The Influence Mechanism of Exploratory Search Intent on Search Strategy Selection: Postprint

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Abstract

[Purpose/Significance] This study aims to investigate how users with different exploratory search intentions express their information needs, which search strategies different need expressions tend to adopt, and how this selection mechanism is affected by users' expected performance. [Method/Process] Through theoretical research, this study explores the complexity of user search intentions and the diversification of search strategies, establishes a theoretical research framework for the influence mechanism of user exploratory search intentions on search strategy selection by analyzing user need expression and expected performance, and obtains search behavior data through scenario simulation questionnaires to reveal the strategic preferences and their underlying causes for five types of exploratory search intentions—undirected information gathering, directed information gathering, knowledge acquisition, advice seeking, and social connection—when selecting strategies such as comprehensive search engines, professional search engines, personal space SMQA, question-and-answer platform posting, and short-video website browsing. [Results/Conclusions] The study indicates that differences in the expression of exploratory search intentions are influenced by the nature of search goals and user cognitive abilities; search strategy choices for different need expressions exhibit significant differences; and the moderating effect of expected performance facilitates the diversification and switching of exploratory search strategy selection.

Full Text

Research on the Influence Mechanism of Exploratory Search Intention on Search Strategy Selection

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Abstract:
[**Purpose/Significance**] This study aims to answer how users with different exploratory search intentions express their information needs, which search strategies are preferred by different need expressions, and how this selection mechanism is influenced by users' expected performance. [**Method/Process**] Through theoretical research, this paper explores the complexity of user search intentions and the diversification of search strategies. Combined with analysis of user demand expression and expected performance, a theoretical research framework for the influence mechanism of user exploratory search intention on search strategy selection was established. Search behavior data was collected through scenario simulation questionnaires to reveal the strategic preferences and their causes of five exploratory search intentions (undirected information collection, directed information collection, knowledge acquisition, suggestion consultation, and social connection) when selecting among comprehensive search engines, professional search engines, personal space SMQA, Q&A platform questioning, and short video website browsing strategies. [**Result/Conclusion**] The study shows that differences in demand expression of exploratory search intentions are influenced by the nature of search objectives and user cognitive abilities; search strategy selection differs significantly across different demand expressions; and the moderating effect of expected performance promotes the diversification and transformation of exploratory search strategy selection.

Keywords: search intention; search strategy; social search; demand expression; expected performance
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1 Introduction

The rapid development of information and communication technologies has facilitated efficient information acquisition for users. Obtaining, utilizing, and creating knowledge through search engines, online communities, personal spaces, and other channels has become a daily information lifestyle. Exploratory search describes a dynamic information seeking process involving advanced cognitive functions, ambiguous search goals and paths, complex problem contexts, and the application of differentiated, diversified, and integrated strategies. It represents an important mode of user information acquisition in complex network environments.

System-centered information behavior research emphasizes the application of technology within systems. Since B. Dervin proposed the user-centered paradigm in 1986, the discovery of patterns between search intentions and strategy selection has become increasingly difficult. Demand expression and expected performance are two important individual cognitive factors in information seeking behavior. Search intentions can only be matched by

information systems through demand expression, which then provides relevant results to users. Demand expression is the key to exploring the unknown from uncertainty, yet it is also the most difficult aspect. Existing research has not thoroughly examined the differences and impacts of demand expression in search behavior. Expected performance refers to an expectation of excellence in task completion by organizations, teams, or individuals under certain resources, conditions, and environments. It is a pre-measurement and feedback of target achievement and efficiency, while expected performance in search behavior represents users' vision and goals for search results. How expected performance influences and shapes the search process remains unclear in current research.

By comprehensively considering the impact of demand expression and expected performance on search behavior and exploring the differences in search strategy selection across different exploratory search intentions, this study will contribute to the improvement of knowledge service systems and information search systems while enriching research in the field of information seeking behavior. Specific research questions include: (1) revealing the correlation between exploratory search intention and demand expression; (2) identifying search strategy preferences for different types of demand expression; and (3) analyzing the influence of expected performance on the relationship between demand expression and search strategy preference.

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2 Related Research

2.1 Exploratory Search Intention Research Regarding the conceptual definition of search intention, one perspective views it as the reason for initiating a search—that is, the search problem—categorizing it alongside motivation and needs. Another perspective considers search intention as the search goal manifested in users' emotional, cognitive, and situational aspects during system interaction. Classic theories such as vague dissatisfaction, anomalous states of knowledge, and uncertainty provide theoretical support for problem-based and goal-based perspectives. Information foraging theory vividly describes humans' "hunting" behavior for information as a means to adapt to the world and escape predicaments, further supporting the view that search intention combines both problem and goal.

Search intention classification research initially focused on search goals. A. Broder first categorized queries into informational, navigational, and transactional intentions, establishing the basic framework for query intention classification systems. Building on this foundation, scholars have attempted to refine search intentions across multiple dimensions including ambiguity, authority sensitivity, and temporal and spatial sensitivity. D. E. Rose et al. proposed a hierarchical classification system that further divides informational intentions into directed, undirected, suggestive, and list-based categories. Other scholars advocate simplifying search intention classification to enhance the operability

of empirical research. Constructing scientifically complete search intention classification systems based on fundamental categories while addressing specific research questions remains an ongoing research focus.

Although exploratory search intentions appear less frequently in current theoretical frameworks of search intention research, classic information behavior theories still offer explanatory power. Whether it is N. J. Belkin's anomalous state of knowledge hypothesis describing search intention as a problem users cannot articulate precisely, or B. Dervin's sense-making theory proposing that information seeking bridges knowledge gaps, both align with the characteristics of exploratory search intentions arising from complex problems and closely associated with knowledge construction goals such as information aggregation, concept understanding, viewpoint interpretation, and comparison. Additionally, research on exploratory search intention characteristics in work and life contexts is gradually emerging. Yang Qian proposed that academic users' exploratory search intentions face triple uncertainties in goals, target domains, and implementation paths, thereby triggering changes in three spaces during the search process: knowledge construction, problem context, and cognitive stages. Yuan Hong et al. analyzed the nonlinear evolution characteristics of hedonic intentions in casual leisure searching based on the berry-picking model. Furthermore, research on task difficulty in interactive information retrieval also intersects with exploratory search intention features. In other words, task difficulty manifestations highly overlap with exploratory search intention characteristics, including problem-related complexity, extensiveness, specificity, and openness; searcher-related familiarity and ambiguity; and system interaction-related difficulties in system selection and query formulation. These features help understand exploratory search intentions from multidimensional perspectives and establish identification criteria.

2.2 Research on Information Search Strategies in Different Network Environments Traditional network environment search strategy research is divided into three levels: Moves, Tactics, and Modes. Moves focus on fragmented search actions such as constructing queries and clicking links. Tactics systematically classify search methods, also known as search behavior levels. For example, M. J. Bates proposed that information seeking can be categorized as searching, browsing, monitoring, and encountering. Modes construct search strategy patterns, such as W. Wirth et al.'s heuristic and systematic strategies based on decision theory and dual-process information processing theory. Moves represent low-level individual actions involving too many search actions, making research difficult. Modes require establishing relationships among users, resources, and methods, yet numerous elements across different dimensions and their interaction patterns remain to be further discovered. Currently, scholars primarily focus on the Tactics level to examine specific search strategies.

As traditional human-computer interaction has transformed into social interaction in social media, social search has attracted academic attention. Since the

concept was proposed in 2004, a consensus has emerged that broadly defines any information search involving social interaction as social search. Regarding social search strategies, M. J. Bates' four tactics at the Tactics level have been inherited and developed in social media environments, while new inquiry strategies have emerged. Inquiry strategies involve publicly or directly asking questions through social media to obtain information, featuring the most prominent social interaction genes. B. M. Evans et al. compared the performance of targeted & directed asking versus network & public asking through platform manipulation. A. Oeldorf-Hirsch et al. analyzed the motivations (Why), question types (What), and usage patterns (How) of Status Message Question Asking (SMQA) as a form of targeted direct questioning. Another active search strategy—social browsing—has also received considerable attention. Social browsing refers to information queries primarily based on user-customized content and social recommendations, with existing research focusing on the efficiency of using browsing to obtain information.

2.3 Research on the Relationship Between Search Intention and Search Strategy Selection Regardless of network environment, users exhibit significant differences in the frequency and patterns of information search strategies across different task contexts. Li Fenglin et al. explored user strategy selection in well-structured and ill-structured problem contexts, finding that users prefer traditional search engines for well-structured problems and social search or combined strategies for ill-structured problems. Jiang Tingting et al. noted that differences in preferences between search engines and personal space SMQA are mainly caused by the nature of search problems. When encountering subjective questions requiring opinions or recommendations, SMQA is often preferred over search engines. I. Xie, based on the theory of planned behavior and situated action theory, proposed that search strategies are products of behavioral intentions and contexts. Both problem contexts and behavioral intentions mentioned above relate to search intentions. Therefore, search strategy research has always been connected with search intention research. However, research on how user search intentions influence strategy selection has only just begun domestically and internationally. H. Xie abstracted the relationships among intentions, entities, methods, and resources during the search process through text analysis, establishing an association model between interactive user intentions and information search strategies. The author's previous research revealed patterns of search and browsing strategy selection based on search intentions through data mining and text analysis. Additionally, a diary study empirically examined strategy usage in entertainment and experience-oriented casual leisure searching, finding that in casual leisure searching without task-driven motivation, users' openness in platform and content selection causes search intentions to deviate, repeat, or even jump, accompanied by search strategy switching. However, these studies employed small-sample surveys or typical case analyses, and their scientific rigor requires further improvement.

2.4 Research on the Influence of Demand Expression and Expected Performance on Search Behavior Individual factors remain a persistent focus in search behavior influence research, particularly cognitive contexts, with cognitive ability, domain knowledge, search skills, and topic familiarity being the most extensively studied. However, existing research has neglected the impact of demand expression and expected performance—both belonging to the user cognition domain—on search behavior.

Current research on demand expression remains at the theoretical exposition and preliminary empirical testing of expression difficulties. "Uncertain information needs" and "implicit information needs" are fundamental causes of demand expression difficulties. P. Vakkari argued that users struggle to clarify information needs when beginning exploratory search tasks, spending the longest time on query formulation suggestions. Xia Lixin et al. noted that demand expression difficulty decreases as problem understanding improves. Demand expression also faces linguistic barriers, requiring satisfaction across lexical, syntactic, and semantic dimensions. The direct manifestation of demand expression difficulty is users' inability to construct appropriate queries. Lu Wei et al. proposed that limited keywords submitted to search engines often fail to fully express information needs. Chen Yijin et al. pointed out that under unclear demands, users experience more browsing and require greater support from retrieval systems—one of the few domestic studies addressing the impact of demand expression on search behavior.

Expected performance is a concept from risk and uncertainty decision-making research, emphasizing the impact of uncertainty on behavioral outcomes. Existing research primarily focuses on business and economics domains, though information behavior research has begun to address it. Zhang Weiwei et al., based on the SOR framework, incorporated outcome expectations as an important individual cognitive factor into the organism (O) component, confirming its influence on users' continuous knowledge contribution behavior in professional virtual communities. Expectancy theory is applicable to information seeking behavior research because the information seeking process itself involves decision-making under uncertainty. Users' evaluation of expected outcomes influences and shapes their information seeking behavior. Currently, expected performance can be quantified in two ways: one internalizes it as task dimensions measured by urgency and importance, belonging to situational categories; the other directly quantifies it using information benefits including recall, precision, and user-evaluated perceived usefulness and satisfaction. However, neither approach reflects the core concept of expectancy theory—uncertainty.

In summary, research on search intentions and search strategies is relatively mature. Studies using questionnaires, experiments, interviews, or automated means to collect user search behavior data have confirmed the existence of search strategy selection preferences and preliminarily revealed the association mechanism between search intentions and search strategies through statistical analysis, mining, and analysis. However, for exploratory search, establishing an

"ideal" model between search problem contexts and implementation plans detached from cognitive factors in the user search process has limited explanatory power. The cognitive factors currently incorporated into exploratory search behavior research are insufficient to fully reveal the cognitive patterns of search behavior. Therefore, continuing to explore fundamental cognitive factors already addressed in library and information science while introducing new cognitive factors from different disciplinary backgrounds represents a breakthrough direction.

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3 Research Design

3.1 Theoretical Research Framework Construction

3.1.1 Classification of Exploratory Search Intentions Based on Bloom's Taxonomy The lower levels of Bloom's taxonomy are memory and understanding, while higher levels from low to high are application, analysis, evaluation, and creation. J. Kim categorized search tasks into factual, explanatory, and exploratory types, corresponding to three different search intentions. Connecting Bloom's taxonomy with search intentions, factual and explanatory search intentions correspond to memory and understanding levels, whereas exploratory search problems are ambiguous, open-ended, and complex, corresponding to higher-order cognitive functions. This study adopts higher-order cognitive functions as the criterion for exploratory search intention classification.

Based on theoretical research and search practice, exploratory search intentions are further divided into content-based and relationship-based categories according to the nature of search objectives. If the search targets documents or resources that satisfy user information needs, it is content-based; if it is information search mediated by interpersonal relationships, it is relationship-based. Content-based exploratory search adopts A. Broder's classification framework and D. E. Rose et al.'s refinement approach, dividing into three categories: information collection, knowledge acquisition, and suggestion consultation. Information collection intention is further divided into directed and undirected based on whether there is a clear and specific search theme. Relationship-based exploratory search intention, referencing M. R. Morris's classification of high-frequency searches in social networks, establishes the significantly interactive social connection intention. The classification approach for exploratory search intentions is shown in Figure 1 [Figure 1: see original paper].

3.1.2 Classification of Search Strategies Based on Information Platforms To clarify abstract search strategies and reflect the richness of search engine and social media applications, this study combines typical information platforms with specific search strategies, dividing them into five types: (1) Comprehensive search engine—searching for different types and topics of information

through query terms. (2) Professional search engine—searching for information in a specific discipline, industry, or theme through query terms. (3) Personal space SMQA—asking questions through status messages in personal space social media such as QQ Zone and WeChat Moments, seeking information through comments or instant communication. SMQA represents strong-tie directed inquiry. (4) Q&A platform questioning—asking questions on Q&A platform social media such as Zhihu and Baidu Knows, seeking information through other users' answers. Questioning represents weak-tie public inquiry. (5) Short video website browsing—primarily adopting social browsing strategies in short video communities such as Douyin and Bilibili, including browsing videos posted by followed users, homepage recommendations, local or nearby users, and various trending lists. Among these, (1) and (2) are search strategies belonging to traditional search; (3) and (4) are inquiry strategies; (5) is a social browsing strategy; and (3), (4), and (5) are all social search strategies.

These five search strategies represent the most typical strategies in different network environments. It should be noted that since information platforms strive to improve user search performance and often support multiple search strategies, traditional search engines are becoming increasingly socialized, and social media can also perform algorithmic searches. For example, short video users also use search boxes, but information browsing behavior is more common on short video platforms. Therefore, this study only considers the main search strategies that align with the functional positioning of information platforms when classifying strategies in combination with platforms.

3.1.3 Demand Expression Based on Taylor's Information Need Hierarchy Theory R. S. Taylor divided information needs into four levels: visceral need, conscious need, formalized need, and compromised need. Traditional information system design initiates human-computer interaction through query commands, and only compromised needs can satisfy command query requirements, while others remain at the problem level of needs with varying degrees of clarity. Based on this, this study divides demand expression into command-based demand expression and problem-based demand expression. Command-based demand expression is based on users' ability to extract limited query terms from problem descriptions, system recommendations, domain knowledge, or search learning as instructions or brief, accurate natural language "instruction-like" expressions at the lexical level; demonstrate the logic of instructions or "instruction-like" expressions at the syntactic level; and conduct similarity assessments and priority considerations for different instructions at the semantic level. Problem-based demand expression occurs when users are unclear about answers or answer formats, cannot effectively issue instructions, and can only attempt to describe problems in natural language rather than refine them. Such information search themes may involve ill-structured problems where users only know peripheral content in the subject domain and struggle to accurately identify and describe information needs.

3.1.4 Expected Performance of Search Behavior Based on Search Benefits Search performance can be measured through search benefits, which include information benefits and cognitive benefits. Information benefits refer to search result quality and user subjective evaluation, while cognitive benefits primarily refer to changes in users' knowledge structures. Expectancy theory posits that decision-makers can assign weights to different possible outcomes of alternative solutions based on their needs, and expected performance is the weighted calculation of various possible outcomes. Exploratory search aims to build new, complex, and more professional knowledge structures, with problem-solving serving only as a means to achieve knowledge construction, and whether problems are solved does not determine whether knowledge construction goals are achieved. Therefore, among the two possible outcomes of exploratory search, cognitive benefits should be assigned greater weight.

Consequently, this study defines expected performance as high when search result expectations include cognitive benefits, and low otherwise. In fact, different search strategies exhibit varying "capabilities" in achieving different expected performance levels. For example, search engines' human-computer interaction provides large amounts of feedback information with fast response times, but information screening costs are high. Social search's person-to-person interaction fully promotes knowledge sharing but has channel limitations and content subjectivity. Therefore, users' pre-search expectations of results necessarily vary with different intentions and possible search strategies, aligning with the uncertainty in expectancy theory—that is, both high and low expected performance will occur with certain probabilities for users.

3.1.5 Theoretical Research Model The conceptualized and symbolic form of search intention is information demand expression. Search intentions become concrete through demand expression, and together they constitute the cognitive space that activates and shapes search strategies. Complex relationships also exist between demand expression and search strategies. Expected performance influences the selection mechanism of search strategies through demand expression, as search behavior is a process continuously advanced through evaluation and adjustment of expectations and actual actions. Combining the aforementioned conceptual definitions, this study constructs the theoretical research model shown in Figure 2 [Figure 2: see original paper].

3.2 Questionnaire Design and Survey Implementation

3.2.1 Search Intention Scenario Design The cognitive functions corresponding to the exploratory search intentions in Table 1 are analyzed. Information collection intentions implement search solutions for novel tourism and laptop selection; knowledge acquisition intentions aim to distinguish facts from opinions in search results, identify relationships between viewpoints, and elaborate on haze knowledge; suggestion consultation intentions comprehensively verify information to make judgments about COVID-19 vaccination based on

evaluation criteria; social connection intentions comprehensively and creatively solve the problem of interviewing parents of autistic children through reasonable planning and implementable steps. These intentions correspond to four higher-order cognitive functions: application, analysis, evaluation, and creation.

Further analysis of the structural characteristics of search problems reflected in these intentions reveals that exploratory search problems generally have complex structures that are sequential, parallel, or mixed. Sequential structure represents depth search—searching for multiple features or aspects of a single concept—while parallel structure represents breadth search—searching for multiple concepts at the same level in a conceptual hierarchy. None of the above search intentions involve simple structures of searching for single pieces of information. Suggestion consultation and social connection intentions even involve mixed sequential and parallel problems. Therefore, these search intentions involve higher-order cognitive functions, complex problem contexts, and uncertain search goals and methods, all exhibiting prominent exploratory characteristics.

3.2.2 Survey Questionnaire and Implementation This study collected user search behavior data through scenario simulation questionnaires, including demand expression method selection based on specific search intentions and search strategy selection under two expected performance scenarios. The questionnaire provided five exploratory search intention scenarios, and respondents selected a demand expression method matching their cognitive abilities for each scenario, then chose appropriate search strategies from five options based on search experience under high and low expected performance settings until completing behavior data for all five scenarios.

To avoid the abstractness of concepts involved in this study, background knowledge documents were distributed before survey implementation, explaining the meanings of demand expression and expected performance combined with search practice and introducing five search strategies to help respondents form correct understanding of relatively unfamiliar inquiry and social browsing strategies. During survey implementation, examples of two demand expression types appeared below options when respondents selected demand expression methods. Under the premise of selected demand expression, search benefits corresponding to high and low expected performance were listed below options when respondents chose search strategies to help them more accurately position their situations.

Using undirected information collection intention as an example, the questionnaire design is shown in Figure 3 [Figure 3: see original paper]. The survey collected 328 online questionnaires. After manually eliminating questionnaires where respondents' "commands" were not command-based demand expressions and those with excessively short completion times, 286 valid questionnaires were obtained, yielding an effective rate of 87.2%. The sample included 48.61% female and 51.39% male respondents, showing no gender bias.

4 Data Analysis

In this study, exploratory search intention is the independent variable, search strategy is the dependent variable, demand expression is the mediating variable, and expected performance is the moderating variable—all categorical data. Variable assignments are shown in Table 2 .

4.1 Descriptive Statistics The survey collected 2,860 search behavior data points. Problem-based demand expression (50.5%) was slightly higher than command-based demand expression (49.5%). Search strategies in descending order of frequency were: personal space SMQA (26.8%), comprehensive search engine (22.2%), Q&A platform questioning (19.6%), professional search engine (17.3%), and short video website browsing (14.1%). Comparing mean selections across search, inquiry, and social browsing strategies showed 566, 674, and 402 selections respectively, with inquiry strategies being most selected, followed by search strategies.

4.2 Mediation Effect Analysis of Demand Expression Since exploratory search intentions must pass through demand expression to initiate search behavior, forming a chain mediation, the mediation effect only requires verification of correlations between search intention and demand expression and between demand expression and search strategy.

4.2.1 Chi-square Test of Exploratory Search Intention on Demand Expression Chi-square test (R×C) showed significant differences in demand expression across different exploratory search intention types ($^2 = 79.553$, Sig $= 0.000 < 0.001$), indicating that at least two groups have different probability distributions and that exploratory search intention correlates with demand expression. Based on actual demand expression frequency data across search intentions, Figure 4 [Figure 4: see original paper] shows that command-based demand expression was significantly higher than problem-based demand expression for undirected information collection, directed information collection, and knowledge acquisition intentions, while the opposite pattern appeared for suggestion consultation and social connection intentions. These differences and their significance require pairwise comparison of chi-square test results (Z-test with Bonferroni adjustment). Since adjusted standardized residuals follow a standard normal distribution with mean 0 and standard deviation 1, differences are considered statistically significant when absolute values exceed 2.

Table 3 shows that adjusted standardized residual absolute values above 2 with letter 'a' mark directed information collection and knowledge acquisition, those with 'b' mark undirected information collection, directed information collection, and knowledge acquisition, and those with 'c' mark social connection. Since data with identical letters show no difference while different letters indicate

statistical significance, undirected information collection, directed information collection, and knowledge acquisition intentions significantly prefer command-based demand expression and significantly avoid problem-based demand expression, with no significant differences among the three in demand expression. Social connection intention significantly prefers problem-based demand expression and significantly avoids command-based demand expression. Suggestion consultation intention shows no prominent demand expression preference.

4.2.2 Chi-square Test of Demand Expression on Search Strategy Selection Chi-square test (R×C) showed significant differences in search strategy selection across different demand expressions (^{2} = 94.217, Sig = 0.000 < 0.001). Based on frequency data of search strategies by demand expression, Figure 5 [Figure 5: see original paper] visually displays the differences. Pairwise comparisons confirm these differences, analyzing data in Table 4 with standardized residual absolute values exceeding 2.

Table 4 shows that command-based demand expression significantly prefers comprehensive search engines and Q&A platform questioning, significantly avoids personal space SMQA, with no significant difference between the two strategies in preference. Problem-based demand expression significantly prefers personal space SMQA, significantly avoids comprehensive search engines and Q&A platform questioning, with no significant difference in professional search engine preference between the two demand expression types.

4.3 Moderating Effect Analysis of Expected Performance Binary logistic regression using the Enter method was employed to regress demand expression and interaction terms of demand expression and expected performance on search strategies. Results are shown in Table 5 .

The significance of demand expression in regression model results indicates its significant impact on search strategy selection. OR values show that command-based demand expression is 2.716, 1.446, and 1.609 times more likely to choose comprehensive search engines, professional search engines, and Q&A platform questioning strategies respectively than problem-based demand expression. Problem-based demand expression is 2.205 and 2.230 times more likely to choose personal space SMQA and short video website browsing strategies than command-based demand expression, further verifying the mediating role of demand expression between search intention and search strategy.

The significance and OR values of interaction terms reveal that command-based demand expression × high expected performance is 0.153, 2.211, 1.301, and 2.250 times respectively of command-based demand expression × low expected performance in choosing comprehensive search engines, professional search engines, personal space SMQA, and short video website browsing strategies. Command-based demand expression × low expected performance is only 0.593 times of command-based demand expression × high expected performance in

choosing Q&A platform questioning. Problem-based demand expression × high expected performance is 0.039 and 3.287 times respectively of problem-based demand expression × low expected performance in choosing comprehensive search engines and professional search engines. This demonstrates that the interaction between demand expression and expected performance significantly influences search strategy selection.

Specifically, high expected performance weakens command-based demand expression's preference for comprehensive search engines while strengthening problem-based demand expression's avoidance of comprehensive search engines. High expected performance strengthens command-based demand expression's preference for professional search engines while enhancing problem-based demand expression's selection of professional search engines. High expected performance moderates command-based demand expression toward personal space SMQA and short video website browsing strategies. Low expected performance plays a weakening moderating role between command-based demand expression and Q&A platform questioning.

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5 Conclusion Analysis

The above data analysis results tested the theoretical research model proposed in this study. Based on these findings, Figure 6 [Figure 6: see original paper] presents the influence mechanism model of exploratory search intention on search strategy selection. Solid arrows represent direct effects, while dashed arrows represent effects generated by moderating effects of expected performance without significant direct effects or with non-significant direct effects. "+" and "-" indicate whether expected performance plays an enhancing or weakening moderating role.

5.1 Differences in Exploratory Search Intention Demand Expression Are Influenced by Search Objective Nature and User Cognitive Ability Exploratory search intentions become symbolized through different types of demand expression. Specifically, information collection and knowledge acquisition intentions primarily adopt command-based rather than problem-based demand expression, while social connection intention shows the opposite preference, and suggestion consultation intention demonstrates no prominent demand expression preference.

The fundamental reason for differences in exploratory search demand expression lies in whether search objectives are system-dominated content or relationship-based content. Since information collection and knowledge acquisition are content-based search intentions, users can extract query terms they believe systems can understand and process from problem context descriptions and their own domain knowledge. When users struggle to find suitable search queries to submit to systems due to lack of knowledge or situational

awareness, they can only describe problems in formalized language, delegating problem understanding and query refinement to human-computer or social systems while obtaining continuing clues through ongoing learning. Clearly, relationship-based social connection intention involves content search mediated by people, and the uncertainty of goals set in weak-tie interaction contexts makes its demand expression difficult to focus on limited query terms and logically rigorous queries.

Additionally, user cognitive ability contributes to demand expression differences. The higher the cognitive function corresponding to search intentions, the more exploratory they become, and the more difficult it is for user cognitive abilities to adapt. From the perspective of cognitive function positioning, social connection corresponds to the highest cognitive level where user cognitive ability mismatch leads to describing search intentions as problems. In contrast, information collection and knowledge acquisition correspond to application and analysis levels where user cognitive ability adaptation is high, making it easier to identify and express search intentions as commands. Although suggestion consultation belongs to content-based search, it is positioned at the evaluation cognitive level. Content-based search tends toward command-based demand expression, while evaluation-level cognitive positioning leads to problem-based demand expression. The interaction of these two factors results in suggestion consultation intention showing no obvious demand expression preference.

5.2 Significant Differences in Search Strategy Selection Across Different Demand Expressions (1) Command-based demand expression significantly prefers comprehensive search engines and Q&A platform questioning strategies, also shows preference for professional search engines, and adopts personal space SMQA and short video website browsing strategies when moderated by expected performance. Command-based demand expression represents explicit needs in command form with simple and direct query statements suitable for recognition and processing by various information systems, thus demonstrating broad strategy applicability.

Search engines establish extremely large databases through powerful crawling and indexing technologies, enabling rapid response and efficient matching to command-based searches, making them simple and convenient. Particularly, comprehensive search engines with wider applicability often serve as the starting strategy for command-based searches. However, search engines cannot respond to personalized, contextualized information needs and are not adept at UGC processing. Inquiry strategies can obtain high-quality customized information from trusted relationships while maintaining interests and social connections, offering greater precision and interactivity. Therefore, command-based expression also chooses inquiry strategies besides search strategies. Although inquiry does not require query statements, clearly expressed information needs enhance inquiry strategy effectiveness. Between the two inquiry strategies, command-based de-

mand expression significantly prefers Q&A platform questioning because the vast Q&A platform knowledge base is more capable of mining command value than limited personal space group wisdom. Additionally, short video website browsing, based on user follows and system recommendations, aggregates information around the same theme or common interests, preventing disorientation or deviation. Clear demand expression helps short video websites understand users' true intentions, making command-based demand expression equally applicable to short video website browsing.

(2) Problem-based demand expression significantly prefers personal space SMQA and short video website browsing strategies, also adopts professional search engines when moderated by expected performance, but does not prefer comprehensive search engines or Q&A platform questioning. Problem-based demand expression is vague, generally cannot refine commands, and features contextual and personalized characteristics requiring search systems more aligned with problem themes or greater social resource assistance. Personal space SMQA, short video website browsing, and professional search engines can all limit search channels or scope, making them suitable for problem-based demand expression. This is also why problem-based demand expression does not prefer comprehensive search engines. Furthermore, since personal space SMQA and short video website browsing can reduce the multidimensional openness of problem-based demand expression to some extent while providing rich conversational environments suitable for problem exploration, problem-based demand expression prefers these two social search strategies. Between the two social search strategies, short video website browsing's effectiveness depends on publishers' content tagging and platform algorithmic recommendations, while users' motivation to meet functional rather than entertainment and social needs is affected. Therefore, problem-based demand expression primarily chooses personal space SMQA.

Regarding inquiry strategies, problem-based demand expression does not prefer Q&A platform questioning due to concerns about answer quality. As social Q&A platforms become flooded with similar, low-quality, and ineffective Q&A, answer quality has become a widespread concern. Additionally, distrust of weak ties means answers from strong ties in personal spaces are considered more valuable and reliable.

5.3 Moderating Effect of Expected Performance Promotes Strategy Selection Diversification and Transformation (1) The moderating effect of expected performance promotes diversification of exploratory search strategy selection. The moderating effect dismantles the dominance of comprehensive search engines, bringing popularity to professional search and emerging social search. Specifically, high expected performance diverts command-based demand expression from comprehensive search engine preference, strengthens professional search engine preference, and increases personal

space SMQA and short video website browsing strategy selection. Low expected performance reduces Q&A platform questioning strategy usage for command-based demand expression. High expected performance causes problem-based demand expression to abandon its original significant avoidance of comprehensive search engines and increase professional search engine selection.

The reason expected performance promotes strategy selection diversification is that each strategy has its own limitations. Search engines return large amounts of advertisements and redundant information, while social search inevitably involves subjectivity and even privacy leakage risks. Under different expected performance levels, users re-examine their search strategy preferences and switch between different strategies, even turning between traditional search engines and social media to seek complementary advantages, becoming an inevitable choice.

(2) The moderating effect of expected performance promotes strategy transformation in exploratory search. The moderating effect blurs the boundary between traditional search and social search, manifested as high expected performance shifting command-based demand expression's search strategy preferences toward comprehensive social search strategies, and shifting problem-based demand expression's social search preferences toward professional search engine strategies.

In the early days of social search, it was considered a powerful supplement to traditional search. When users failed to obtain desired results through search engines, they typically chose social information search. As social search demonstrated excellence in personalized, localized, and contextualized search through interaction, it became a choice alongside search engines. As information environments become increasingly complex and users face growing information acquisition dilemmas, relying solely on social search makes it difficult to achieve high-quality results, prompting users to turn to traditional methods for help. In fact, only by combining traditional search engines with social search can higher search benefits be achieved.

Strategy transformation refers to changes in preferred strategies for specific demand expressions due to certain factors, forming search path shifts between preferred and transformed strategies. The mechanism of strategy transformation triggered by expected performance is relatively complex. This study attempts an empirical exploration by using search benefits represented by high and low expected performance as horizontal (knowledge construction) and vertical (information benefits) coordinates to position various search strategies' "capabilities" in satisfying knowledge construction and information acquisition. For instance, comprehensive search engines have the highest information acquisition capability due to superior algorithmic technology but are very unfavorable for user knowledge construction due to redundancy and even erroneous information. Short video website browsing provides the most limited information due to UGC content and push algorithm constraints but is relatively beneficial for domain knowledge construction. Connecting the positioning points of all search strategies and smoothing the trend line reveals high consistency with the strat-

egy transformation patterns revealed earlier under expected performance moderation. This suggests that using expected performance to explain the triggering mechanism of strategy transformation has certain rationality—the internal driving force of strategy transformation is search strategies' active adaptation to problem contexts, while the external driving force is expected performance.

Figure 7 [Figure 7: see original paper] shows that under high expected performance influence along the horizontal direction, command-based demand expression's preferred comprehensive search engines at the starting point will transfer toward professional search engines, personal space SMQA, and other social search strategies. The combination of original strategy preferences and transferred strategies brings diversified strategy selection. Short video website browsing at the end of the transfer sequence indicates it is currently less used, but due to short video websites' high-density information load and rich information presentation forms, user stickiness is growing daily, inevitably generating rising search traffic. It can be predicted that short video website browsing search strategy preferences will continue to grow.

This study extends search intention to demand expression, introduces the economic concept of expected performance, examines the influence mechanism of search intention on search strategy selection within the exploratory search framework, and covers multiple stages of the search process, representing a research exploration addressing existing studies' weaknesses in granularity and integration.

The revealed patterns also offer insights: simple command-based demand expression provides users with richer search strategy choices, necessitating functional designs such as query expansion and gamification to help users clarify search intentions and form query commands, while shaping search behavior toward high expected performance through searching as learning. Additionally, multi-strategy selection does not equal optimal selection—not all problem-based demand expressions must be transformed into command-based forms for more effective searching. Different demand expressions have their own strategy preferences, and the goal is for users to have diverse strategy choices while maintaining immersive search with high engagement. Furthermore, information platform functional design should combine social media interaction elements with search algorithms and semantic retrieval technology, starting from accurately identifying user needs and providing scientific guidance and intervention for user search strategy selection through big data analysis of user demand expression and expected performance.

This study has limitations. Besides the search strategies discussed, some commonly used search channels were not considered. After incorporating demand expression and expected performance as individual cognitive factors into the association mechanism between exploratory search intention and search strategies, the possible interaction between these two elements was not examined. Future research will focus on constructing a more comprehensive and scientific search strategy classification system, deeply mining the mechanisms among model el-

ements, enriching model connotations, and improving explanatory power for exploratory search behavior.

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Note: Figure translations are in progress. See original paper for figures.