

Herding Behavior in Young Investors: A Bibliometric Analysis

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Abstract: - This study aims to investigate herding behavior among young investors, employing a bibliometric analysis to uncover trends, key contributors, and emerging themes in this research area. Herding significantly impacts market efficiency and stability. Using the Scopus database, we identified 279 relevant publications from 1994 to 2023, focusing on young investors who often exhibit low financial literacy and a propensity for herding. Our analysis highlights the United States as the leading country in this research domain, with notable contributions from authors such as Nisha Goyal and Satish Kumar. Using VOS Viewer and Publish or Perish, we analyzed the data and categorized the literature into four clusters: Psychological Factors in Financial Markets, Behavioral Finance in Emerging Markets, Future Generations for Tomorrow's Challenges, and Behavior Evaluation during the Pandemic. Emerging topics include risk aversion, cryptocurrency, and heuristic biases, with Prospect Theory frequently used to explain herding phenomena. This comprehensive overview provides valuable insights for policymakers, financial strategists, and future research directions aimed at mitigating the adverse effects of herding behavior on financial markets. This study is also useful for young investors to improve their investment skills by knowing more about herding behavior.

Key-Words: - herding, young investors, behavioral finance, risk aversion, cryptocurrency, heuristic bias, prospect theory.

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1 Introduction

Behavioral finance is crucial as it explains how psychological factors and biases influence financial decisions, addressing gaps in traditional financial theories. It helps understand market anomalies, develop better investment strategies, enhance risk management, inform policymaking, and improve personal financial planning, [1], [2], [3], [4], [5]. Behavioral finance identifies various cognitive biases, such as Overconfidence Bias [6], [7]; Anchoring Bias [8]; Confirmation Bias [9]; Loss Aversion [4]; Herding Bias [10], [11]; Hindsight Bias [12]; Representativeness Bias [13]; Availability Bias [14]; Self-Attribution Bias [15]; Mental Accounting [16]; Disposition Effect [17]; and Recency Bias [18]. Among those biases that influence investment decisions, "herding" ranks the highest [19]. "Herding behavior" is the most prominent research theme in research on investor sentiment [20].

Herding bias or herding behavior is the tendency of investors to follow the decisions of other investors [21], investor behavior in making decisions that are influenced by the decisions of financial agents [22], the behavior of individuals

who act collectively without centralized direction [23], or a situation where a person himself cannot decide and take any action himself unless he is motivated and moved by the footsteps and actions of others, [24]. Herding has increased since the COVID-19 pandemic, fear and uncertainty over the impact of the pandemic will encourage uninformed investors to abandon their beliefs and follow those who know more, [25], [26].

Studying herding behavior among investors is crucial for understanding and managing financial markets. Herding influences market efficiency and price formation, often leading to asset bubbles and crashes, which destabilizes markets, [27]. It aids in risk management by identifying periods of intense herding and implementing strategies to mitigate potential losses, [28]. Behavioral insights from herding studies enhance predictions of market trends and investor actions, [29]. Policymakers can design better regulations to prevent excessive herding and reduce information asymmetry, [30]. For investors, understanding herding can improve investment strategies by timing market entry and exit points more effectively, [18]. Herding also impacts economic stability by causing rapid shifts in asset

prices, leading to broader economic consequences, [31]. Finally, studying herding contributes to the development of empirical and theoretical financial models, incorporating behavioral aspects for a comprehensive understanding of market dynamics, [32].

By conducting a bibliometric analysis of herding behavior, researchers can gain a comprehensive overview of the field, identify key contributions, and uncover opportunities for future research, thereby advancing the understanding of herding behavior in financial markets. From the Scopus database, we only find two bibliometric analyses about herding. First, analyzing articles from 1988 to 2018, the research highlights that herding behavior in capital markets is a well-documented phenomenon, significantly influenced by market conditions and investor types. [33] recommends future research should focus on integrating various dimensions of herding behavior and exploring demographic factors. Second, The bibliometric analysis over three decades 1990 - 2020 reveals that herding behavior has been extensively studied with increasing interest over time and identifies key contributors, influential journals, and recurring themes, showing a shift from informational cascades to the roles of different investor types, [23]. Those bibliometric analyses for herding behavior are for the general investor, but this research tries to do a bibliometric analysis, especially for young investors with coverage periods from 1994 - 2023. Many young investors have low financial literacy and often behave in herding, [34].

Thus, the aim of the article is to examine trends in the study of the herding behavior of young investors by performing a bibliographic and addressing the following research questions:

RQ1: What are the trends in publications related to herding behavior in young investors?

RQ2: Who are the leading authors, journals, institutions, and countries contributing to research on herding behavior in young investors?

RQ3: What is a state of the art of this research in young investors?

RQ4: What are the emerging and trending themes in the area of herding behavior in young investors?

RQ5: What directions should future research in this field take?

2 Literature Review

Herding, originally documented by [35] in the discussion of “Beauty Contest”, can be interpreted as a situation in when traders make decisions by

imitating others’ behavior, [36]. The theory of herd behavior was popularized in the 1990s through research by [11], [32]. [11] described Herd behavior as the tendency to follow the actions of others without relying on one's own information. [37] highlights Herding behavior should be regarded and further examined as a potential risk factor. Herding behavior occurs when individuals mimic others' actions, often resulting in collective decisions that lack rational analysis, [38]. Herding behavior occurs when investors imitate the actions of others rather than relying on their own independent analysis, [39], [40], [41], [42]. [43] studied that herding behavior widely affects the process of individual investor’s decision-building power to buy and sell stocks. In the past, herd behavior and informational cascades were used interchangeably, [44]. The term “information cascade” refers to a circumstance in which it is optimal for a person to follow specific steps— to follow the behavior of someone else— without taking into account that person’s information, [32].

Based on previous research on young investors, their characteristics are traders or short-term buying and selling shares [6], [45], [46], risk-taker [45], [47], emotional [48], have low financial literacy and behaves herding by following a financial planner [34]. Individual investors who frequently buy and sell shares or investments in the short term obtain lower returns than those who invest in the long term [49] or tend to reduce their Investment Return [50]. [51] state that more buying and selling activities (trading) will cause higher transaction costs and reduce investor welfare because huge transaction costs will reduce investors' net profits from Investment Returns in these shares. Hence satisfaction among investors will decrease as well. Young investors are also very exposed to digitalization. They often follow advice from influencers or social media in investing, [34].

This comprehensive overview provides valuable insights for policymakers, financial strategists, and future research directions aimed at mitigating the adverse effects of herding behavior on financial markets. This study is also useful for young investors to improve their investment skills by knowing more about herding behavior.

3 Methodology

The researcher began the search strategy by utilizing the Scopus database due to its comprehensive bibliographic index, which made it an ideal choice for this study, [52]. The authors use search queries of various terms and the thesaurus linked to herding

behavior in young investors : (TITLE-ABS-KEY ("Herd*" OR "informat* cascad*" OR "Behav* Conform*" OR "copyc* invest*" OR "imitati* behav*" OR "pe* effe* in investm*" OR "soci* proof in financ* decisi*") AND ("youn*" OR "millenni*" OR "New-generati*" OR "Gen Y" OR "Next-ge*") AND PUBYEAR > 1993 AND PUBYEAR < 2024 AND (LIMIT-TO (SUBJAREA,"ECON")) AND (LIMIT-TO (DOCTYPE,"ar")) AND (LIMIT-TO (PUBSTAGE,"final")) AND (LIMIT-TO (SRCTYPE,"j")) AND (LIMIT-TO (LANGUAGE,"English"))). These keywords for searching criteria are chosen from a thesaurus and the asterisk* as well as other patterns using Boolean logic.

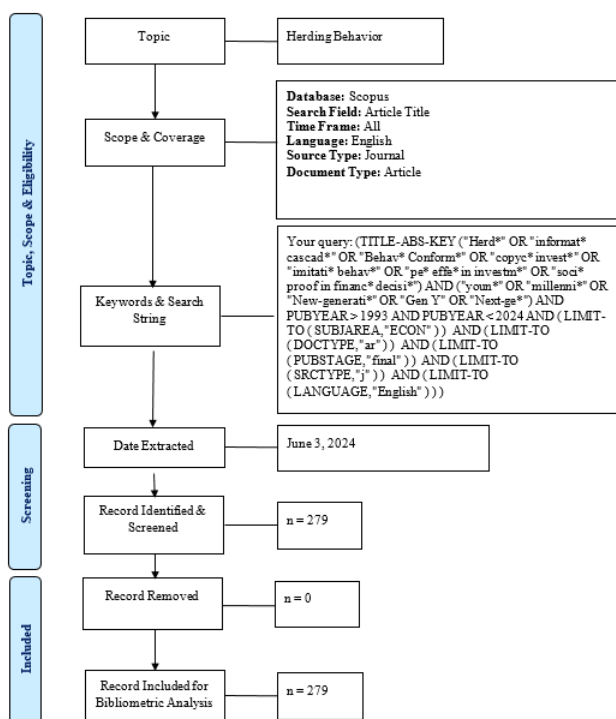


Fig. 1: Search Strategy and Flow Diagram

A total of up to 17,347 documents were initially identified using the search technique with the query : TITLE-ABS-KEY ("Herd*" OR "informat* cascad*" OR "Behav* Conform*" OR "copyc* invest*" OR "imitati* behav*" OR "pe* effe* in investm*" OR "soci* proof in financ* decisi*") AND ("youn*" OR "millenni*" OR "New-generati*" OR "Gen Y" OR "Next-ge*") to find an article regarding Herding behavior in young investors. During the screening step, the documents were restricted to a time period from 1994 to 2023, and 17,330 documents were found. The subject area was restricted to Economics, Econometrics, and Finance, and 342 documents were found. Only

articles processed for final publication were considered, and the documents had to be in English and sourced from journals. From this process, 279 documents remained. The subsequent procedure, illustrated in Figure 1, adheres to the modified PRISMA stages Ultimately, 279 documents were available for further research. The following data was collected from these 279 papers: author, author's appendix, journal name, document title, author's keywords, abstract, and citation.

"Publish or Perish" is the program utilized for performance analysis in bibliometric studies, [53]. For scientific mapping and enrichment, VOSviewer 1.6.18 is the chosen software. The type of analysis performed is co-occurrences, focusing on the author's keyword analysis unit, and employing full counting, [54]. The VOSviewer Thesaurus File is used to standardize terms during processing. The author also uses OpenRefine to aid in the analysis of the papers.

The Enhance strategic diagram is an extension of the existing strategic diagram. Essentially, it is almost identical to the previous version. A diagram is created for each term in the metadata bibliography, mapping keywords based on relevance degree (centrality) and development degree (density) variables.

4 Results and Discussion

4.1 Trend of Literature

Table 1 shows the article published about herding behavior in young investors for the last 10 years, spanning from 2014 to 2023.

Table 1. Publication Year

Year	TP	NCP	TC	C/P	C/CP	h
2014	14	14,00	337	24,07	24,07	11
2015	8	7,00	398	49,75	56,86	5
2016	13	13,00	164	12,62	12,62	7
2017	12	11,00	238	19,83	21,64	8
2018	17	15,00	480	28,24	32,00	9
2019	16	16,00	515	32,19	32,19	9
2020	21	20,00	305	14,52	15,25	9
2021	23	22,00	227	9,87	10,32	8
2022	39	35,00	351	9,00	10,03	11
2023	42	23,00	130	3,10	5,65	6

Figure 2 gives details about the total number of papers has steadily increased over the years, but the number of citations have fluctuated. In particular, there were many citations in 2018-2019 compared to a few citations in 2016 and 2023. The lower citation count in 2023 may be due to the

publications from that year not having sufficient time to be recognized and cited by other researchers.

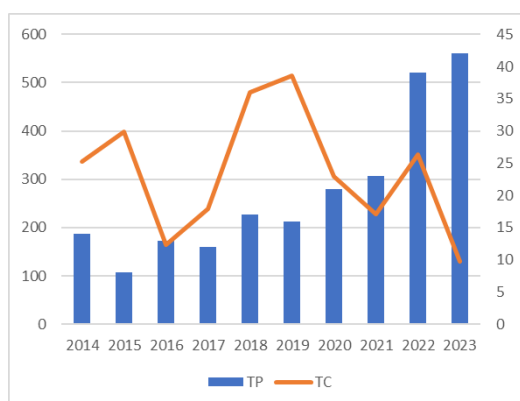


Fig. 2: Total Citations and Publications

4.2 Top 10 Influential Countries

Table 2 highlights the most active nations in publishing research studies and scientific articles on herding behavior in young investors, detailing their total publications, citations, and H-index.

Table 2. Top 10 Influential Countries

Country	TP	NCP	TC	C/P	C/CP	h
United States	77	72	3068	39,84	42,61	26
United Kingdom	33	30	921	27,91	30,70	16
China	31	26	491	15,84	18,88	11
India	26	23	545	20,96	23,70	12
Germany	21	21	744	35,43	35,43	13
Taiwan	13	12	147	11,31	12,25	6
Australia	11	11	168	15,27	15,27	7
South Korea	11	10	285	25,91	28,50	5
Netherlands	9	9	304	33,78	33,78	5
Malaysia	9	8	61	6,78	7,63	4

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; and C/P=total citations/total publications; C/CP= total citations/total cited publications

Table 2 includes data on the top 10 countries in this field. The United States leads all countries with 77 publications, a total number of cited publications of 3068 or an average of 40 citations/publication and h-index 26, followed by the United Kingdom with 33 publications, and China in third place with 31 publications. India ranks fourth with a total of 26 publications followed by Germany with 21 publications. Although Germany has fewer publications compared to other countries, its articles have a total citation of 744 and an average citation 35/per publication.

4.3 Top 10 Authors

Table 3 displays the productivity of authors in the field of herding behavior in young investors, listing the top 10 authors from various universities around the world.

Table 3. Top 10 Authors

Author Name	TP	NCP	TC	C/P	C/CP	h
Goyal, Nisha (Dayananda Sagar University, India)	3	3	291	97	97	3
Kumar, Satish (Indian Institute of Management Nagpur, India)	3	3	291	97	97	3
Barrett, Christopher B. (Cornell University, United States)	3	3	110	37	37	3
Hirshleifer, David (National Bureau of Economic Research, United States)	2	2	562	281	281	2
Ottaviani, Marco (Università Bocconi, Italy)	2	2	212	106	106	2
Menkhoff, Lukas (Humboldt-Universität zu Berlin, Germany)	2	2	209	105	105	2
Baker, H. Kent (American University, United States)	2	2	138	69	69	2
Claes, Christa (Gottfried Wilhelm Leibniz Universität Hannover, Germany)	2	2	76	38	38	2
Deng, Xin (Nanyang Technological University, Singapore)	2	2	59	29,5	29,5	2
Hung, Shengmin (Soochow University, Taipei, Taiwan)	2	2	59	29,5	29,5	2
Qiao, Zheng (Xi'an Jiaotong University, China)	2	2	59	29,5	29,5	2

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; and C/P=total citations/total publications; C/CP= total citations/total cited publications

Nisha Goyal from Dayananda Sagar University and Satish Kumar from Indian Institute of Management Nagpur, India are the most productive authors on the list, with 3 total publications (TP) and 3 net-cited publications (NCP). Their total citations (TC) and h-index are notably high at 297 and 3, respectively. The third most productive author is Christopher B Barrett. He has 3 TP and 3 NCP, but his TC is lower compared to Nisha Goyal and Satish Kumar, with values of 110.

Each author has unique strengths and areas of expertise in herding behavior research. Consequently, their findings collectively contribute to the advancement of herding behavior knowledge.

4.4 State-of-the-art Map of Herding behavior in Young Investors

The forthcoming bibliometric analysis will develop a science map using the bibliographic metadata of documents related to herding behavior in young investors. Figure 3 illustrates the result of mapping the occurrence of author keywords in this area. To create this scientific map, the association strength technique is applied to normalize the data, and smaller groups are combined to ensure a minimum group size of 10. The keyword co-occurrence analysis resulted in four distinct clusters. The clusters are outlined below, along with brief descriptions and their respective names:

Cluster 1: Psychological Factors in Financial Markets refers to various mental and emotional influences that affect the behavior and decision-making processes of individuals and groups participating in financial markets. This cluster covered the keywords as follows: behavioral finance, reputation, mutual fund, analyst, information cascade, career concerns, information asymmetry, peer effect, learning, market efficiency, agent-based model, anti-herding, big data, cheap talk, consumer behavior, hedge funds, heterogeneous agents, information collection, informed trading, reputational herding, social learning, stock recommendation, uncertainty. Cluster 1 explores the emotional influences on market participants' behavior and decisions, with a focus on behavioral finance, information asymmetry, and reputation dynamics. The integration of themes such as informational cascades and social learning demonstrates the complex interplay between psychological factors and market mechanisms that influence investment outcomes.

Cluster 2: Behavioral Finance in Emerging Markets refers to the study of how psychological factors and cognitive biases affect the financial decisions of investors and market outcomes in

developing economies. This cluster covered the keywords as follows: COVID, financial literacy, stock market, behavioral biases, institutional investors, investment decision, overconfidence, risk aversion, volatility, contrarian strategies, cryptocurrency, demographic variables, emerging market, equity crowdfunding, Indian investors, industry herding, investment performance, momentum strategies, overreaction, poverty, psychological biases. This cluster examines the influence of psychological factors and cognitive biases on investment decisions and market outcomes in emerging economies, with a focus on financial literacy, overconfidence, and momentum strategies. It also explores the complexity of investor behavior in dynamic and volatile environments, including in the context of cryptocurrency and equity crowdfunding.

Cluster 3: Future Generations for Tomorrow's Challenges focused on preparing younger generations to tackle upcoming challenges associated with herding behavior in investment contexts. This cluster covered the keywords as follows: children, behavioral economics, biotechnology, csad, decision-making, education, extreme weather events, health, heuristics, investor sentiment, millennials, prospect theory, and real estate. This cluster focuses on preparing young people for future challenges related to herding behavior in investment, emphasizing the importance of education and decision-making. By exploring behavioral economics and prospect theory, this cluster reflects on how psychological understanding can shape the next generation's response to extreme market conditions.

Cluster 4: Behavior Evaluation during the Pandemic focused on assessing the behavior of young investors during a pandemic, specifically in relation to herding behavior. This cluster covered the keywords as follows: imitation, cost-effectiveness, vaccination, herd immunity, hurst exponent, contagion, economic evaluation, event study, evolution, infectious disease, optimization, pandemics, pneumococcal conjugate vaccine, pneumococcal disease, pneumococcal vaccination, simulation, stochastic stability, vaccine. This cluster covers the behavior of young investors during the pandemic, focusing on herding behavior and its influence on investment decisions. Using concepts such as economic evaluation and simulation, the study explores the dynamics of imitation and market resilience in the context of global health challenges and vaccinations.

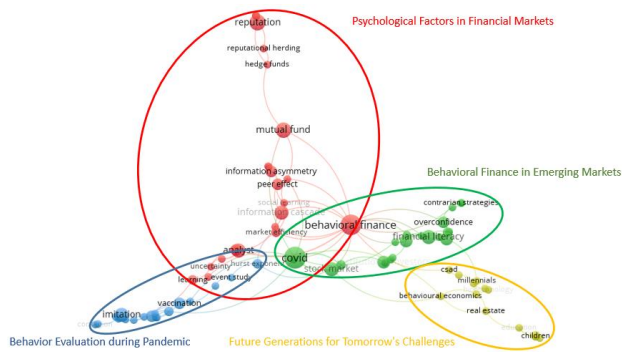


Fig. 3: Author Keywords co-occurrence in herding behavior in young investors

4.5 The Emerging and Trending Themes in the Area of Herding Behavior in Young Investors

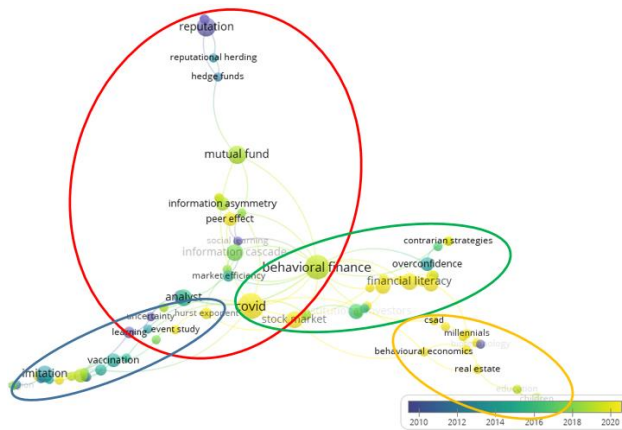


Fig. 4: Network and Overlay Visualization based on the emerging trends in herding behavior in young investors

From Network and Overlay Visualization with VOS Viewer in Figure 4, we can see that the dots in yellow mean the latest topics related to herding behavior in young investors that are still being researched a lot. Those topics are behavioral biases, behavioral economics, big data, contrarian strategies, cryptocurrency, financial literacy, heuristics, hurst exponent, investment decision, investment performance, investor sentiment, psychological biases, risk aversion, simulation, and the stock market. The theory that is most used is prospect theory.

From Network and Overlay Visualization with VOS Viewer in Figure 5, we can see that the red dots mean the most interested/ hottest topics related to herding behavior in young investors. Those topics are consumer behavior, social learning, risk aversion, millennials, prospect theory, cryptocurrency, and heuristics.

If we combine the topics from Figure 4 and Figure 5, we can see that future research regarding

herding behavior in young investors is risk aversion, cryptocurrency, and heuristic bias. The theory that is still relevant to use is Prospect theory to explain the phenomena of herding behavior.

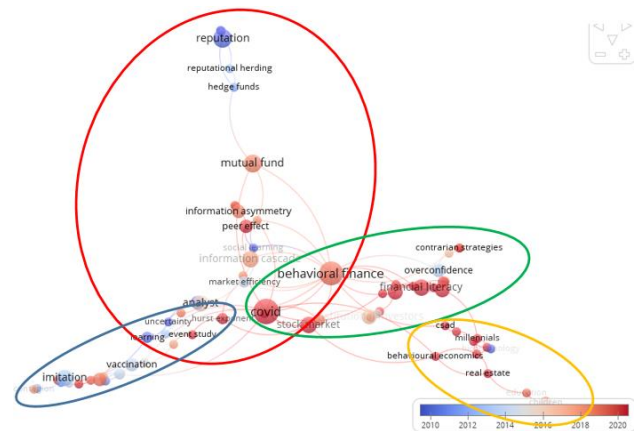


Fig. 5: Network and Overlay Visualization based on the trending topics in herding behavior in young investors

This study is useful for young investors, who are generally under 30 years old and are in their early careers with low wealth accumulation but have a longer investment horizon, [48], [55]. They tend to be active in trading and price sensitive, despite having limited knowledge and are willing to take high risks to pursue profits from stocks and cryptocurrencies, [6], [47]. In emerging markets, their heuristic and emotional nature often leads to irrational investment behavior, [48].

5 Conclusion

This paper aims to investigate trends in publications, the leading authors, journals, institutions, and countries related to herding behavior in young investors as well as state of the art emerging and trending themes in the area.

We found the publications related to herding behavior in young investors steadily increased over the years. The most active country in publishing research studies and scientific articles on herding behavior in young investors is the United States. Nisha Goyal from Dayananda Sagar University and Satish Kumar from the Indian Institute of Management Nagpur, India are the most productive authors. The keyword co-occurrence analysis resulted in four distinct clusters: Psychological Factors in Financial Markets, Behavioral Finance in Emerging Markets, Future Generations for Tomorrow's Challenges and Behavior Evaluation during the Pandemic. From Network and Overlay Visualization with VOS

Viewer, the authors found the emerging and trending topics related to herding behavior in young investors are risk aversion, cryptocurrency, and heuristic bias. The prospect theory is the most used and relevant theory to explain herding behavior.

Investors can improve their investment strategies by improving their investment skills and effectively managing information from social media to take advantage of short-term herding behavior and following advice from credible sources. The Indonesia Stock Exchange (IDX) should provide clear and transparent official information, as well as online educational resources to combat misleading information. IDX can also develop herding behavior monitoring tools and create a discussion platform for investors to share experiences and constructive information. Future research can examine deeper the influence of digital and social media on young investors' behavior including herding behavior.

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Contribution of Individual Authors to the Creation of a Scientific Article

- Fredella Colline was responsible for conceptualization, data curation, formal analysis, investigation, project administration, resources, software, validation, visualization, writing – original draft and writing – review, and editing.
- Budi Hermawan was responsible for conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, supervision, validation, visualization, writing – original draft and writing – review, and editing.

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