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Capabilities Over Feelings: Digital Literacy, Short Video Engagement, and Aging Expectations among Older Adults in China

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Abstract. China is experiencing rapid population aging and fast adoption of short video platforms among older adults, and Douyin has become a major source of information and entertainment for this group. Whether educational level influences the way older adults engage with short video content, and whether such engagement in turn influences how they expect their later life, remains underdeveloped. This study uses a cross-sectional survey of 127 older adults aged 60 and above in Maojian District, Shiyan, to examine relationships between education, mode of engagement, digital literacy, content response, perceived influence, and aging expectations. Results of Chi-square tests and Spearman rank correlations suggest that educational level is significantly associated with mode of engagement and with response to family-related content. Digital literacy is significantly associated with more optimistic aging expectations, whereas perceived influence from short video content is not. The findings demonstrate that what older adults can actually do on a platform matters more than how strongly they feel they are being influenced by it.

Keywords: Older adults, Douyin, Digital literacy, Aging expectations, Short Videos

1. Introduction

China is experiencing both rapid population aging and growing digital adoption among older adults. According to the 57th Statistical Report on China's Internet Development [1], users aged 60 and above account for 15.4% of all internet users in the country. These two trends are occurring simultaneously, but not every older adult who has access to the internet uses it in a meaningful way. Among various digital platforms, Douyin has become one of the most widely used short video platforms among Chinese older adults. Unlike traditional media, Douyin allows users to either passively receive algorithmic recommended content or actively search for what they want to see. This difference in engagement mode may be influenced by educational background and may, in turn, influence how older adults perceive aging.

This study focuses on Maojian District, an urban district of Shiyan in Hubei Province. According to China's Seventh National Population Census, approximately 59,800 residents in Maojian are aged 60 and above, representing 12% of the total district population. As an urban district of a mid-sized city, older adults in Maojian generally have access to digital devices and internet connectivity, but

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the way they use these resources still varies. The older adults in Maojian District with a lower educational level often cannot independently search for eldercare-related information on Douyin, while their higher-educated peers rarely have such difficulty. This gap suggests that educational level may influence how older adults interact with short video platforms, and may further shape their information access and expectations of aging. However, much existing research treats older adults as a relatively homogeneous group, and the relationship between digital information consumption patterns and psychological outcomes such as aging expectations and quality of life remains underdeveloped. Therefore, this study aims to answer the following questions: How is educational level associated with the mode of information engagement among older adults on short video platforms? To what extent is educational level associated with differences in emotional responses to aging-related short video content? Do older adults who perceive greater influence from short video content on their views of aging report more optimistic or more pessimistic later-life expectations? What is the relationship between older adults' digital literacy and their overall later-life expectations?

2. Literature review

2.1. Education and older adults' digital usage

Recent research on the Chinese digital divide highlights that educational background continues to shape how older adults use the internet, even when access is no longer the main barrier. Du and Luo analyzed older adults' internet use in China and found that more educated users engaged with comprehensive and multi-functional activities, while less educated individuals concentrated on basic social and entertainment activities [2]. Li and Kostka reached a similar conclusion about the broader Chinese context, arguing that the gray digital divide in China is now primarily a usage divide rather than a connectivity divide [3].

Algorithm awareness is a further layer of this divide. Moravec et al. examined algorithmic personalization across user groups and reported that awareness of how recommendation systems work varies with education, with less educated users showing a weaker understanding of how their feed is shaped [4]. Wang and Cao studied older adults on Douyin and observed that the platform's default mode of interaction requires little cognitive effort; in that case, for users with low digital literacy, the algorithm effectively becomes the main gatekeeper to information [5].

2.2. Short video usage, well-being, and digital literacy interventions

Zhang et al., drawing on the 2020 China Family Panel Studies, reported that short video usage produced meaningful improvements in older adults' mental health through better intergenerational relationships and leisure consumption [6]. Li et al., surveying 407 rural empty-nest older adults in Sichuan, found that the interactivity and entertainment value of Douyin increased subjective well-being [7]. By contrast, Wen et al. reported that perceived overload on short video platforms led to loneliness, anxiety, and depression among older users, indicating that the same medium can make different psychological consequences depend on how it is used [8].

Negative effects appear when usage becomes unregulated. Yao argued that addictive algorithmic design accentuates older adults' vulnerabilities through reinforcement mechanisms, including cognitive change, social isolation, and limited digital literacy [9]. These studies together suggest that whether short video use helps or harms an older adult depends on how it is used and the user's capacity to evaluate content.

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Cheng et al. implemented a three-month intergenerational learning program in a rural Chinese primary school, where grandchildren taught their grandparents digital skills, and reported gains in digital knowledge and lifestyle adjustment [10]. Li et al. found that higher digital literacy was associated with healthier behaviour and more positive future expectations among rural older adults, suggesting that digital literacy has both practical and affective consequences [11].

2.3. Research gap

Three gaps have been proposed. First, no existing study used digital literacy as the mediating variable that links educational background to short video engagement patterns and aging-related psychological outcomes. Second, work on older adults' Douyin usage has concentrated on general behaviour, well-being, or addiction risk rather than on the specific link between content engagement and aging expectations. Third, mid-sized Chinese cities such as Shiyan, where access is no longer the main barrier but skill gaps still exist, have had little empirical attention.

3. Theoretical framework

Three theoretical frameworks provide the foundation for this study. The first is the second-level digital divide proposed by van Deursen and van Dijk [12, 13], which mentions that once physical access to the internet becomes widespread, inequality is not only related to connectivity but also linked to the skills users bring to digital environments. Their four-level framework distinguishes operational, formal, information, and strategic skills, and predicts that disparities in usage increase as digital participation requires more sophisticated capability. Applied to Douyin, this framework implies that older adults with similar device access may differ in what they can do on the platform.

The second is cultivation theory, which suggests that habitual media exposure gradually shapes viewers' perceptions of social reality [14]. On algorithmic platforms, cultivation effects may operate more selectively than on traditional media, as personalized recommendation reinforces the patterns the user has shown before. For older adults whose short video usage is dominated by algorithmic recommendations, cultivation theory provides a basis for expecting that habitual exposure to particular kinds of aging-related content may shape their perceptions of what later life is like.

The third is Levy's stereotype embodiment theory, which argues that age stereotypes can become a self-fulfilling prophecy through psychological, behavioural, and physiological pathways [15]. Older adults who have negative aging beliefs tend to behave in ways that confirm them. The theory thus supports that what older adults see on Douyin is related to how they expect their own later life.

Taken together, these theories provide a basic mechanism for this study, which is that educational background shapes the digital skills with which older adults approach Douyin; those skills shape what content they are exposed to; and exposure interacts with aging beliefs to shape later-life expectations.

4. Methodology

4.1. Research design

The research was conducted in Maojian District, an urban district of Shiyan, Hubei Province, as digital usage patterns still differ among people with different educational backgrounds. This study uses a cross-sectional survey design to identify associations between education, digital literacy,

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content engagement, and aging expectations. A quantitative approach was chosen because the four research questions all concern relationships between measurable categorical or ordinal variables.

4.2. Sample selection

The study used purposive and convenience sampling. Participants were adults aged 60 and above living in Maojian District. Participants were recruited through three channels: a local senior university in Maojian District, which provided the largest portion of the sample (approximately 70%); a community choir and dance group introduced by personal contact (approximately 10–15%); and additional personal referrals, in which initial respondents passed the questionnaire to other older adults they knew. Because senior university attendees and community group members tend to be more educated, healthier, and more socially active than the general older population, the sample likely underrepresents the most digitally isolated older adults. In total, 127 valid responses were collected, and all returned questionnaires were complete, so no responses were excluded.

4.3. Instrument

The questionnaire was developed in Chinese and contained 37 items distributed across five parts: demographic background (age, education, occupation, living arrangement, health, financial situation), short video usage behaviour (frequency, time, type of engagement), content exposure and emotional response (health content, policy content, filial-piety content, perceived reality), aging expectations and well-being (future expectation, emotional companionship, financial confidence), and digital literacy (policy knowledge, search ability, perceived access difficulty). Before distribution, the questionnaire was reviewed by an older adult who provided feedback on item clarity and wording adjustments.

Each question contains four core variables and one composed variable, which were aligned with the research objectives and measurement validity. Multi-select and open-ended items were excluded from the inferential analysis. Educational level (Q2) was coded as an ordinal variable from 1 (no formal education) to 6 (college degree or above). Mode of engagement (Q11) was coded as a categorical variable with three values: passive viewing of recommended content, active searching, and viewing content shared by family members. Family-related content response (Q17) was an ordinal variable from 1 (never seen) to 4 (watch often, deeply related). Perceived influence of short video content on aging views (Q21) was measured on an ordinal scale from 1 (no influence) to 4 (significant influence). Future expectation (Q32) was an ordinal outcome with three categories: optimistic, neutral, and pessimistic. Respondents who selected "haven't thought about it" for Q32 were excluded from analyses involving future expectation. Digital literacy was constructed as a composed variable by averaging three items: policy knowledge (Q35), independent search ability (Q36), and perceived access ability (Q37). A higher score means higher digital literacy. It correlates to the four-level digital skills framework: Q35 captures information-related knowledge, Q36 captures operational and strategic skills, and Q37 captures perceived effectiveness.

4.4. Data collection

Data were collected in early 2026 through paper questionnaires distributed face-to-face. The decision to use a single mode was made to keep the data collection procedure consistent across respondents and ensure that older adults who do not regularly use smartphones to take the survey were not excluded from the sample. Paper questionnaires were distributed at the senior university

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and at the community group by a personal contact, who explained the purpose of the study before handing out each questionnaire. Completed paper responses were entered into a single Excel dataset for analysis.

Informed consent was obtained from all participants, who were told that the questionnaire was part of a student research project on short video usage among older adults and that participation was voluntary. All responses were anonymous, and participants were free to withdraw at any time.

4.5. Data analysis

Data were analyzed in SPSS. Descriptive statistics were used to characterize the sample. Because the key variables in the four research questions are all categorical or ordinal, inferential analysis relied on chi-square tests of independence and Spearman rank correlations. Cramer's V was reported as an effect-size indicator for chi-square tests.

5. Results

5.1. Descriptive result

Among 127 participants, ages ranged from 60 to 82 years (M = 70.52, SD = 6.50). Educational level ranged with a mean of 3.87 (SD = 1.64), indicating that the average participant fell around middle school attainment but spread across the educational level. Self-rated health (M = 2.57, SD = 0.96) and financial security (M = 2.48, SD = 0.94) both centred near the midpoint of their scales. Daily short video usage averaged between 30 minutes and one hour (Q9 M = 2.67), indicating that the sample engaged with the platform meaningfully. The composed digital literacy score ranged from 1 to 3.67 (M = 2.25, SD = 0.67, N = 127). Internal consistency of the three items was acceptable (Cronbach's $\alpha = 0.684$), and the items correlated positively with each other (rs from 0.37 to 0.48, all $p < 0.001$), supporting a single underlying dimension of digital ability. For analyses involving future expectation (RQ4 and Table 2), 5 participants who selected "haven't thought about it" on Q32 were excluded, yielding a sample of N = 122. The full descriptive result was shown in Table 1.

Table 1. Descriptive result (N = 127)

Variable	Category	n (%)
Age group	60–64	27 (21.3)
	65–69	29 (22.8)
	70–74	31 (24.4)
	75–79	26 (20.5)
	80+	14 (11.0)
Educational level	No formal education	14 (11.0)
	Some elementary school	18 (14.2)
	Elementary school graduate	14 (11.0)
	Middle school	31 (24.4)
	High school/Vocational	24 (18.9)
	College or above	26 (20.5)
Self-rated health	Very poor	18 (14.2)
	Poor	43 (33.9)

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Table 1. (continued)

	Fair	42 (33.1)
	Good	24 (18.9)
Daily short video usage	< 30 min	25 (19.7)
	30 min – 1 hr	36 (28.3)
	1 – 2 hr	29 (22.8)
	2 – 3 hr	30 (23.6)
	> 3 hr	7 (5.5)

5.2. Educational level and mode of engagement

To test the association between educational level and mode of engagement, the chi-square test was statistically significant ($p = 0.001$), indicating that mode of engagement differed across educational groups. The Spearman correlation was positive and significant ($p < 0.001$), indicating that a higher educational level was associated with more active engagement. Cramer's V was 0.32, suggesting a medium effect.

As Figure 1 shows, the contrast between the lowest and highest educational groups was pronounced. Among participants with no formal education, 87.5% relied entirely on algorithmic recommendations, and none reported actively searching for content. Among college-educated participants, only 25.0% relied mainly on passive recommendations, and 54.2% actively searched for content.

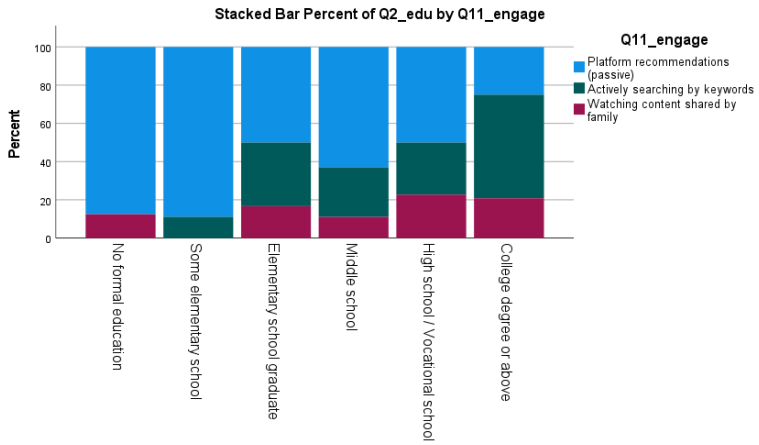

Figure 1. Mode of engagement by educational level (N = 127)

5.3. Educational level and response to family-related content

The chi-square test of the association between educational level and emotional response to family-related short video content was statistically significant ($p = 0.005$), indicating that responses to family-related content differed across educational groups. The Spearman correlation was positive and significant ($p = 0.002$), indicating that a higher educational level was associated with more frequent engagement with such content. Cramer's V (0.29) indicates a near-medium effect.

Among participants with no formal education, 85.7% either reported never seeing family-related content or expressed little interest in it. Among college-educated participants, 65.4% reported

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watching such content often (as shown in Figure 2).

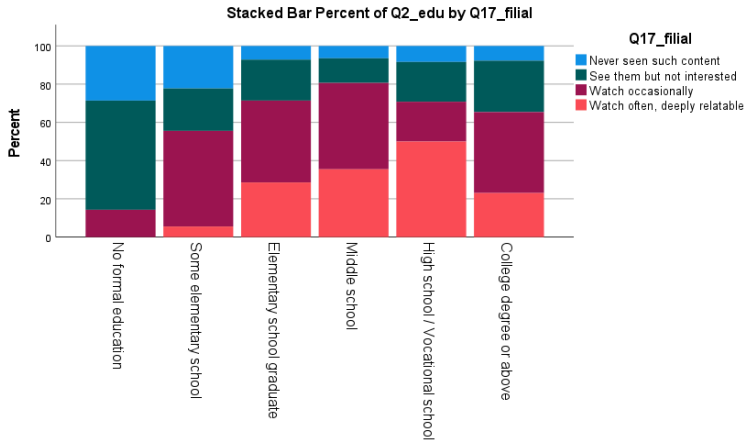

Figure 2. Response to family-related content by educational level (N = 127)

5.4. Perceived influence and future expectations

To test the relationship between perceived influence of short video content on views of aging and future expectations, the result of the chi-square test was not statistically significant ($p = 0.107$), and the Spearman correlation was also non-significant ($p = 0.641$). This analysis was based on 102 participants who use short video platforms, since the 25 participants who reported rarely using short videos skipped Q21.

As Figure 3 shows, among respondents who answered both items, the largest group reported experiencing "some influence" from short video content, and the majority (57.1%) selected neutral aging expectation.

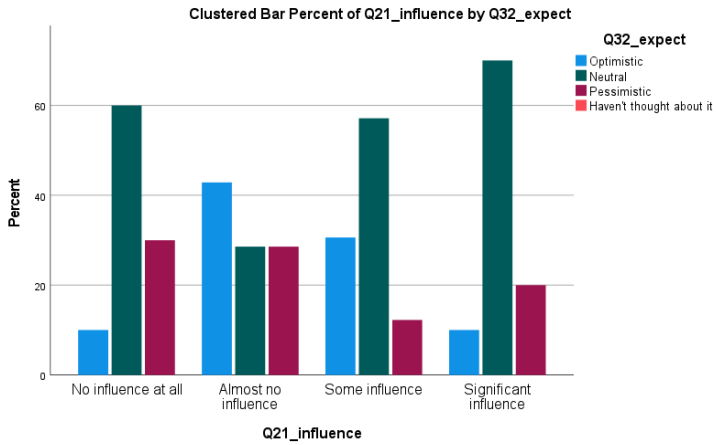

Figure 3. Aging expectations by perceived influence of short video content (N = 102). Includes only participants who reported using short video platforms

5.5. Digital literacy and future expectations

Spearman's rank correlation was used to test the association between Digital literacy and Future expectations. As Table 2 shows, the correlation was positive and significant ($p < 0.001$), indicating that higher digital literacy was associated with more optimistic later-life expectations. The three

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component items also showed significant positive correlations with aging expectations ($p < 0.001$): knowledge of elderly rights and policies (Q35); independent search ability (Q36); and access ability (Q37).

Table 2. Spearman correlations among key variables

Variable	1	2	3	4	5	6
1. Education	—					
2. Digital Literacy	.65***	—				
3. Engagement Mode	.33***	.24**	—			
4. Family Content Resp.	.27**	.36***	.27**	—		
5. Perceived Influence	.16	.17	.29**	.10	—	
6. Aging Expectations	.36***	.38***	.06	−.03	.03	—

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. N = 127 for correlations among variables 1–4. N = 102 for correlations involving Perceived Influence (excludes participants who reported rarely using short videos). N = 122 for correlations involving Aging Expectations (excludes 5 participants who selected "haven't thought about it"). N = 97 for Perceived Influence × Aging Expectations.

6. Discussion

6.1. Education as a gateway to engagement

The findings on RQ1 and RQ2 show that educational background continues to affect how older adults interact with short video platforms, even if access is no longer the central barrier. Higher-educated older adults were more likely to actively search for content and to engage more often with family-related material, while lower-educated users depend more on algorithmic recommendations. This pattern is what the second-level digital divide framework would predict: when the operational threshold for entry to a platform is low, inequality settles in formal, informational, and strategic skills that determine what people can do once they are inside the app.

The RQ2 result was, at first, the opposite of what intuition suggests. One might assume that lower-educated older adults, who are sometimes stereotyped as more traditional, would engage more deeply with filial-piety content. The findings show the opposite, and the most plausible explanation is that higher-educated older adults pursue emotionally meaningful and family-related content more often, while lower-educated users encounter such material only when the algorithm recommend to them.

This finding also extends what Du and Luo observed in Douyin, where the divide between active and passive usage seems likely to compound rather than narrow over time. Du and Luo described usage differences across educational groups on general internet platforms; the present results suggest that on Douyin, the same thing is amplified by the recommendation system itself, as higher-educated users can override the algorithm by searching while lower-educated users cannot [2]. Wang and Cao's observation that the algorithm becomes the main gatekeeper for low-literacy older users on Douyin is consistent with this: their qualitative pattern shows up here as a quantitative gradient [5]. The direction of the RQ2 result, therefore, does not contradict prior work; it extends prior work into a content domain (family and filial-piety material) where "traditional" older users had not previously been tested.

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6.2. Digital literacy matters more than felt influence

The most interesting result of this study is the contrast between RQ3 and RQ4. Perceived influence of short video content on views of aging showed no significant relationship with future expectations, while objective digital literacy did. This finding supplements cultivation theory. Classical cultivation theory predicts that heavy, repeated exposure should gradually shape perceptions of social reality, and a respondent who reports feeling more strongly influenced by what she watches might therefore show a measurably different outlook. The data did not align with this. The largest cluster of respondents who reported "some influence" also reported neutral expectations, which suggests that the experience of feeling influenced may produce uncertainty rather than a direct shift toward optimism or pessimism.

One important thing about the RQ3 result is that perceived influence was measured by self-report. People often underestimate the effects media have on them while overestimating the effects on others, and a single ordinal item asking respondents how influenced they feel cannot separate awareness of media effects from social-desirability responding or from a general sense of being affected by something. The null finding on RQ3 should therefore not be used as evidence that short video content does not shape aging perceptions at all; it is better to understand that self-perceived influence is not a reliable proxy for the cultivation-type effects that may be operating. A behavioural measure of exposure, or an experiment, would be a more direct test of the cultivation prediction.

Digital literacy, in contrast, showed a positive association with optimistic expectations. The pattern was not driven by any single component: knowledge of elderly rights and policies, independent search ability, and perceived access ability each correlated with aging expectations at similar magnitudes (rs around 0.32). It suggests that it is a general digital capability rather than any narrow technical skill to influence expectations. Older adults who feel capable of operating in digital environments seem to feel more capable of operating in later life more broadly. The skill itself is part of how they imagine their own future.

One way to make sense of this contrast is to recognize that aging expectations are probably more related to older adults' own circumstances. Health, finances, family support, and emotional companionship may shape later-life expectations more than any other factor does. Short video content may change what older adults think about during the day, but it cannot change the conditions of the day itself. So even if a respondent feels strongly influenced by what she watches, her expectations about later life still correlate more with her real-world situation. On the other hand, digital literacy is not only a media-related capacity, but it is also a practical life skill that affects paying bills, booking appointments, reaching family members, and finding health information. In that case, digital literacy connects directly to material that shapes how an older adult feels about her future, while felt influence does not.

It is important to find that older adults who can do more things in the digital world, no matter which specific aspect, tend to feel more optimistic about later life. This fits the broader Chinese context, where intergenerational support structures such as the 4-2-1 family, meaning one child supports two parents and four grandparents, have left many older adults relying on short video platforms to substitute some social and informational functions that family members provided. When digital tools begin to carry that weight, the ability to use them well becomes relevant.

It is also worth noting that the effect sizes observed throughout this study are moderate rather than large. The correlation of 0.39 between digital literacy and aging expectations is meaningful but not dominant, which means that digital literacy explains a part of the later-life expectation rather

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than most of it. This is why digital life is expected to sit alongside health, finances, and family support rather than provide a substitute for them.

6.3. Practical implications

Two practical implications are proposed. The first concerns digital literacy interventions for older adults. If digital literacy is consistently associated with more optimistic aging expectations, then training programs such as the intergenerational learning model of Cheng et al. or the mentor model described by Li and Kostka may support psychological well-being [3, 10]. This is a particularly relevant result for mid-sized Chinese cities like Shiyan, where access is no longer the constraint, but skill gaps still shape who can use what. A program that teaches an older adult to search, recognize policy information, or navigate a platform independently may be teaching her to imagine her future more hopefully.

The second implication is about platform design. The data suggest that older adults who cannot or do not search are dependent on whatever the algorithm hands them. If a recommendation system optimizes engagement rather than relevance to user goals, the content these users see may not be either the most useful or the most balanced. The experience of an older adult who relies on the For You page is not interchangeable with the experience of one who searches. For lower-literacy users, the algorithm is not just one of several information sources; it is actually the only one. A practical step is that platforms targeting older users provide tutors on the search function as part of the onboarding experience rather than burying them, since the data suggest that the search function is where higher and lower literacy users diverge.

7. Conclusion

This study examined how educational level and digital literacy shape older adults' engagement with short video platforms and their aging expectations by using a cross-sectional questionnaire survey of 127 older adults in Maojian District, Shiyan. This paper suggests that the digital divide among Chinese older adults is no longer primarily a divide in access, but in usage capacity. Supporting that capacity is not only a matter of helping older adults navigate Douyin; it is also a way to support how they imagine their later years. The results show that Educational level was associated with both the mode of engagement and the response to family-related content, with higher-educated older adults more likely to actively search and to engage with family-related content. Digital literacy was associated with more optimistic aging expectations, while the perceived influence of short video content on views of aging was not. The contrast between these last two findings is the central contribution of the study: on algorithmic short video platforms, what older adults can actually do appears to matter more for their later-life expectations than how strongly they feel they are being influenced.

The study has limitations. First, the cross-sectional design cannot establish causation between digital literacy and aging expectations. Second, the sample was recruited through a senior university and a community group in a single urban district, which probably underrepresents the most digitally isolated older adults and may therefore understate the true size of the digital divide observed here. Future research could address these limitations through a longitudinal design that tracks digital literacy and aging expectations over time, a more diverse and representative sampling that reaches less digitally engaged older adults, and the use of a longer, validated digital literacy instrument designed specifically for older populations. A test of the full chain from education through digital literacy and engagement mode to aging expectations would also be a productive next step.

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