervention. The competition hypothesis (Ettema & Kline, 1977) posits that motivation plays a central role in information acquisition, as more motivated individuals are more likely to invest cognitive effort in processing information. In the context of game-based learning, affinity for

board games can be understood as an indicator of intrinsic motivation to engage with the intervention format. Participants who enjoy board games are therefore expected to engage more deeply with the learning environment, resulting in greater elaboration and stronger learning effects.

**H1.2:** The positive effect of the intervention on knowledge of news production, media structures, and journalistic roles will be stronger among participants with higher affinity for board games than among participants with lower affinity.

Finally, attitudes toward journalism are expected to shape how participants process information about journalistic practices. Given that journalism is embedded in politically and ideologically contested public discourses, individuals differ in their predispositions toward the topic. To explain how such predispositions affect learning, this study draws on the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986). The model posits that individuals engage in more effortful and elaborated information processing when they are motivated to do so.

Positive attitudes toward journalism can be conceptualized as a motivational driver that increases the perceived relevance of journalism-related content. As a result, individuals with favorable attitudes are more likely to engage in central-route processing, leading to deeper cognitive elaboration and more durable knowledge acquisition (Petty & Cacioppo, 1986; Petty & Wegener, 1999). In contrast, individuals with less favorable attitudes are expected to process the information more superficially, resulting in weaker learning outcomes.

**H1.3:** The positive effect of the intervention on knowledge of news production, media structures, and journalistic roles will be stronger among participants with more positive attitudes toward journalism than among participants with less positive attitudes.

## ***2.2 Motivation for News Engagement***

Beyond cognitive outcomes, fostering motivation to engage with news is a central objective of news media literacy interventions. In increasingly fragmented and choice-rich media environments, individuals' willingness to actively seek out news has become a critical prerequisite for an informed citizenry. Accordingly, educational interventions should not only enhance knowledge but also strengthen individuals' motivation to engage with journalistic content.

The expected increase in motivation can be theoretically grounded in Self-Determination Theory (SDT; Deci & Ryan, 2000). SDT posits that intrinsic motivation is fostered when individuals experience competence, autonomy, and relatedness. Learning environments that

support these basic psychological needs are more likely to promote sustained engagement and self-determined forms of behavior.

Game-based learning environments are particularly well-suited to satisfy these needs. By allowing participants to actively take on roles, make decisions, and experience the consequences of their actions within structured rule systems, such environments can foster a sense of autonomy. At the same time, feedback mechanisms and progressive challenges can enhance perceived competence. In the context of the present study, simulating journalistic processes through a board game may increase participants' perceived understanding of how news is produced, thereby strengthening their sense of competence in dealing with journalistic content.

This increased sense of competence, in turn, is expected to translate into higher motivation to engage with news. Individuals who feel more capable of understanding and evaluating news are more likely to perceive news consumption as meaningful and rewarding, which should increase their willingness to engage with journalistic content beyond the intervention context.

**H2:** Participants will report higher motivation for news consumption after the intervention compared to before the intervention.

### **3 Method & Data**

#### ***3.1 Data collection procedure***

To test the proposed hypotheses, a quasi-experimental between-subjects design was employed. Data were collected in lower secondary school classes (ages 12–15) in the canton of Bern, Switzerland between March 24 and April 2, 2026.

This age group was selected because the educational board game NewsMaker was specifically designed for lower secondary education and addresses competencies related to media education and critical understanding of news that are part of the Swiss curriculum (Lehrplan 21). School classes in the canton of Bern typically include students with heterogeneous socio-demographic backgrounds and educational levels, making them a suitable setting for studying variation in learning outcomes and motivation.

Participating classes were randomly assigned at the class level to one of two conditions:

- **Pre-intervention condition:** Students complete the questionnaire before playing the board game.
- **Post-intervention condition:** Students complete the same questionnaire after playing the board game.

All classes participated in the educational board game NewsMaker, which simulates key mechanisms of journalistic work (e.g., news values, source evaluation, funding). The game was played in small groups at separate tables within the classroom setting under the supervision of the research team and the teacher. Each table was assigned a non-identifying code, which participants recorded in the questionnaire. This allowed the identification of participants nested within game tables and classes.

Either before or after playing, students completed a standardized questionnaire assessing news consumption, news engagement motivation, news media knowledge (questions related to news production and media structures), attitudes toward journalism, perceived news media literacy, affinity for board games, and socio-demographic characteristics. The order of questions and response options was randomized to reduce potential order effects.

Although the study design allowed for a multilevel structure (students nested within tables nested within classes), empirical tests indicated negligible clustering effects (see Section 3.4).

### **3.2 Participant Recruitment and Sample Size**

Participants were recruited through secondary schools in the canton of Bern. The unit of recruitment is the school class. Schools were contacted directly and invited to participate in the study. Participation required institutional approval from school authorities as well as consent from parents or legal guardians and assent from students.

The final sample consisted of  $N = 129$  students from nine lower secondary school classes. This is below the initially targeted sample size of 150–250 students due to practical constraints in school recruitment. The distribution across conditions was  $n = 58$  in the pre-intervention group and  $n = 71$  in the post-intervention group.

Participants were aged between 11 and 16 years ( $M = 13.43$ ,  $SD = .94$ ). The sample included 55.2% female and 44.8% male participants. A total of 76.7% of participants reported German or Swiss German as the primary language spoken at home.

### **3.3 Measures and Descriptive Statistics**

#### **Dependent Measures**

*News media knowledge* ( $M = 3.46$ ,  $SD = 1.93$ ) was measured using 11 multiple-choice items adapted from prior research on media literacy and news knowledge (e.g., Amazeen & Bucy, 2019; Maksl et al., 2015). Each item presented four substantive response options and an additional “don’t know” option. Only one response was correct.

Items covered key aspects of media literacy, including media structures (e.g., ownership, funding), journalistic processes (e.g., verification, news structure), and media types (e.g., quality vs. tabloid press).

Responses were coded dichotomously (1 = correct; 0 = incorrect or “don’t know”). Missing responses were also coded as incorrect, such that the resulting sum index (range: 0–11) reflects the proportion of correct answers across all participants.

Across the full sample, the average knowledge score was relatively low, indicating substantial room for improvement in students’ understanding of news media structures and processes. Item-level analyses revealed substantial variation in both response rates and correctness. While the proportion of participants answering individual items ranged from 30% to 78%, the proportion of correct responses across all participants ranged from 7% to 50%. Among those participants who provided an answer, correct response rates ranged from 11% to 71%.

Given that each item included a “don’t know” option, this pattern suggests that low overall item difficulty is not solely due to a lack of knowledge but also reflects participants’ reluctance to guess when uncertain.

News engagement motivation ( $M = 3.42$ ,  $SD = .85$ ) was measured using Likert-type adapted from prior research on news interest, informational motivations, and social uses of news (e.g., Katz et al., 1973; Newman et al., 2024).

Although the pre-analysis plan specified a five-item index, reliability analyses supported the use of a reduced three-item scale focusing on core motivational aspects. The resulting scale showed acceptable internal consistency (Cronbach’s  $\alpha = .73$ ).

### **Moderators**

*SES* was approximated using a composite measure of socioeconomic resources, as direct indicators of status (e.g., income or occupation) are difficult to assess reliably in adolescent samples. The index captures educational, informational, and communicative resources in the household.

Specifically, the index included parental education, number of books or e-books at home, newspaper subscription, and frequency of discussions about news at home. Parental education was measured separately for both parents and coded to indicate whether at least one parent had attained tertiary education (university or university of applied sciences).

All components were standardized (z-scores) and averaged. The resulting index was approximately normally distributed ( $M = -.03$ ,  $SD = .74$ ).

*Affinity for board games* ( $M = 3.35$ ,  $SD = 1.03$ ) was measured using a single Likert-type item. Responses covered the full range of the scale, indicating sufficient variability for testing moderation effects

**Table 1: Experimental Conditions and Measures**

<b>Variable Type</b>	<b>Variable</b>	<b>Operationalization / Items</b>
<b>Experimental Condition</b>	Intervention	Binary variable indicating whether the questionnaire was completed before (0 = pre-intervention) or after (1 = post-intervention) playing the board game.
	Timing	
<b>Clustering Variables</b>	School class	Participants are nested within school classes. Classes are treated as higher-level units in multilevel analyses.
	Game Table	Non-identifying table code recorded by participants to identify game groups. Used as grouping variable in multilevel analyses (tables nested within classes).
<b>Moderators</b>	Socio-economic Status (SES)	Composite index based on: (a) Highest educational attainment of parents (ordinal categories for Parent 1 and Parent 2), (b) perceived importance of books or e-books at home (1–5 scale), (c) newspaper subscription at home (yes/no), (d) frequency of discussions about news at home (1–5 scale). Variables standardized (z-scores) and combined into an index.
	Affinity for Board Games	Single item (1–5 scale): “How much do you enjoy playing board games in general?”
	Attitudes Toward Journalism (Trust & Performance)	Mean index of Likert items (1–5 scale): trust in journalistic news media, reporting of important topics, presentation of key facts, accuracy of information, and journalistic diligence.
<b>Dependent Variables</b>	News Media Knowledge	Sum index of knowledge items assessing media structures, media economics, journalistic processes and journalistic norms (e.g., Duration of Tagesschau - Quality newspaper (NZZ) - Boulevard newspaper (Blick) - Media ownership structure (private companies) - Google News vs SRF News - License-fee funding (SRF) - Local media definition - Paywall definition - Advertising as revenue source - Lead structure of news articles - Journalistic verification of information). Dichotomous scoring (1 = correct; 0 = incorrect or “don’t know”).
	News Engagement Motivation	Mean index of 5 Likert items (1–5 scale): interest in news, importance of being informed, understanding the world, using news for conversations, perceived social expectations.
<b>Control Variables</b>	Age	Measured in years (continuous).
	Gender	Categories: Female; Male; Diverse; Prefer not to say; Don't know.
	Language at Home	Categories: German/Swiss German; French; Italian; English; Other.
<b>Manipulation Check</b>	Game Experience	Mean index of 5 items (1–5 scale): 1. I enjoyed the game. 2. I was concentrated during the game. 3. I understood the game well. 4. I actively participated. 5. The game made me think. Measured in the post-intervention condition only.

*Attitudes toward journalism* ( $M = 3.30$ ,  $SD = .72$ ) were measured using a five-item index capturing trust in journalistic news media and perceived performance (e.g., reporting important topics, presenting key facts, accuracy, diligence). The items were adapted from established measures of media trust and perceived journalistic quality (Kohring & Matthes, 2007; Prochazka & Schweiger, 2019). The scale showed good internal consistency ( $\alpha = .83$ ).

### **Correlations**

Bivariate correlations showed moderate positive associations between key constructs. News engagement motivation was moderately correlated with SES ( $r = .47$ ), attitudes toward journalism ( $r = .44$ ), and news media knowledge ( $r = .41$ ). News media knowledge showed weak associations with attitudes toward journalism ( $r = .18$ ), suggesting that objective knowledge and subjective competence are only weakly related.

### **Game Experience (as Manipulation Check)**

To assess participants' engagement with the intervention, game experience was measured in the post-intervention condition only ( $n = 70$ ) using five items assessing enjoyment, concentration, understanding, participation, and cognitive engagement. The scale showed very good internal consistency ( $\alpha = .88$ ). Participants reported moderate to positive levels of game experience ( $M = 3.37$ ,  $SD = 0.99$ ), suggesting that the game was generally well received and that participants engaged with the intervention as intended.

### **3.4 Data analysis**

Primary analyses estimated the effect of the intervention using linear regression models (ordinary least squares, OLS), with condition (0 = pre-intervention, 1 = post-intervention) as the key independent variable.

Although multilevel models with random intercepts for classes and game tables were initially planned, variance components at higher levels were negligible and models showed singular fits. Therefore, OLS regression models were used for the main analyses. To assess the robustness of the intervention effect and the contribution of additional predictors, hierarchical regression models were estimated. Models were compared using F-tests and changes in explained variance ( $\Delta R^2$ ).

Moderation effects were tested by including interaction terms between the intervention condition and the respective moderator variables (socioeconomic resources, affinity for board games, and attitudes toward journalism). Continuous moderators were mean-centered prior to computing interaction terms.

Mean indices were calculated for multi-item scales if at least half of the items were available. Internal consistency was assessed using Cronbach's  $\alpha$ . Statistical significance was evaluated at  $\alpha = .05$  (two-tailed).

Analyses including socioeconomic resources and related variables were based on complete cases, resulting in a reduced sample size ( $n = 63$ ). Comparisons between included and excluded cases revealed systematic differences. Participants included in the analytical models reported marginally significant higher SES levels ( $M = 0.13$ ,  $SD = .61$ ) compared to excluded cases ( $M = -.12$ ,  $SD = .83$ ),  $t(119.3) = -1.98$ ,  $p = .051$ . In addition, included participants reported significantly higher news engagement motivation ( $M = 3.67$ ,  $SD = .78$ ) than excluded cases ( $M = 3.14$ ,  $SD = .84$ ),  $t(116.3) = -3.63$ ,  $p < .001$ . This pattern indicates selective missingness and suggests that findings involving socioeconomic resources should be interpreted with caution.

All analyses were conducted using R version 4.5.2) with the packages tidyverse, psych, and lme4.

The study design, hypotheses, and analysis plan were preregistered prior to data collection. The preregistration, including the full questionnaire, is available on the Open Science Framework (OSF; <https://osf.io/und6m>).

### **3.5 Ethical Considerations**

The study was approved by the Institutional Review Board of the the Faculty of Economics and Social Sciences at the University of Fribourg (IRB UNIFR SES; approval no. 2026-03-01). The study involved minor participants (students aged 11–16). Ethical standards for research with adolescents were strictly observed. Participation was entirely voluntary. Prior to data collection, permission was obtained from school authorities. Parents or legal guardians provided active informed consent, and students provided assent before participating.

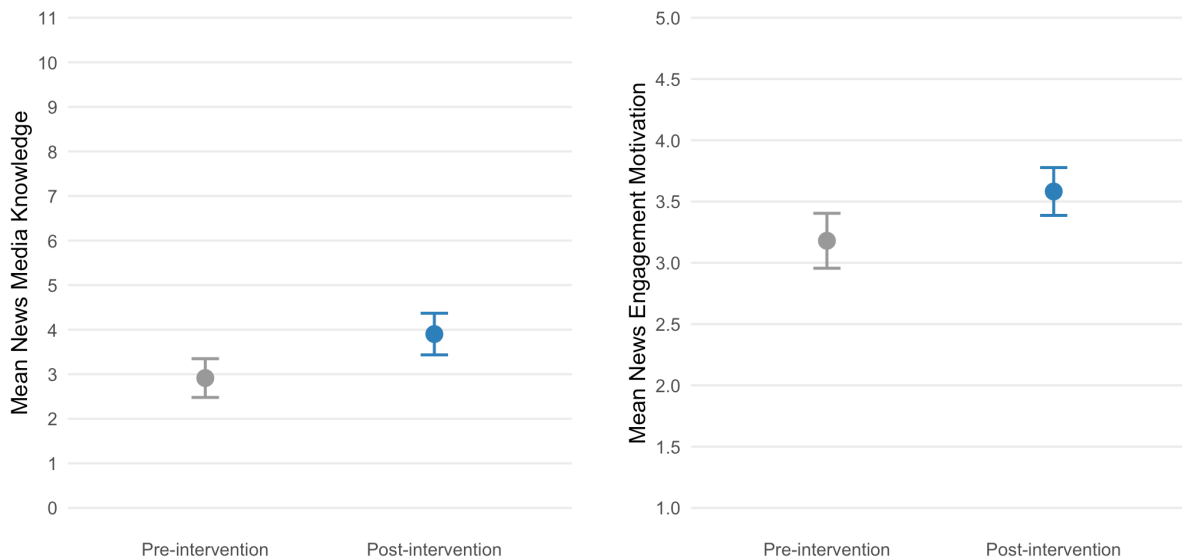
Participants were informed that they could withdraw from the study at any time without any negative consequences. Students who did not participate were provided with an alternative activity during the survey phase. Data collection was conducted anonymously.

## **4 Results**

Descriptive analyses revealed higher average levels of both news media knowledge and news engagement motivation among participants in the post-intervention condition compared to the pre-intervention condition (see Figure 1). For news media knowledge, participants in the post-intervention condition scored higher ( $M = 3.90$ , 95% CI [3.47, 4.33]) than participants in the pre-intervention condition ( $M = 2.91$ , 95% CI [2.43, 3.40]). Similarly, news engagement motivation was higher in the post-intervention condition ( $M = 3.58$ , 95% CI [3.39, 3.77])

compared to the pre-intervention condition (M = 3.18, 95% CI [2.95, 3.41]). These descriptive patterns are examined inferentially in the following regression analyses.

**Figure 1. Descriptive differences in news media knowledge and news engagement motivation by condition**



Note. Points represent group means and error bars indicate 95% confidence intervals. Higher values indicate higher levels of news media knowledge and news engagement motivation, respectively.

#### **4.1 Effect of the Intervention on News Media Knowledge (H1)**

H1 posited that participation in the NewsMaker intervention would be associated with higher levels of news media knowledge. To test this hypothesis, the effect of the intervention on knowledge was estimated using OLS regression models (see Table 2).

Results from the baseline model showed that participants in the post-intervention condition scored significantly higher on the knowledge index compared to those in the pre-intervention condition ( $b = .99$ ,  $SE = .33$ ,  $p = .003$ ). This effect remained robust when controlling for sociodemographic and resource-related variables ( $b = 1.44$ ,  $SE = .44$ ,  $p = .002$ ).

Hierarchical model comparisons indicated that the inclusion of control variables did not significantly improve model fit,  $\Delta F(7, 55) = 2.04$ ,  $p = .066$ , although explained variance increased substantially from  $R^2 = .07$  to  $R^2 = .34$  ( $\Delta R^2 = .27$ ).

These results support H1, indicating that participation in the NewsMaker intervention is associated with higher levels of news media knowledge. The observed effect corresponds to an increase of approximately one additional correct answer on the knowledge index.

**Table 2: OLS Regression Models Predicting News Media Knowledge**

Predictor	Model 1 (Baseline)	Model 2 (Controls)
Condition (post = 1)	.99** (0.33)	1.44** (.44)
Age		.28 (.27)
Gender (male =1)		.84 (.48)
Language (German = 1)		.78 (.57)
Books at home		.20 (.18)
Newspaper subscription (yes =1)		.58 (.48)
News discussions		.21 (.23)
Parental education (tertiary = 1)		-.26 (.41)
N	129	64
R <sup>2</sup>	0.07	0.34
Adjusted R <sup>2</sup>	0.06	0.24
F statistic	8.89**	3.50**

Note. OLS regression coefficients with standard errors in parentheses. Model 2 includes sociodemographic and resource-related control variables. Due to missing data, Model 2 is based on a reduced sample (complete cases). \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

#### **4.2 Moderation Analyses (H1.1–H1.3)**

To examine whether the effect of the intervention varies across individual characteristics, moderation analyses were conducted for SES (H1.1,  $N = 129$ ), affinity for board games (H1.2,  $N = 129$ ), and attitudes toward journalism (H1.3,  $N = 128$ ).

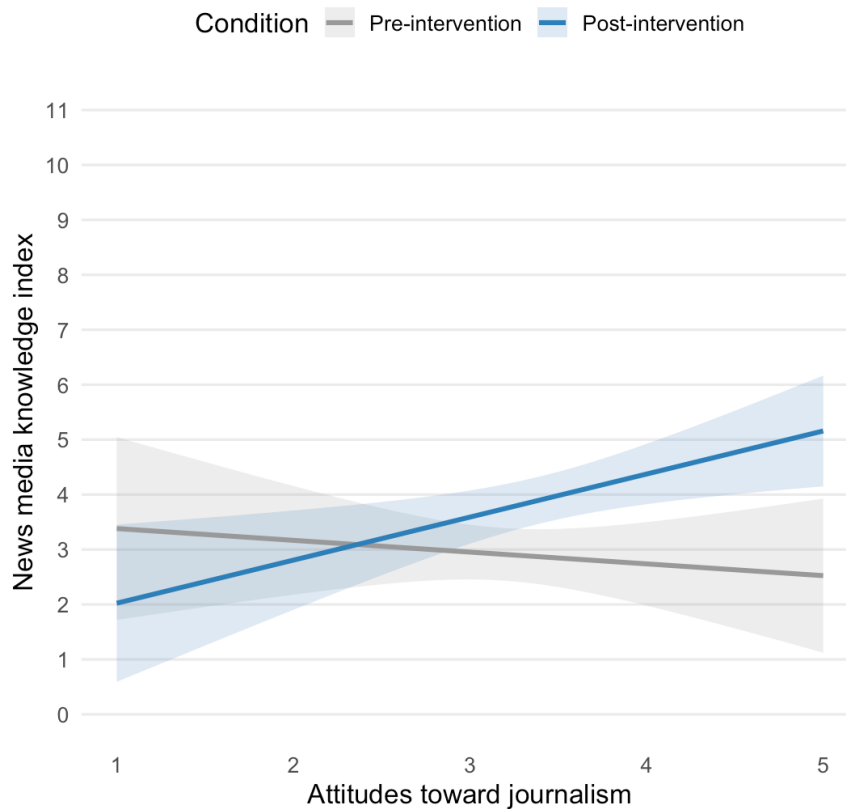
Regarding H1.1, SES was positively associated with knowledge ( $b = .97$ ,  $SE = .35$ ,  $p = .007$ ), indicating that participants with higher levels of socio-economic resources scored higher on the knowledge index overall. However, the interaction between condition and socioeconomic resources was not statistically significant ( $b = -.43$ ,  $SE = .45$ ,  $p = .334$ ), suggesting that the effect of the intervention did not differ systematically across levels of socio-economic resources. Thus, H1.1 was not supported.

For H1.2, affinity for board games was not significantly associated with knowledge ( $b = .23$ ,  $SE = .23$ ,  $p = .320$ ), and the interaction between condition and board game affinity was not significant ( $b = -.14$ ,  $SE = .34$ ,  $p = .678$ ). This indicates that the effectiveness of the intervention did not depend on participants' general affinity for board games. Accordingly, H1.2 was not supported.

In contrast, the analysis for H1.3 revealed a significant interaction between condition and attitudes toward journalism ( $b = 1.00$ ,  $SE = .47$ ,  $p = .036$ ). While attitudes toward journalism were not significantly associated with knowledge in the pre-intervention condition ( $b = -.21$ ,  $SE = .37$ ,  $p = .565$ ), the positive interaction term indicates that the effect of the intervention was stronger for participants with more positive attitudes toward journalism. (see Figure 1)

These results provide support for H1.3, suggesting that pre-existing attitudes toward journalism moderate the effectiveness of the intervention.

**Figure 2: Moderating effect of attitudes toward journalism on the relationship between intervention condition and news media knowledge**



Note. Predicted values from OLS regression models (N=128). Higher values indicate greater news media knowledge. Shaded areas represent 95% confidence intervals.

#### **4.3 Effect of the Intervention on News Engagement Motivation (H2)**

H2 posited that participation in the NewsMaker intervention would be associated with higher levels of motivation to engage with news. To test this hypothesis, OLS regression models were estimated with news motivation as the dependent variable (see Table 3).

Results from the baseline model showed that participants in the post-intervention condition reported significantly higher levels of news motivation compared to those in the pre-intervention condition ( $b = .40$ ,  $SE = .15$ ,  $p = .010$ ;  $N = 121$ ).

A separate model including socioeconomic resources showed that SES was positively associated with news motivation ( $b = .47$ ,  $SE = .15$ ,  $p = .003$ ), while the interaction between condition and SES was not statistically significant ( $b = .09$ ,  $SE = .19$ ,  $p = .618$ ), indicating no moderation effect.

When including sociodemographic and resource-related control variables, the effect of the intervention remained statistically significant ( $b = .41$ ,  $SE = .17$ ,  $p = .017$ ;  $N = 63$ ). Moreover, results show that frequency of news discussions emerged as a strong and statistically significant predictor of news motivation ( $b = .41$ ,  $SE = .09$ ,  $p < .001$ ), whereas other resource indicators showed weaker or non-significant associations.

Hierarchical model comparisons indicated that the inclusion of control variables significantly improved model fit,  $\Delta F(7, 54) = 5.17$ ,  $p < .001$ , with explained variance increasing from  $R^2 = .06$  to  $R^2 = .46$  ( $\Delta R^2 = .40$ ).

These results support H2, indicating that participation in the NewsMaker intervention is associated with higher levels of news motivation.

**Table 3. OLS Regression Models Predicting News Motivation**

Predictor	Model 1 (Baseline)	Model 2 (SES Model)	Model 3 (Controls)
Condition (post = 1)	.40** (.15)	.39** (.14)	.41* (.17)
SES		.47** (.15)	
Condition × SES		.09 (.19)	
Age			-.01 (.10)
Gender (male = 1)			.43* (.19)
Language (German = 1)			.09 (.22)
Books at home			.12 (.07)
Newspaper subscription (yes = 1)			.13 (.18)
News discussions			.41*** (.09)
Parental education (tertiary = 1)			.09 (.16)
N	121	121	63
R <sup>2</sup>	0.06	0.27	0.46
Adjusted R <sup>2</sup>	0.05	0.25	0.37
F statistic	6.94**	14.45***	5.64***

Note. OLS regression coefficients with standard errors in parentheses. Model 2 includes socioeconomic resources and their interaction with condition. Model 3 includes sociodemographic and resource-related control variables. Due to missing data, Model 3 is based on a reduced sample (complete cases). \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

## 5 Discussion

The present study examined the effects of the educational board game *NewsMaker* on adolescents' news media knowledge, motivation to engage with news, and perceptions of journalism. Overall, the findings provide evidence that game-based learning can contribute to strengthening key components of news media literacy and engagement, while also highlighting important boundaries of such interventions.

A central finding is that participants demonstrated relatively low levels of news media knowledge at baseline. Despite the inclusion of media-related competencies in the Swiss curriculum (Lehrplan 21), the average number of correct answers remained modest, suggesting substantial gaps in adolescents' understanding of media structures, journalistic processes, and the functioning of news production. This may reflect that existing curricular approaches place greater emphasis on general digital skills or technical competencies rather than on the institutional foundations and democratic functions of journalism. However, in increasingly complex information environments, understanding journalism as a source of verified information becomes an important democratic competence (Castro et al., 2022; Frau-Meigs et al., 2017).

Against this background, the results show that participation in the *NewsMaker* intervention was associated with significant increases in both objective news media knowledge and news engagement motivation. These findings support previous research suggesting that serious games can serve as effective learning tools by making complex processes more tangible, interactive, and engaging (Wouters et al., 2013; Clark et al., 2016; Noda et al., 2019). By simulating journalistic decision-making, source verification, and structural constraints, the game appears to facilitate a deeper understanding of how news is produced and evaluated. In line with Self-Determination Theory (Deci & Ryan, 2000), the positive effect on news engagement motivation further suggests that interactive and collaborative learning formats may enhance not only cognitive outcomes but also motivational engagement with news.

The findings further indicate that the effectiveness of the intervention varies across individuals. While socioeconomic resources were positively associated with both knowledge and motivation, they did not moderate the effect of the intervention. Contrary to expectations derived from the knowledge gap hypothesis (Tichenor et al., 1970), the intervention did not reinforce resource-based differences in learning gains. In contrast, and consistent with assumptions of the Elaboration Likelihood Model (Petty & Cacioppo, 1986; Petty & Wegener, 1999), attitudes toward journalism significantly moderated knowledge gains. The intervention was particularly effective among participants who already held more positive views of journalism, highlighting the importance of pre-existing orientations toward journalism in shaping media-literacy-related learning outcomes.

In addition, the frequency of news-related discussions emerged as a consistent predictor of news engagement motivation. This highlights the central role of communicative environments in shaping adolescents' engagement with news and suggests that informal learning processes—such as conversations with family or peers—may complement formal educational interventions.

Taken together, the findings suggest that serious games can be a valuable tool for promoting news media literacy, particularly with regard to knowledge and motivation. By offering an interactive and experiential learning environment, such approaches may complement existing curricular formats and address gaps in adolescents' understanding of journalism as a societal institution and as a source of verified and reliable information.

### *Limitations and Outlook*

Several limitations should be considered when interpreting these findings. First, the study employed a quasi-experimental design with class-level assignment, which may introduce unobserved differences between groups. Second, the overall sample size was smaller than initially planned, and analyses including socioeconomic variables were based on a reduced subsample due to missing data. Third, the intervention was implemented as a one-time session, limiting conclusions about long-term effects. Fourth, several measures relied on self-reports and may therefore be subject to response biases.

Future research should examine the effects of repeated or longer-term implementations of game-based interventions and explore how such approaches can be integrated into formal educational settings. In addition, combining game-based learning with reflective components or guided discussions may help strengthen not only knowledge and motivation, but also normative and evaluative dimensions of media literacy. Finally, given the moderating role of attitudes toward journalism, future work should investigate how media literacy interventions can be adapted to reach adolescents with more skeptical orientations toward news media.

### *Conclusion*

This study contributes to research on news media literacy and digital communication in several ways. First, it provides empirical evidence that a short game-based intervention can increase adolescents' objective knowledge about journalism as well as their motivation to engage with news. These findings highlight the potential of serious games as interactive and scalable approaches to media literacy education.

Second, the study contributes to a more differentiated understanding of news media literacy by demonstrating that cognitive and motivational dimensions do not necessarily develop in parallel and are shaped by different individual predispositions. In particular, the moderating role of attitudes toward journalism suggests that media literacy interventions are influenced not only by structural resources, but also by pre-existing orientations toward journalism and news.

Third, the findings highlight the importance of communicative environments in adolescents' engagement with news. The consistent association between news-related discussions and

news motivation suggests that informal and socially embedded learning processes may complement formal educational interventions.

Finally, the findings underscore the importance of developing educational approaches that make journalism more transparent, accessible, and understandable in increasingly complex information environments.

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## References

- Amazeen, M. A., & Bucy, E. P. (2019). Conferring Resistance to Digital Disinformation: The Inoculating Influence of Procedural News Knowledge. *Journal of Broadcasting & Electronic Media*, 63(3), 415–432. <https://doi.org/10.1080/08838151.2019.1653101>
- Basol, M., Roozenbeek, J., & Van Der Linden, S. (2020). Good News about Bad News: Gamified Inoculation Boosts Confidence and Cognitive Immunity Against Fake News. *Journal of Cognition*, 3(1), 2. <https://doi.org/10.5334/joc.91>
- Castro, L., Strömbäck, J., Esser, F., van Aelst, P., Vreese, C. de, Aalberg, T., Cardenal, A. S., Corbu, N., Hopmann, D. N., Koc-Michalska, K., Matthes, J., Schemer, C., Sheaffer, T., Splendore, S., Stanyer, J., Stępińska, A., Štětka, V. & Theocharis, Y. (2022). Navigating High-Choice European Political Information Environments: a Comparative Analysis of News User Profiles and Political Knowledge. *The International Journal of Press/Politics*, 27(4), 827– 859. <https://doi.org/10.1177/19401612211012572>
- Clark, D. B., Tanner-Smith, E. E., & Killingsworth, S. S. (2016). Digital games, design, and learning: A systematic review and meta-analysis. *Review of Educational Research*, 86(1), 79–122. <https://doi.org/10.3102/0034654315582065>
- Chang, Y.K., Literat, I., Price, C., Eisman, J.I., Chapman, A., Gardner, J., & Truss, A. (2020). News literacy education in a polarized political climate: How games can teach youth to spot misinformation. *The Harvard Kennedy School (HKS) Misinformation Review*, 1(4). <https://doi.org/10.37016/mr-2020-020>
- Deci, E. L., & Ryan, R. M. (2000). The “What” and “Why” of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, 11(4), 227–268. [https://doi.org/10.1207/S15327965PLI1104\\_01](https://doi.org/10.1207/S15327965PLI1104_01)
- Ettema, J. S., & Kline, G. (1977). Deficits, Differences, and Ceilings. Contingent Conditions for Understanding the Knowledge Gap. *Communication Research*, 4(2), 179–200. <https://doi.org/10.1177/009365027700400204>
- fög – Forschungszentrum Öffentlichkeit und Gesellschaft (Hg.) (2025). Jahrbuch Qualität der Medien 2025. Schwabe. <https://doi.org/10.24894/978-3-7965-5366>
- Frau-Meigs, D., O’Neill, B., Soriani, A., & Tomé, V. (2017). *Digital citizenship education: Volume 1: Overview and new perspectives*. Council of Europe Publishing.
- Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and Gratifications Research. *The Public Opinion Quarterly*, 37(4), 509–523. <https://doi.org/10.1086/268109>
- Kohring, M., & Matthes, J. (2007). Trust in news media. *Communication Research*, 34(2), 231–252. <https://doi.org/10.1177/0093650206298071>
- Külling-Knecht, C., Waller, G., Willemse, I., Deda-Bröchin, S., Suter, L., Streule, P., Settegrana, N., Jochim, M., Bernath, J., & Süß, D. (2024). JAMES – Jugend, Aktivitäten,

Medien – Erhebung Schweiz. Zürich: Zürcher Hochschule für Angewandte Wissenschaften.

- Maksl, A., Ashley, S., & Craft, S. (2015). Measuring News Media Literacy. *Journal of Media Literacy Education, 6*(3), 29-45. <https://doi.org/10.23860/jmle-6-3-3>
- Newman, N., Fletcher, R., Robertson, C. T., Ross Arguedas, A., & Nielsen, R. K. (2024). Reuters Institute digital news report 2024. Reuters Institute for the Study of Journalism.
- Noda, S., Shirotaki, K., & Nakao, M. (2019). The effectiveness of intervention with board games: a systematic review. *BioPsychoSocial medicine, 13*(1), 22. doi: 10.1186/s13030-019-0164-1.
- Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In R. E. Petty & J. T. Cacioppo (Eds.), *Communication and Persuasion: Central and Peripheral Routes to Attitude Change* (pp. 1-24). Springer.
- Petty, R. E., & Wegener, D. T. (1999). The Elaboration Likelihood Model: Current status and controversies. In S. Chaiken, & Y. Trope (eds.), *Dual-process theories in social psychology* (pp. 41–72). Guilford Press.
- Prochazka, F., & Schweiger, W. (2019). How to Measure Generalized Trust in News Media? An Adaptation and Test of Scales. *Communication Methods and Measures, 13*(1), 26–42. <https://doi.org/10.1080/19312458.2018.1506021>
- Tichenor, P., Donohue, G., & Olien, C. (1970). Mass Media Flow and Differential Growth in Knowledge. *Public Opinion Quarterly, 34*(2), 159–170.
- Wouters, P., van Nimwegen, C., van Oostendorp, H., & van der Spek, E. D. (2013). A meta-analysis of the cognitive and motivational effects of serious games. *Journal of Educational Psychology, 105*(2), 249–265.