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Relationship Between the Big Five Personality Traits and Knowledge-Sharing Behaviour: A Meta-Analysis

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ABSTRACT

Background: Knowledge-sharing is crucial for innovation and productivity. It was determined that it depends on five significant personal factors known as the Big Five personality traits which comprise extraversion, agreeableness, openness, conscientiousness and neuroticism. The gathered bodies of research have brought patchy insights rather than an integrated, holistic explanation because they have been one-sidedly oriented toward characteristics and contexts. Hence, a meta-analysis systematically encompassing all aspects is the requisite for synthesising findings, examining dimensions of the environment, and formulating productive strategies to improve knowledge-sharing.

Objective: The research seeks to understand the complex association between the Big Five personality traits and knowledge-sharing behaviour through meta-analysis studies.

Methods: This study conducts a meta-analysis of the relationship between each Big Five personality trait and knowledge-sharing behaviour across different contexts based on 30 publications.

Results: The meta-analysis suggests that knowledge-sharing has small to moderate positive correlation (COR) with personality traits—extraversion (COR=0.25), agreeableness (COR=0.28), conscientiousness (COR=0.23), and openness to experience (COR=0.26). The COR is nearly zero for neuroticism (COR=0.01), hence suggesting a minimal relationship with the outcomes. Considering the high level of heterogeneity to the results, there may be numerous contextual factors, such as the role of the country, contributing to the variability of the findings.

Contributions: This meta-analysis gives deep insights into the intricate relationship between the Big Five personality traits and knowledge-sharing behaviour for designing approach and policy to gain maximum benefits from the diversity of personality traits in all settings.

INTRODUCTION

Personality and its role in behaviour is fundamental in psychology and the organisational realm. Personality, which consists of thoughts, emotion and behaviour, is generally quite stable over an individual's lifetime.

The Big Five personality traits of extraversion, agreeableness, openness to experience, conscientiousness, and neuroticism comprise one of the most widely used frameworks in the general study of personality (Oshio, Taku, Hirano, & Saeed, 2018). The framework has value for analysing behaviour, such as, knowledge-sharing that plays a massive role in the growth and development of not only individuals, but also, the organisations.

Background

Knowledge-sharing is a process of sharing information and expertise as well as mastering skills by individuals or in groups rout through verbal or written words, electronic or face-to-face methods (Lin, Hsieh, & Lian, 2018).

Most literatures agree with the proposition that knowledge transfer is critical for promoting innovation, increasing productivity and meeting organisational and personal goals. Indeed, it is essential in various organisations, learning institutions, businesses, families, and communities (Pei-Lee, Chen, Chin, & Siew, 2011). However, much attention is needed to understand what makes an individual willing to share knowledge. It is clear that different relations and interactions of personality traits determine an individual's behaviour and characteristics, including the propensity to share knowledge. Hence, there is relationship between individual personalities and knowledge-sharing activities. For example, those who scored high on the extraversion dimension are more inclined to engage in knowledge-sharing and are willing to share knowledge while those high in conscientiousness are more likely to engage more systematically and accurately in knowledge-sharing (Lin, Hsieh, & Lian, 2018; Li, Wu, & Xiong, 2021).

Personality traits and knowledge-sharing have no linear association, that is, factors such as environmental conditions in which knowledge-sharing takes place and the contexts within which individuals engage in problem solving and learning, affect the knowledge-sharing process. In fact, according to Hislop, Bosua and Helms (2018), sharing of knowledge can either be enhanced or inhibited in various contexts whether, be it in workplaces, learning institutions or social relationship based on cultural beliefs, accessible assets and the inter-personal relations.

Research Problem

It is significant to understand that personality traits are not isolated characteristics; they work in diverse combinations influencing each other and can change the effect they produce on knowledge-sharing behaviour (Silvia & Christensen, 2020).

Despite significant research in domain of knowledge-sharing behaviour, it could be argued that there is still a dearth of integrative review for synthesising personality traits' effects on knowledge-sharing and examining the contingencies of this relationship.

Existing literature is majorly inclined towards specific traits and limited contexts which ultimately gives fragmented understanding of a complex relationship. In addition to this, contingencies like contextual and environmental factors which can influence personality traits in knowledge-sharing attitudes are also unexplored in depth. This lack of knowledge ultimately affects the development of holistic strategies about effective knowledge-sharing across diverse settings. To this end, our study objective is to undertake a meta-analysis to synthesise findings in the manner that the Big Five personality traits affect knowledge-sharing behaviors in different settings.

Our approach is to systematically gather and synthesise data from the numerous studies in an attempt to understand the identified dynamics in more detail and differentiate them to identify patterns that can be beneficial in terms of theoretical and pragmatic use.

The information derived from this study should offer insights to policy makers of organisations for improving knowledge-sharing climate and for the development of knowledge-sharing interventions and policies that may open up a more conducive milieu to for innovation and organizational productivity. For the individuals, it is possible that the

information derived could help them understand the significance of personality characteristics in terms of knowledge-sharing which is effective for enabling individual growth and interpersonal communication skills.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

According to Akbar, Malik and Warraich (2023), the Big Five personality traits can help in explaining how personality affects the willingness to share knowledge. On this basis, we reviewed related literatures and identified gaps which help us (1) formulate five hypotheses for our study investigation on the interplay between each of the Big Five personality traits and knowledge-sharing and (2) suggest direction for future researches.

- **Extraversion and Knowledge-sharing**

The first group that must be predisposed to share knowledge based on one's nature is the extraverted people since they are sociable and assertive in nature. Stapleton and Tonkin (2018) pointed out that extraverts are the ones who initiate conversation, and this is very useful when it comes to the control of information flood. According to Mance (2021) owning to the inherent social orientation of extraverts they have the ability to comfortably galvanise group where information sharing is encouraged. This results in their ability to readily approach people making it easy to share knowledge thereby enhancing collaboration. Hence, our first hypothesis is:
Hypothesis 1*: Extraversion is positively correlated with knowledge-sharing behaviour.*

- **Agreeableness and Knowledge-sharing**

Agreeableness entails traits like altruism, cooperation and trust. Polite, empathetic, and cooperative are also some of the qualities of those who score high in agreeableness. These people are focused not only on their individual ambitions, but also, seek balance within the group and its overall success, which in turn, creates positive conditions for knowledge transfer. Agreeable people are highly cooperative. Hence, they become invaluable in creating a culture of sharing knowledge among other people. Theories in organisational behaviour indicate that these attributes promote shared workspaces. This is because, for one to be considered an agreeable person, he or she should partake in other beneficial behaviours and one of them is sharing valuable knowledge and information with other people. This behaviour is tantamount to the social exchange theory, which asserts that the behaviour that people exhibit is a result of an exchange process aimed at maximising gains and minimising losses (Tsai & Kang, 2019). Consequently, the agreeable people contribute to the creation of the strong-knit group with good interpersonal relationships.

On the other hand, people who are not agreeable would have negative attitudes towards helping others or may not feel that there is a strong social norm endorsing sharing of knowledge within their group. Hence, they may not engage in this behaviour.

It is thus possible to note that, although the role of agreeableness regarding knowledge-sharing is fairly well understood, more context-based research is required to fill a rather significant gap. While prior literature has established a relationship between agreeableness and knowledge-sharing behaviour in usual or abstract organisational environment, no study has tried to explore impact in specific organisational conditions like, high stress jobs, virtual teams, or in innovation-oriented sectors. In the same context, there is limited knowledge

concerning the moderation effects of cultural variations on the relationship between the magnitude of agreeableness and knowledge-sharing.

Based on the above literature and identified gaps, our second hypothesis is:
Hypothesis 2*: Agreeableness is positively correlated with knowledge-sharing behaviour across different organisational contexts and cultures.*

- **Conscientiousness and Knowledge-sharing**

Being conscientious, people become the lifeblood sustaining the quality and the accuracy of shared knowledge (Tan, 2020). Their commitments and care for information reliability go in parallel with the establishment and management of knowledge databases and information sharing services. Their methodical approach guarantees, that the knowledge, which is being passed down, is accurate and documented properly.

Conscientiousness under the five-factor model of personality falls under the category of hardworking, careful, and reliable. Some behaviour in knowledge-sharing of conscientious individuals might be understood by the self-determination theory (Gagné, Deci & Ryan, 2018). This theory posits that individuals are motivated to grow and change by three innate and universal psychological needs—competence, autonomy and relatedness. Conscientiousness as a personality trait, includes such facets as, zeal for work and the duty to make a perfect job, which can be closely linked to the moral obligations of persons sharing specific knowledge, and the motivation to sort it properly.

The goal-setting theory by Latham and Locke (2018) asserted that knowledge-sharing is also likely to occur among conscientious people. According to this theory, people, who are under a frame to pursue specific and difficult targets, are likely to perform better than people under no or easy targets (Latham & Locke, 2018). When it comes to organisational citizenship, conscientious individuals especially, due to their proactive decision-making mechanism, can be expected to easily commit themselves to personal goals that are oriented towards preserving high data quality standards and making sure that knowledge contributions are actually beneficial for the group.

We found that existing literature, reveals only studies that have established relationships between several variables including conscientiousness with the general knowledge-sharing process. It lacks exploration of the way this process occurs in volatile turbulent environments. Furthermore, despite the fact that knowledge management has been accepted as an integral concept in organisations, research on how organisational culture impacts the knowledge-sharing activities, especially of conscientious persons, is still limited. Future research could explore how different cultures or industries influence the knowledge-sharing practices of conscientious workers.

The literature discussed and identified gaps, help us derive the following:
Hypothesis 3: *Conscientiousness is positively correlated with knowledge-sharing behaviour, particularly in structured and stable organisational environments.*

- **Neuroticism and Knowledge-sharing**

People with high neuroticism are generally less motivated to share or contribute their knowledge. Employing best practices that allow neurotics to share knowledge should be another area of consideration to the business as well as the educational organisations (Farrukh, Sajid, Zreen, & Khalid, 2020).

We observe that there is no lack of literature on why neurotic people are not forthcoming in knowledge-sharing. For example, Baumgartner and Schneider (2020) stressed that people with neurotic tendencies require extra encouragement and rewards to alleviate the obstinacy in relation to sharing knowledge with others. The affective event theory mentioned by Weiss and Cropanzano (1996) postulated that events at work that evoke insecurity and stress, discourage neurotic persons from to come forward to share information as they fear rejection or failure. Another example is the conservation of resources theory by Stevan E. Hobfoll, mentioned in Modrzynski (2018). The theory states that people aim at possessing and maintaining resources. As such, neurotic people who may harbour such aim, resist knowledge-sharing.

In spite of the abundance in studies on how neuroticism influences negative attitudes towards knowledge-sharing, few works attempt to describe the kind of support that could be implemented to helping neurotic individuals. As follow-up through to our study, it would be important for subsequent investigations to examine methods to help neurotic employees who may require encouragement to engage in knowledge-sharing. Such measures may include the application of stress reduction, handling of subordinate supervisee relationship, the development of psychologically healthy workplace.

From this literature review and identified gaps, our hypothesis is:
Hypothesis 4*: Neuroticism is negatively correlated with knowledge-sharing behaviour, and targeted support mechanisms can mitigate this effect.*

- **Openness to Experience and Knowledge-sharing**

Openness to experience as a personality trait encompassing curiosity and a propensity to experiment with new ideas is in a positive relationship with knowledge-sharing.

It has been postulated by Zhang and Cranshaw (2018) that open people are self-contained in sharing their opinions and participating in conversations. This means, their ability to seek self-actualisation in creative space makes them ideal candidates for knowledge-sharing endeavours. They are trendsetters who embrace and implement new technologies, methods and new knowledge management systems early enough. Cohen and Levinthal (1990)'s idea of open people is quite similar to that of Zhang and Cranshaw. The former presented the absorptive capacity concept which refers to the capacity of organisations to identify the potential benefits of new information. In such organisations, open people are invaluable as they are endlessly looking for novel information to adopt as well as reconcile dissimilar viewpoints.

Even though openness is positively associated with knowledge-sharing, there is lack of research focus in the aspect of openness to the sharing of knowledge with other cultures and contexts. Potentially, future research could examine how the level of openness impacts the take-up and usage of knowledge-sharing technologies in diverse cultures.

Based on the above literatures and identified gaps, our last hypothesis is:
Hypothesis 5*: Openness to experience is positively correlated with knowledge-sharing behaviour, particularly in environments that encourage creativity and the use of innovative technologies.*

To sum up, our studies have confirmed that personality patterns relate to knowledge-sharing. The present analysis suggests that there are important gaps within the field. When generalising the findings on the five basic personality traits and knowledge-sharing, it is crucial to note that the literature is still scarce in terms of contextualisation. More future researches would be needed to examine how the aforementioned relationships are generalised

across different types of organisations and work culture. Furthermore, researchers could extend the research forward in time, with the aim of getting to know how these relations in the long-term influence knowledge-sharing.

METHODOLOGY

A detailed approach of research is crucial to understand the complex relationship between the Big Five personality traits and knowledge-sharing behaviour.

Our approach is based on systematic research of studies which contain primary statistical analysis. These relevant studies, finally 30 of them as shown in Table 2, with primary data were used for our analysis on the topic of personality traits and knowledge-sharing behaviour. A systematic literature review or a bibliometric analysis was also performed to gather suitable conclusions. In this regard, our present study applied a universally recognised and approved PRISMA approach to the process of systematic reviews. Afterwards, a statistical analysis was done to arrive at a strong conclusion to the analysis and suggested new directions for the policymakers.

Research Design

This research adopts a secondary qualitative approach in terms of research design and is based on a systematic literature review. We therefore undertook a meta-analysis systematic review to determine the interaction between the five-factor personality model and knowledge-sharing behavior. This assists in integrating existing literature for deriving profound implications of personality characteristics on the sharing of knowledge in any given environment (Ritterbusch & Teichmann, 2023). According to Hou et al (2023), a systematic literature review guarantees that all the studies are necessarily searched, evaluated, and compiled in a way that ensures a strong body of evidence is provided on patterns, trends, or gaps as captured by the literature to inform potential future development. It is to be noted that secondary qualitative data focus their attention on the analysis of the themes and findings from other studies.

Data Collection Method

The Big Five personality traits comprise openness, conscientiousness, extraversion, agreeableness and neuroticism. We critically reviewed articles originating from peer-reviewed journals, conference papers, and academic papers by aligning with Sauer and Seuring (2023)'s Prisma guideline. As eligible databases include Scopus, Web of Science, and Google Scholar, articles on this subject matter were evaluated on quality, relevance, and methodological soundness using pre-specified keywords based on the inclusion criteria. This allows for the uptake of a myriad of views and so provided insights into how the personality elements interacted with knowledge-sharing behaviour (De Felice, Petrillo, Iovine, Salzano, & Baffo, 2023).

Search Strategy

Search strategy plays crucial role in gaining significant amount of data and information from available relevant data sources. We utilised relevant electronic databases including the Web of Science, Scopus, PubMed, PsycINFO, Google Scholar, manual search as well as backward and forward citations. These databases are significant in covering a wide spectrum of academic literature in the wide discipline of knowledge management, organisational behaviour and psychology. Additionally, there was a mix of free-text keywords and regulated

vocabulary terms (like MeSH terms in PubMed). "Personality traits," "knowledge-sharing," "knowledge exchange," and similar synonyms were the main search terms or keywords. Search query refinement was further done by using Boolean operators (AND, OR).

Inclusion and Exclusion Criteria

Table 1 presents the criteria used for including and excluding the studies (articles) of our research, that is, type of published research studies, studies related to only the Big Five personality traits and knowledge-sharing, language and published year.

Table 1. Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Studies published in peer-reviewed journals	Studies with inadequate data or unclear methodologies
Studies conducted on human participants	Studies focusing on populations other than adults (e.g., children or animals)
Studies examined the relationship between personality traits (e.g., Big Five traits) and knowledge-sharing behaviour	Studies which do not use Big Five personality factors
Studies available in English	Non-English studies, as resources for translation, may be limited
Studies published up to the date of the search, with no limitations on publication year	Conference abstracts, dissertations, and unpublished reports

Study Selection Process

The study selection process followed a two-stage approach:

- *Title/Abstract screening:* Based on the research titles and abstracts, two impartial reviewers were determined. During this phase, studies that did not completely fit the inclusion criteria of the current study were rejected.
- *Full-text assessment:* In this phase, decision was made if the remaining studies were appropriate for inclusion and a thorough full-text evaluation by reviewers was conducted for each study, in the light of the inclusion and exclusion criteria.

Data Extraction

A standardised data extraction form was used to collect relevant information from each included study, including authors and publication details, study design and methodology, sample characteristics, Big Five personality traits assessed, measures of knowledge-sharing statistical analyses and effect sizes.

PRISMA Flowchart

A clear visual depiction of the systematic review process of studies and the research selection process, including the number of studies identified, screened, evaluated for eligibility, and included in the final analysis, is best shown in a PRISMA flowchart (De Felice, Petrillo, Iovine, Salzano, & Baffo, 2023). In Figure 1, the PRISMA flowchart reflects the selection of final studies from different databases—Web of Science, Scopus, PubMed, PsycINFO, Google Scholar, manual search, backward and forward citations—in the current study. The number of

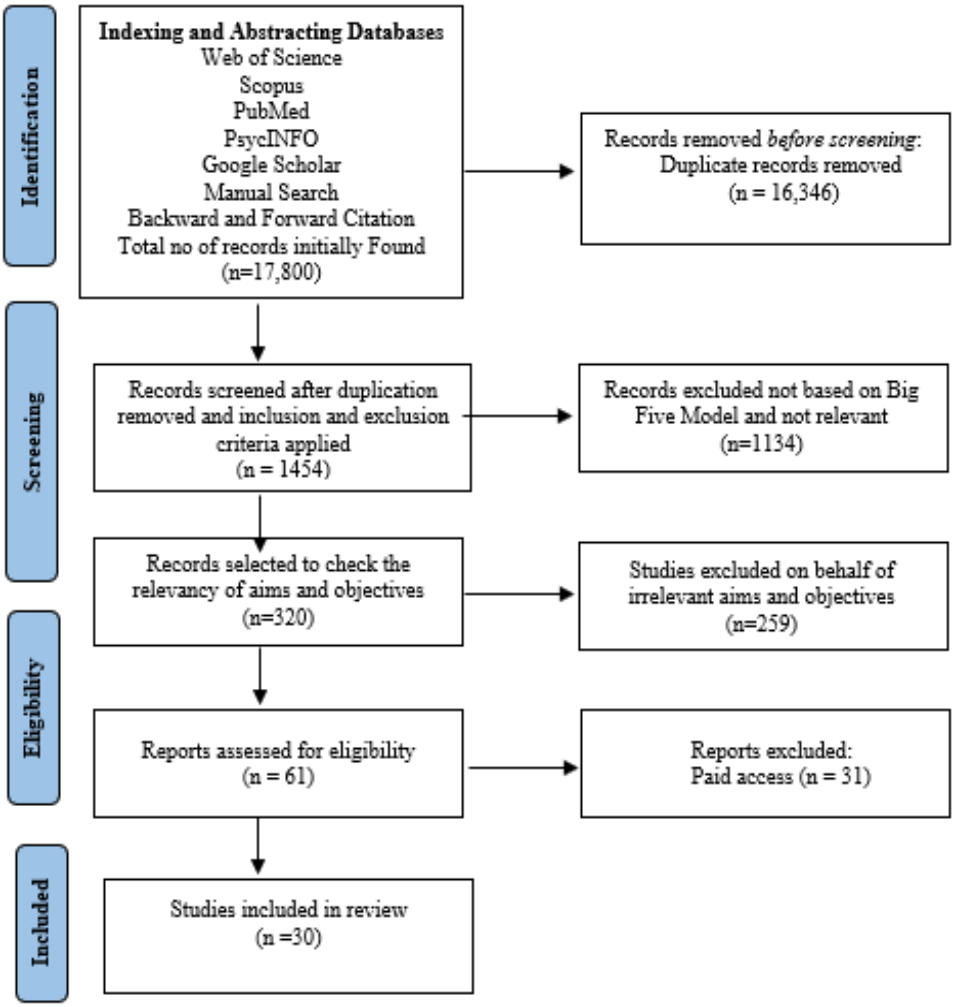

Figure 1: Search Process in PRISMA flowchart

initially found records was 17,800. Records removed based on duplication of studies were 16,346. After removing the duplicated studies, remaining records were screened using the inclusion criteria.

The inclusion criteria of the current work were for collecting only those studies which were published in peer-reviewed journals by aligning with Slagboom, Muis, Taba, and Hakim (2023)'s PRISMA guideline. Additionally, the inclusion criteria were expanded to the addition of only human participants-based studies, English language-based studies and studies which examined the relationship between personality traits (e.g., Big Five traits) and knowledge-sharing behaviour by aligning with Basenach, Renneberg, Salbach, Dreier and Wölfling (2023)'s PRISMA guideline. Therefore, the current record of 1454 (16,346 excluded due to repetition) was examined in using the inclusion criteria. Another 1134 studies were excluded because they did not match the inclusion criteria. The remaining records of 320 studies were selected to check the relevancy of aims and objectives. Here again, 259 more studies were excluded because of irrelevant aims and objectives (examined from the abstracts of studies). Of the 61 left, 31 paid studies further were excluded after eligibility checks and statistical techniques used. Finally, 30 studies as shown in Table 2 were selected for the meta-analysis in the current study.

Table 2. Research Methodological Information

	Authors*	Year	Country
1	Abdel-Aal, E.M. and Khairy, H.A.,	2016	China
2	Lin, K.J., Hsieh, Y.H. and Lian, W.S	2018	Taiwan
3	Wang, C.C. and Yang, Y.J	2007	Taiwan
4	Pei-Lee, T., Chen, C.Y., Chin, W.C. and Siew, Y.Y.,	2011	Malaysia
5	Jami Pour, M. and Taheri, F	2019	Iran
6	Zhang, J., Zhou, M. and Zhang, J	2016	China
7	Khan, M.N. and Zaman, U.,	2022	Pakistan
8	Cabrera, A., Collins, W.C. and Salgado, J.F	2006	US
9	Wang, S., Noe, R.A. and Wang, Z.M	2014	China
10	Cui, X.,	2017	China
11	Farrukh, M., Sajid, M., Zreen, A. and Khalid, R	2020	Pakistan
12	Ali, I.,	2019	Saudi Arabia
13	Van Duijn, M.J. and de Kwaadsteniet, E.W.,	2018	Netherlands
14	Shaukat, R., Ahmad, S., Naveed, M.A. and Ur Rehman, S	2023	Pakistan
15	Lotfi, M., Muktar, S.N.B., Ologbo, A.C. and Chiemeke, K.C	2016	Malaysia
16	Zaidi, N.R., Wajid, R.A., Zaidi, F.B., Zaidi, G.B. and Zaidi, M.T	2013	Pakistan
17	Javaid, M., Jaaron, A.A. and Abdullah, N.H.B	2022	Pakistan
18	Holman, D.J. and Hughes, D.J.,	2021	UK
19	Anwar, C.M.,	2017	Pakistan
20	Suryadi, D.F., Muis, M., Taba, I. and Hakim, W.,	2022	Indonesia
21	Fang, C.L. and Liu, W.C.,	1997	Taiwan
22	Roccas, S., Sagiv, L., Schwartz, S.H. and Knafo, A.,	2002	Israel
23	Rehman, M., Safdar, S., Mahmood, A.K., Amin, A. and Salleh, R.,	2017	Malaysia
24	Harari, M.B., Jain, N.K. and Joseph, T.,	2014	India
25	Lin, Q., Lin, L. and Ye, D.,	2015	China
26	Wijesinghe, P.R.D. and Kathriarachchi, R.P.S.,	2022	Taiwan
27	Kanwar, M. and Sehgal, M.,	2021	India
28	Cordaro, J.K.,	2023	US
29	Munasinghe, M.K.O. and Nishanthi, H.M.,	2019	Sri Lanka
30	Mutlu, M.D.,	2017	UK

*Full citations are in the REFERENCE

Data Analysis

Study Description

The meta-analysis of this study, which focused on the association between each of the Big Five personality traits-extraversion, agreeableness, openness, conscientiousness, and neuroticism and knowledge-sharing, were derived from 30 prevailing studies with 24,937 observations. The description of the studies by authors, year and country is in Table 2. These studies have statistical analyses involving both male and female students and employees from diverse organisational context and personality traits with regards to knowledge-sharing attitudes.

In view of the diversity of the 30 studies, we expected the significant variations in the association of each Big Five personality traits and knowledge-sharing to be inevitable in the meta-analysis heterogeneity tests. To account for the variations in the, we used two statistical tools, namely, the random effect model and Fisher's z transformation. The results are displayed in Figure 2 to Figure 16 in the Appendix.

There are multiple types of software for analysing data. The RStudio stands out as-one of the best advanced software for the meta-analysis of data. In the present study, we used the

RStudio (Version 2025.05.0) to create the forest and funnel plot graphs in the Appendix with the help of two powerful libraries— meta and metaphor.

Results of Meta-analysis

The interpretation of the results for each of the 15 figures (Figure 2 to Figure 16) in the Appendix is as follows:

- *Figure 2: Extraversion and Knowledge-sharing (Effect Size Estimation)*

The overall correlation (COR) across 30 studies with 24,937 observations is 0.25. This suggests a small to moderate positive effects. The 95% confidence interval (CI) [0.11; 0.38] also proves that the effect is statistically significant (p=0.0001). However, there is also a very high heterogeneity (I^2=97.8%) and this means there are significant differences in impact ratios among the studies. The tau^2 value of 0.15 also shows the significant variability across absolute deviation between units. Altogether, the meta-analysis as in Figure 2 reveals a moderate extent of positive treatment for most comparisons, but considerable heterogeneity points to potential moderators that may affect the relationship in different settings or samples.

- *Figure 3: Agreeableness and Knowledge-sharing (Effect Size Estimation)*

The overall COR is 0.28 across 30 studies with 24,937 observations is in the positive moderate range. By the calculation of the 95% CI [0.18; 0.38], the significance level of p<0.0001 is confirmed to be in direct positive effect. The percentage figure for heterogeneity is 96.9%, which indicates the substantial differences between studies. The tau^2 value of 0.08 indicates moderate heterogeneity. These findings indicate that agreeableness, in particular, has positive influence on knowledge-sharing, though the degree of this impact is depended on the differences in the examined study context and sample populations.

- *Figure 4: Conscientiousness and Knowledge-sharing (Effect Size Estimation)*

The overall COR between conscientiousness and knowledge-sharing across 30 studies with 24,937 observations is equal to 0.23. This expresses a small to moderate positive impact. The CI at 95 % is [0.17; 0.29] thus, proving that statistical significance exists at p<0.0001. There is high heterogeneity (I^2=92.8%) among the studies. The tau^2 value was found to be equal to 0.02 reflecting moderate heterogeneity. However, it was generally found to be positive; still the high heterogeneity provides evidence that the effect of grade point average might not be consistent in different settings, studies or across different samples which were investigated.

- *Figure 5: Neuroticism and Knowledge-Sharing (Effect Size Estimation)*

The total measure of COR is 0.01 suggests that the extent of experience has almost no influence on the usability of the system, as supported by the 95% CI of -0.09 to 0.12. This result indicates that there is no correlation between the two variables in the study group, therefore p=0.0001 is not significant. However, the meta-analysis found high heterogeneity (I^2=96.4%), which means there is high variability between the studies. The tau^2 value of 0.07 signifies moderate heterogeneity. However, synthesized meta-analysis indicates that the net effect is close to zero suggesting that neuroticism does not positively or negatively influence knowledge-sharing irrespective of context and population.

- *Figure 6: Openness and Knowledge-sharing (Effect Size Estimation)*

The meta-analysis in turn examines the correlation between openness and knowledge-sharing based on the 30 studies with 24,937 observations. The overall COR of 0.26 falls in the small to moderate positive range with the 95% CI ranging from 0.18 to 0.33 and the statistically significance being $p<0.0001$. Significantly high heterogeneity ($p<0.0001$, $I^2=94.4\%$) indicates the disparity in results between different studies. The tau^2 value of 0.04 represents the variation of within-study standard deviations and it can be concluded that the heterogeneity of the within-study standard deviations is equal to 0, meaning absence of moderate to high level of heterogeneity. Therefore, with reference to the findings above, knowledge-sharing behaviour for individuals who scored higher in openness were established to be more effective, which underscores the role of this personality factor in knowledge-sharing.

- *Figure 7: Extraversion and Knowledge-sharing (Assessment of Publication Bias)*

Publication bias is the selective publication of studies with essential results while potentially neglecting those with opposing or insignificant findings (Mlinaric, Horvat & Supak Smolcic 2017).

Publication bias for extraversion and knowledge-sharing exists and this is clear from the large holes seen close to the bottom or asymmetry in the plot indicates publication bias. However, it also reflects heterogeneity of studies' findings for extraversion and knowledge-sharing.

- *Figure 8. Agreeableness and Knowledge-sharing (Assessment of Publication Bias)*

In this plot between agreeableness and knowledge-sharing, there is a positive COR between but because the data points are spread out, so it is difficult to indicate exact robustness of correlation.

- *Figure 9: Conscientiousness and Knowledge-sharing (Assessment of Publication Bias)*

The plot between conscientiousness and knowledge-sharing shows the standard error on the y-axis and Fisher's z-transformed correlation on the x-axis. These points clearly present individual studies. However, symmetry around the vertical line highlights the low publication bias, while asymmetry suggests potential bias.

- *Figure 10: Neuroticism and Knowledge-sharing (Assessment of Publication Bias)*

In this funnel plot for relationship between neuroticism and knowledge-sharing, symmetry around the vertical line at zero reflects the absence of publication bias, whereas asymmetry highlights potential bias. Precisely, the plot suggests a moderate degree of symmetry with relatively balance distribution of studies although some asymmetries are there, implying minor publication bias.

- *Figure 11: Openness and Knowledge-sharing (Assessment of Publication Bias)*

The openness and knowledge-sharing plot highlights a slight rightward skew, indicating few asymmetries and potential publication bias and favouring positive correlations.

- *Figure 12: Extraversion and Knowledge-sharing (Sub-Group Analysis by Country)*

This meta-analysis enables the authors to investigate the link between extraversion and knowledge-sharing of 30 different studies with a total sample of 24,937, categorized by country. The overall COR is 0.25 (95% CI: 0.11 to 0.38), statistically significant is p=0.0*00*1. Moderate to high heterogeneity exists (I^2=97.8%), meaning that high variability exists in the outcome of different studies. Countries are ranked from the highest positive correlation to the lowest, the higher the value, the closer the two variables would be to each other. In this respect, Iran has the strongest positive COR 0.69 followed by Taiwan at 0.59 and then Sri Lanka at 0.31. The result also showed that the chi-squared value between groups is significant (χ^2_{12}=352.75, p<0.0001), pointing to the fact that the nature of the correlation between agreeableness and knowledge-sharing differs between countries.

- *Figure 13: Agreeableness and Knowledge-sharing (Sub-Group Analysis by Country)*

The total COR coefficient is 0.28 (95% CI: 0.18 to 0.38), the value was statistically significant (p<0.0001). High values of heterogeneity represent a significant difference between researches and its level is 96.9%. The subgroup analysis reflects positive correlation, specifically in Malaysia with COR of 0.59, Taiwan 0.34 and China 0.32. It was also established that the chi-squared value between groups is significant (χ^2_{12}=175.27, p<0.0001), pointing to the fact that the nature of the correlation between agreeableness and knowledge-sharing differs between countries.

- *Figure 14: Conscientiousness and Knowledge-sharing (Sub-Group Analysis by Country)*

The overall COR is 0.23 (95% CI:0.17 to 0.29), a significant and positive correlation. The high heterogeneity (I^2 92.8%) supports the view that there is a lot of variability in the studies. Certain countries under subgroup analysis reveals varying correlations: Saudi Arabia (0.37), Indonesia (0.32), Pakistan (0.30), Taiwan (0.26), China (0.26) positive correlation. The evidence that chi-squared is significantly different from zero (χ^2_{12}=113.45, p<0.0001) proves the heterogeneity of studies.

- *Figure 15: Neuroticism and Knowledge-sharing (Sub-Group Analysis by Country)*

This subgroup analysis examines the association between neuroticism and knowledge-sharing using data from 30 samples, including 24,937 observations at country level. The overall COR is 0.1 (95% CI: -0.09 to 0.12) with significant *p*=0.0001. The presence of a comparable or even higher level of heterogeneity indicates that the estimates are considerably divergent (I^2=96.4%). When analysing the CORs between subgroups, we notice that the results are not very encouraging; the correlation in the US is positive (0.32) and so is Saudi Arabia (0.32), and there are negative correlations in Iran (-0.38) and Pakistan (-0.12). Again, using chi-squared test results, χ^2_{12}=182.25, p<0.0001) asserts that there are differences among the studies with regard to the research questions while the subgroup differences are also statistically significant (p<0.0001), which underlines cross-country variations in the relationship between neuroticism and knowledge-sharing.

- *Figure 16: Openness and Knowledge-sharing (Sub-Group Analysis by Country)*

The overall COR analysed can be marked as equal to 0.26 (95% CI: 0.18 to 0.33), statistically significant (p<0.0001). High heterogeneity (I^2=94.4%) is also found between studies. The analysis of the variance of the index is positive in Iran at 0.67, in Pakistan at 0.45, Malaysia at 0.28, China at 0.25, and Taiwan at 0.22. The chi-squared test of the results calculated

significant sub-group differences (χ^2_{12}=519.72, p<0.0001) approve the country-specific differences in the relationship between openness and knowledge-sharing. In this connection, while the average COR coefficient of the study is 0.28, Israel exhibits a negative relationship (-0.34).

FINDINGS

The meta-analysis provides a differentiated understanding of the studies of the Big Five personality traits and knowledge-sharing behaviour. The results pave way in advancing the literature regarding personality determinants of knowledge-sharing across various contexts, thus enriching the specification of self and other-related factors as determinants of behaviour.

The meta-analysis concluded that there is a small to moderate positive relationship between extraversion and knowledge-sharing in Figure 2. This is confirmed by the COR of 0.25 and p-value of 0.0001. This finding supports the extraverted personality theoretical stance that socially outgoing and self-assertive people are more likely to share knowledge (El-Tah & Jaradat, 2018). On the same note, the manner that has been exhibited by extraversion people ability to share knowledge can be attributed to the fact that they are involved in or promote interaction with other people mainly through communication. There is high heterogeneity (I^2=97.8%) in Figure 12 implying a great deal of variation across contexts and populations. For example, in the sub-group analysis by country, Figure 12 shows Iran having a COR of 0.69, Taiwan, 0.59 and Sri Lanka, 0.31. This variability can be largely attributed to factors like cultural norms and organisational practices in different countries. Lastly, extraverts are believed to enjoy sharing knowledge more, if the culture of the geographical location they live in encourages them; this is particularly so in cultures that embrace collective and collaborative work (Boyle, Wongsri, Bahr, Macayan, & Bentler, 2020).

The findings stated that there is a small to moderate positive correlation between amount of knowledge shared and agreeableness, which was found to be true (COR=0.28, p<0.0001) in Figure 3. Unlike the disagreeable individuals, who are highly uncooperative and might even lack empathy, the agreeable persons prefer to have good relationships and such relations make the sharing of knowledge possible. The funnel plot symmetry test shows high heterogeneity (I^2=96.9 %) and the significant country-level differences outline the significant part of cultural as well as organisational context in nurturing this relation. For example, in Figure 13, a COR of 0.59 for Malaysia, 0.34 for Taiwan, and 0.32 for China may enhance the correlation COR of agreeableness and knowledge-sharing because of interpersonal and collective aspects.

Conscientiousness has a small to moderate positive relationship with knowledge-sharing (COR=0.23 and p<0.0001) in Figure 4. Since knowledge sharers are self-motivated and hardworking people who are often considered conscientious, they are usually involved in knowledge-sharing as a way of supporting the achievement of organisational goals and objectives formulated under structured patterns of work (Molla, 2020). This is an indication that this relationship is explicable by the organisational environments since the heterogeneity is high (I^2=92.8%) in Figure 14. For instance, in formal and organised contexts, conscientious people can experience well-defined best practices in the sharing of knowledge, making the positive linkage better. It was also observed in Figure 14 that, countries like Saudi Arabia (COR=0.37), Indonesia (COR=0.32), Pakistan (COR=0.30), Taiwan (COR=0.26), China (COR=0.26) have a relatively higher COR coefficient, which may indicate more of an organisational culture that encourages knowledge-sharing activities searches for relevant information by the workforce.

The relationship between neuroticism and knowledge-sharing in Figure 5 is almost zero: COR=0.01, p=0.0001. Specifically, neurotic individuals, who are characterized by anxiety and emotional instability, may not share knowledge because of their fear of negative feedback or low self-confidence. Figure 15 shows the high heterogeneity (I^2=96.4%) and meta-regression indicates the difference in this relationship across countries. For instance, the COR of US is positive (0.32) and so is Saudi Arabia (0.32), but there are negative correlations in Iran (-0.38) and Pakistan (-0.12). These negative CORs in Figure 15, indicate that strength and effectiveness of environment and some interventions programs could decrease negative influence of neuroticism on knowledge-sharing.

Openness to experience has the most positive relationship with knowledge-sharing. There must be a positive linear relationship between openness to experience and knowledge-sharing since the results show a COR of 0.26 ($p<0.0001$) in Figure 6. Those who are more open to experience are talented and inventive, especially the latter, are the ones who are predisposed to share knowledge in an applicable environment (Munir & Beh, 2019). Although the level of heterogeneity was relatively high (I^2=94.4%) in Figure 16, it can be concluded that creating a culture that is open and encourages innovation may facilitate improvement of knowledge-sharing behaviour. The COR of Iran at 0.67, Pakistan at 0.45, Malaysia at 0.28, China at 0.25, and Taiwan at 0.22 in Figure 16, are all of high positive significant values and these mean openness within these contexts can escalate and multiply the creativity and innovation on knowledge-sharing.

Overall, the findings, firstly, confirm that the influence of the Big Five personality traits on knowledge-sharing is contingent; secondly, attach significance to the propositions that cultural factors and organisational context influence these relationships and thirdly, advance the enhancement of theories that offer an explanation for the extent of knowledge-sharing based on individual difference and situational contingencies.

These findings are important for practitioners because of the established relationship between personality traits and knowledge-sharing and therefore indicate that the introduction or intervention of knowledge-sharing practices should consider these traits. Thus, it is logical to state that individualised approaches, based on the extraverted, agreeableness, conscientious, and open personality traits would be effective in the enhancement of knowledge-sharing. For instance, designing common working areas and conditions of direct social contact can help employees with extraverted and agreeable character traits and perks would make conscientious individuals feel recognised for their efforts in knowledge-sharing.

For employers open to experience, creating an innovative organisation culture would enhance knowledge-sharing. On the other hand, constructive coping strategies can motivate neurotic person positively in knowledge-sharing.

For the organisational policies, practising a supportive organisational culture is necessary. Supportive policies that could increase workplace knowledge-sharing include, increasing the perception of psychological safety; intrinsic and extrinsic motivational incentives; specific knowledge-sharing positive behaviours; and enablers that promote the cultivation of learning and innovation.

Our overall conclusion of the findings of this meta-analysis is constructive regarding the interaction between personality dimensions and knowledge-sharing. This is particularly valuable because it points to context as a critical determinant of these relations and provides a rich premise for theory, practice, and policy alike. The implications of such discoveries are significant as organisations can avoid the drawbacks of ineffective knowledge-sharing, by

using strategies that promote knowledge-sharing and improve organisational learning and growth.

CONCLUSION

The meta-analysis findings present exhaustive analysis of the complex dynamics of the relationship between the Big Five personality traits and the knowledge-sharing in different contexts.

Through the studies, it is identified that extraversion, agreeableness, conscientiousness, neuroticism and openness are positively correlated to knowledge-sharing, while, conversely, there is a very low negative correlation between neuroticism and knowledge-sharing. Such outcomes speak of the complex role played by personality in modulating the knowledge-sharing behaviour while pointing to the robust effects of contextual and cultural differences. However, perceptions of open-mindedness in the form of curiosity and innovative recycling of ideas aided by technology, fosters generation and dissemination of new knowledge. Invariably, neuroticism is relatively unchanged, pointing to the need for interventions to conquer barrier-related risks in neurotics. Consequently, these findings expand personality and knowledge-sharing literatures by highlighting the involvement of contextual variables, including culture as well as organisational climate, in mediating the presented associations between personality traits and knowledge-sharing.

SUGGESTION FOR FUTURE RESEARCH

Future researches need to specify the ways in which diverse aspects of personality could lead to the share and disseminate knowledge in different settings. Exploring relationships between certain aspects of personality and particular conditions that are present in the environment may be beneficial to gain a more precise understanding of the correlations, which in turn may enhance the effectiveness of therapeutic actions. Moreover, understanding the nature of these relationships and examining the role of digital and remote work contexts for moderating them will definitely provide useful insights in the shift of work and cooperation. Through investigation of these mechanisms are far from simple, further researches can gradually enhance the theory and the efficiency of practice in the field of knowledge-sharing.

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APPENDIX

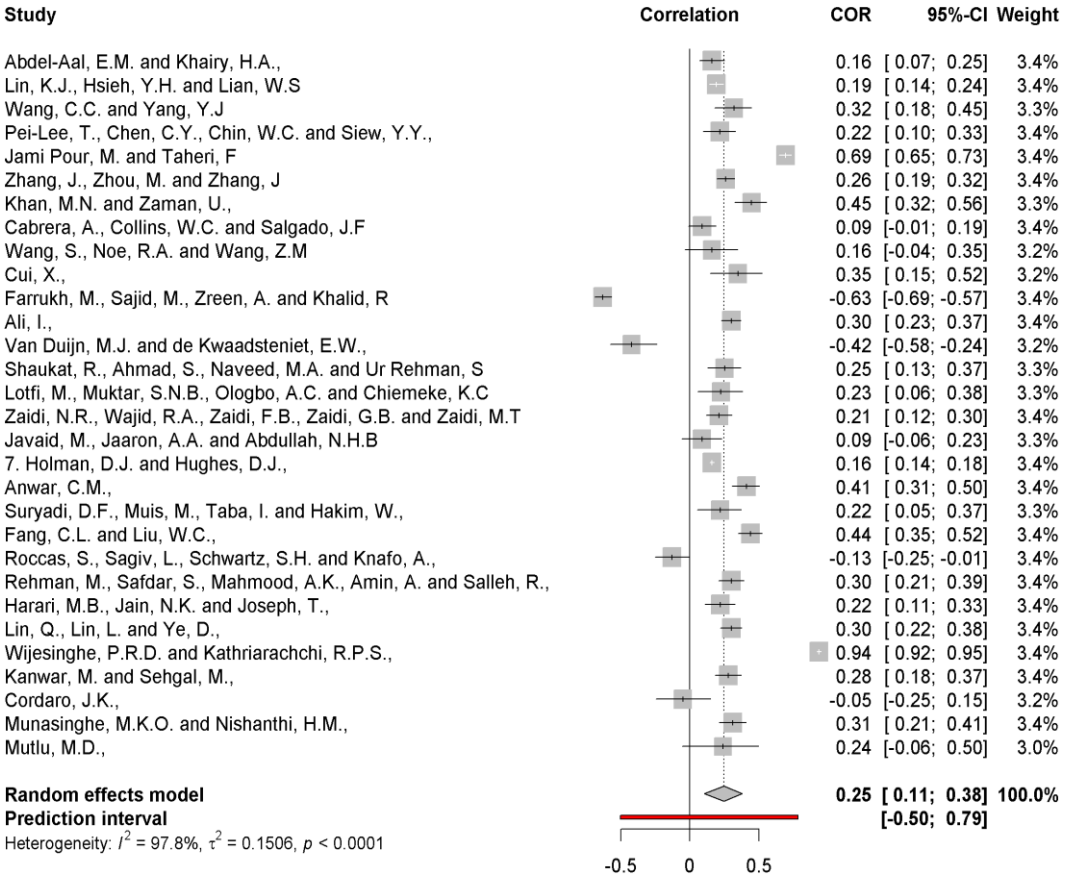

Figure 2. Extraversion and knowledge-sharing (Effect size estimation)

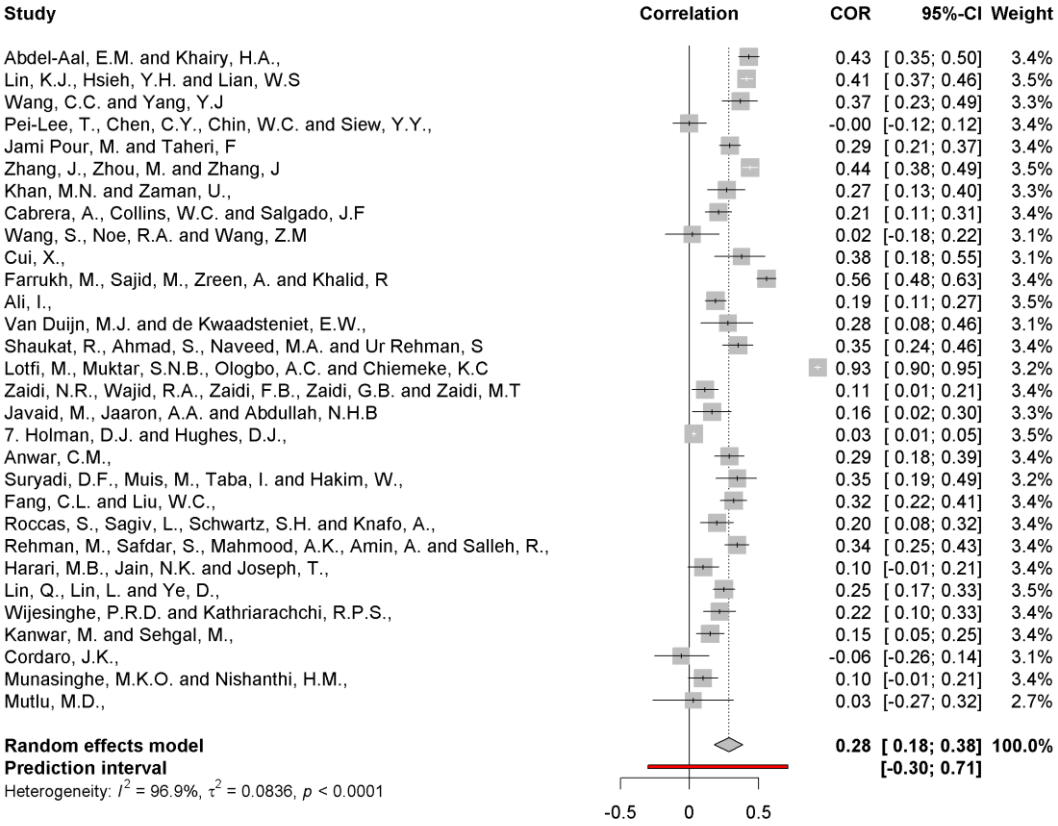

Figure 3. Agreeableness and knowledge-sharing (Effect size estimation)

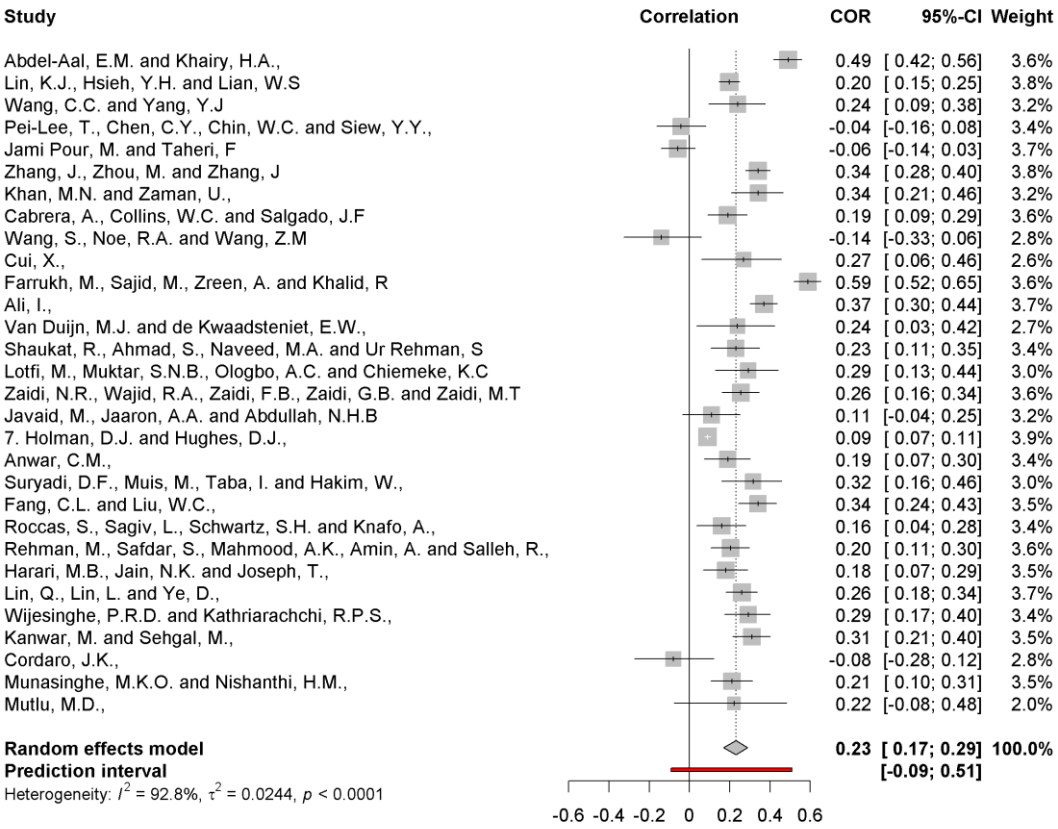

Figure 4. Conscientiousness and knowledge-sharing (Effect size estimation)

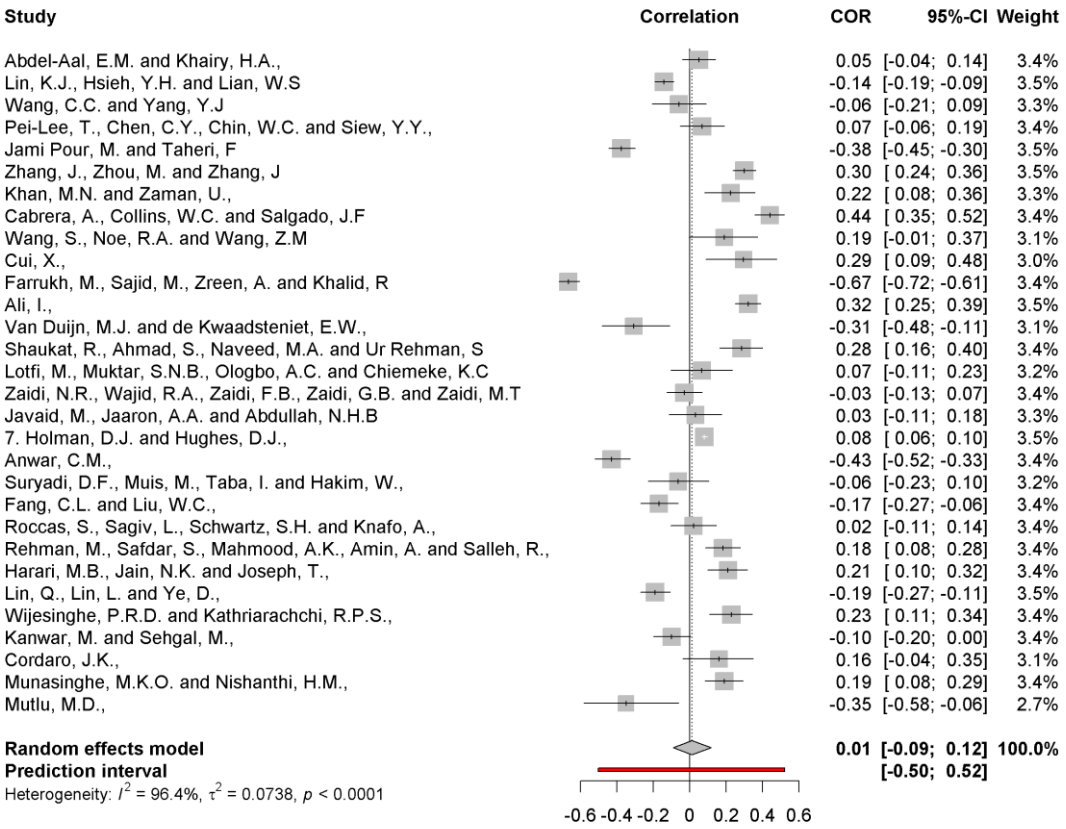

Figure 5. Neuroticism and knowledge-sharing (Effect size estimation)

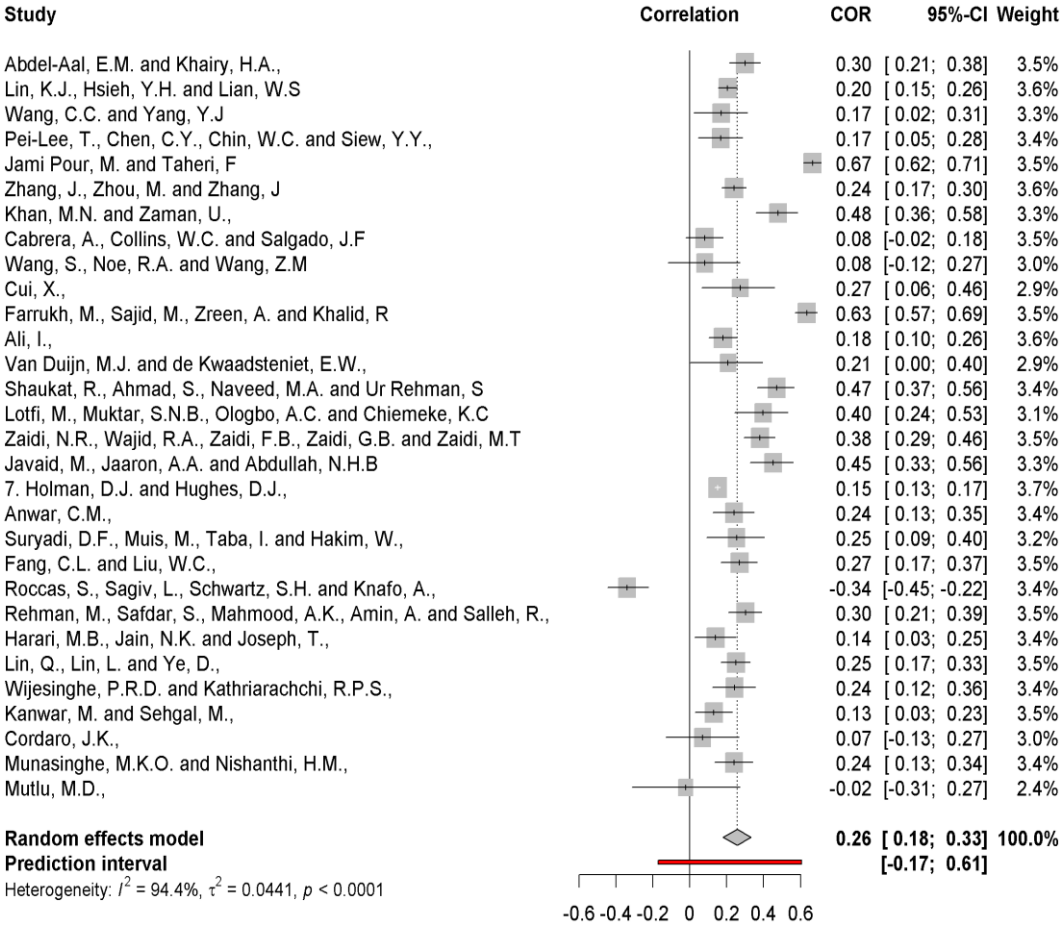

Figure 6. Openness and knowledge-sharing (Effect size estimation)

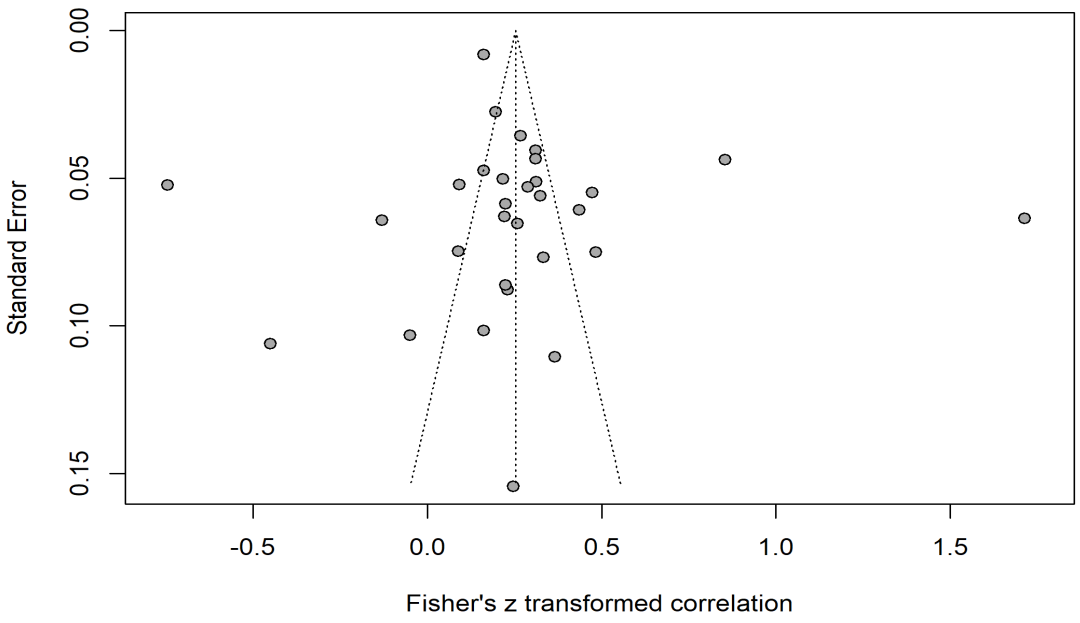

Figure 7. Extraversion and knowledge-sharing (Assessment of publication bias)

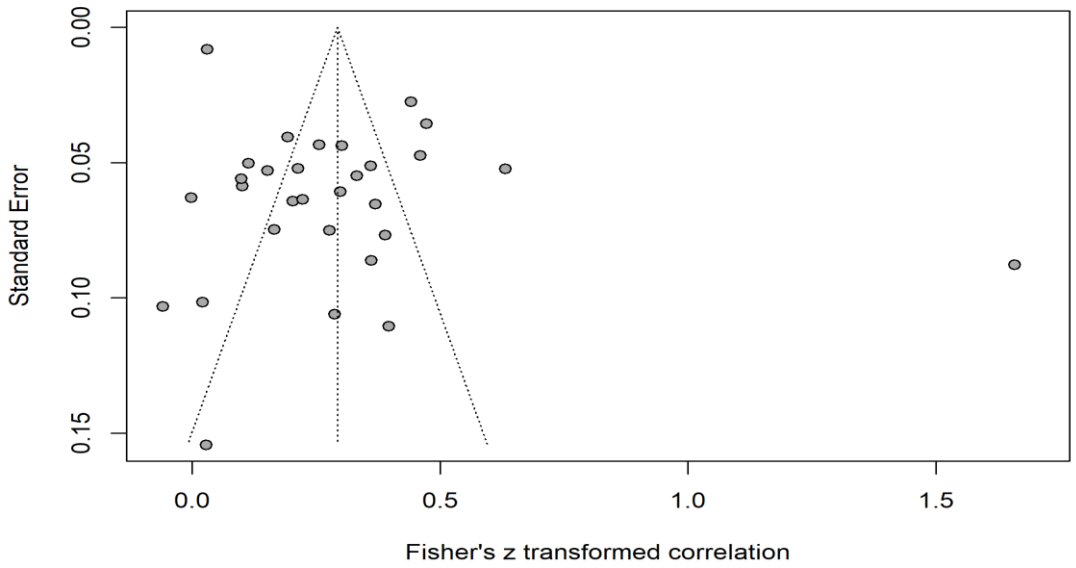

Figure 8. Agreeableness and knowledge-sharing (Assessment of publication bias)

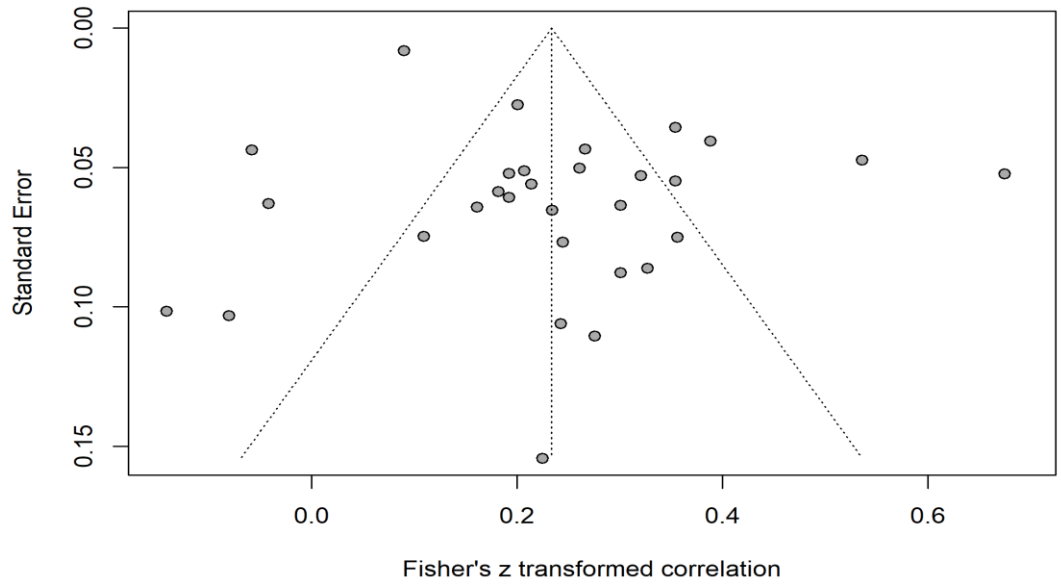

Figure 9. Conscientiousness and knowledge-sharing

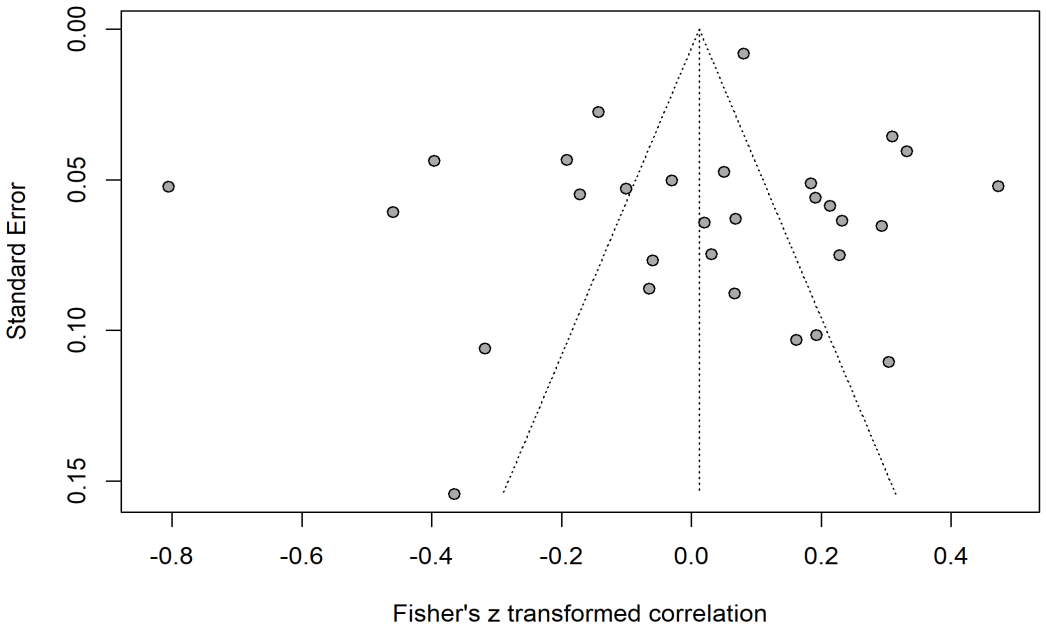

Figure 10. Neuroticism and knowledge-sharing (Assessment of publication bias)

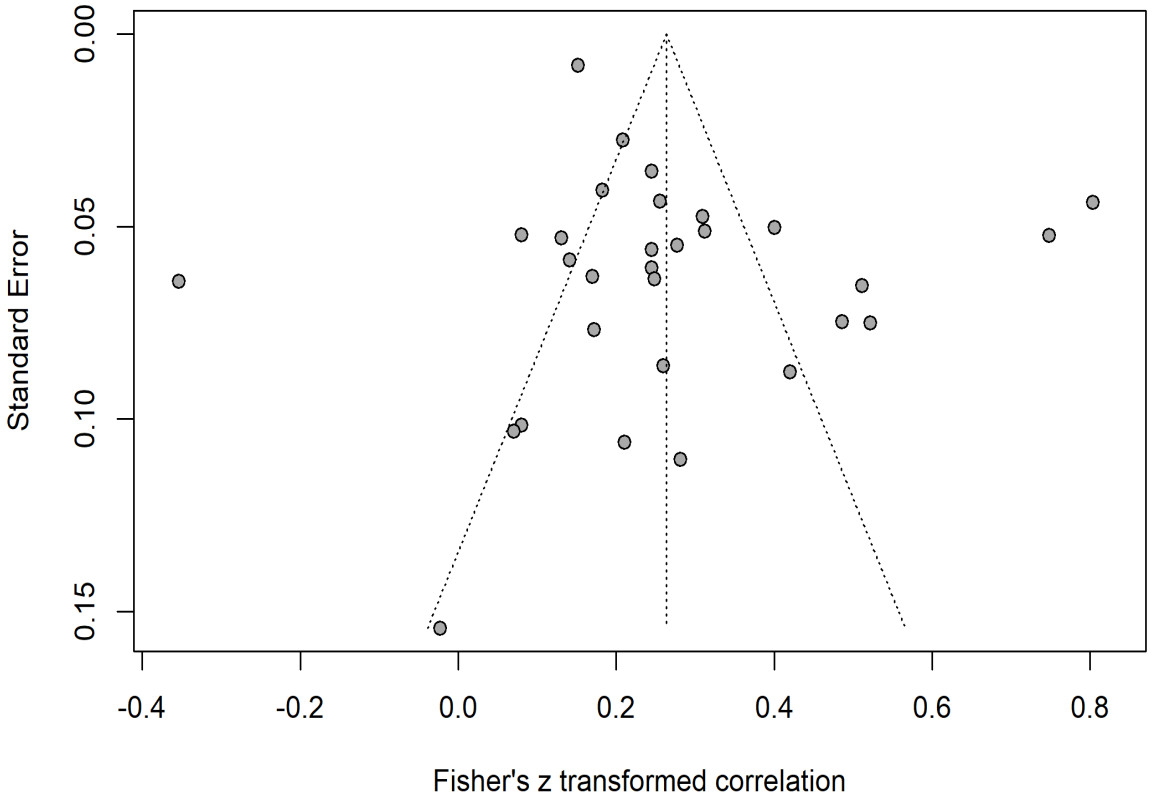

Figure 11. Openness and knowledge-sharing (Assessment of publication bias)

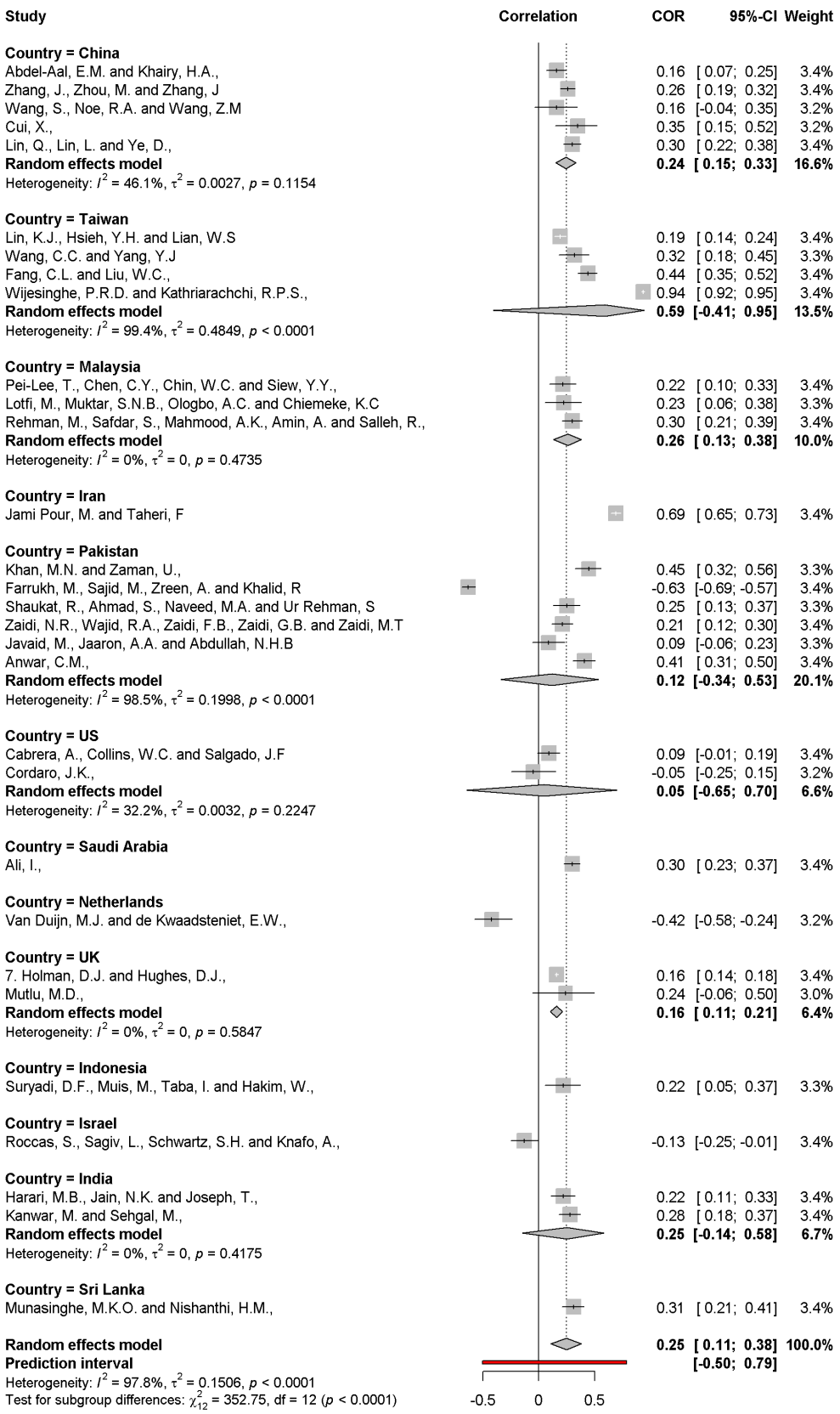

Figure 12. Extraversion and knowledge-sharing (Sub-group analysis by country)

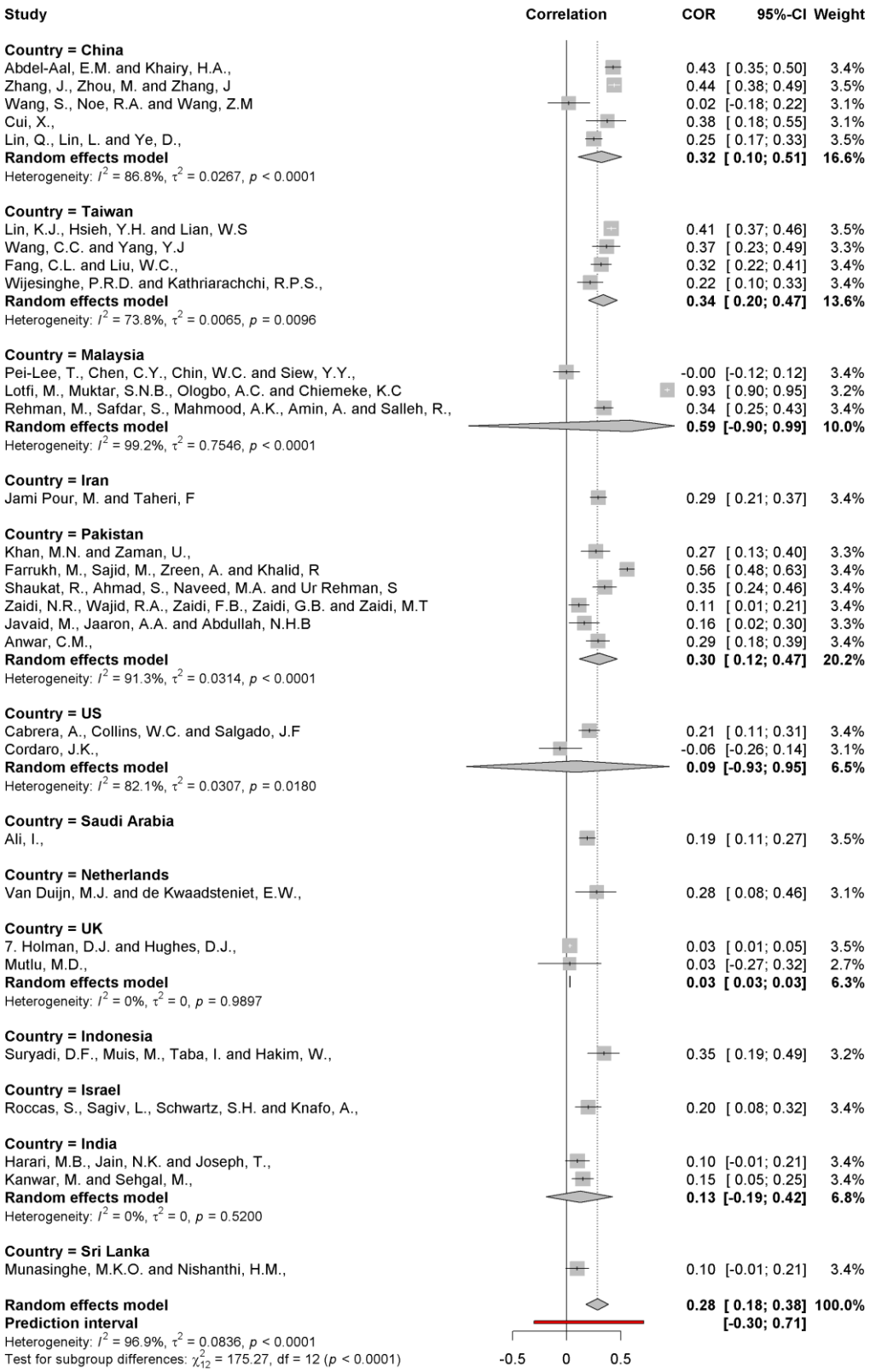

Figure 13. Agreeableness and knowledge-sharing (Sub-group analysis by country)

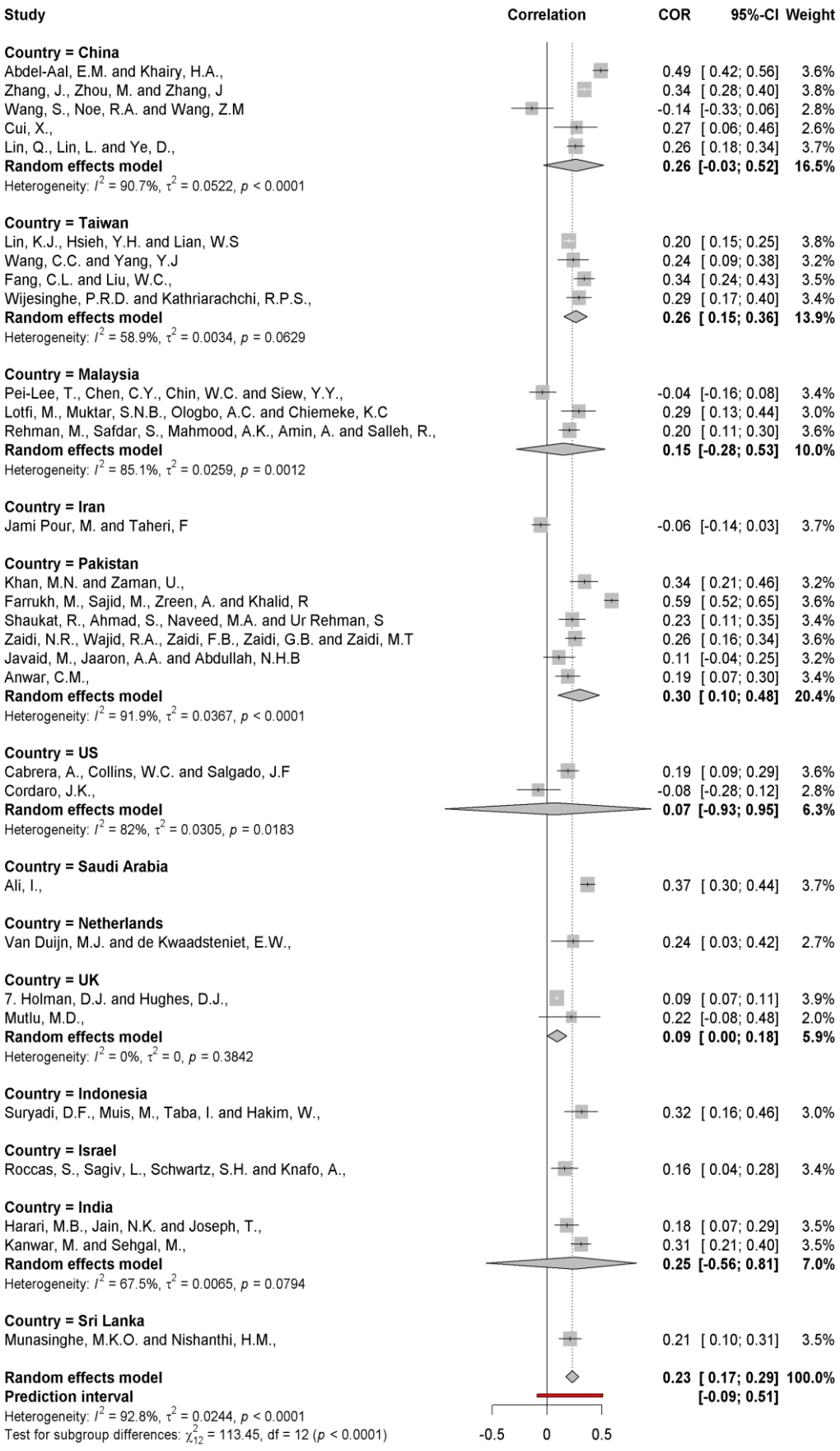

Figure 14. Conscientiousness and knowledge-sharing (Sub-group analysis by country)

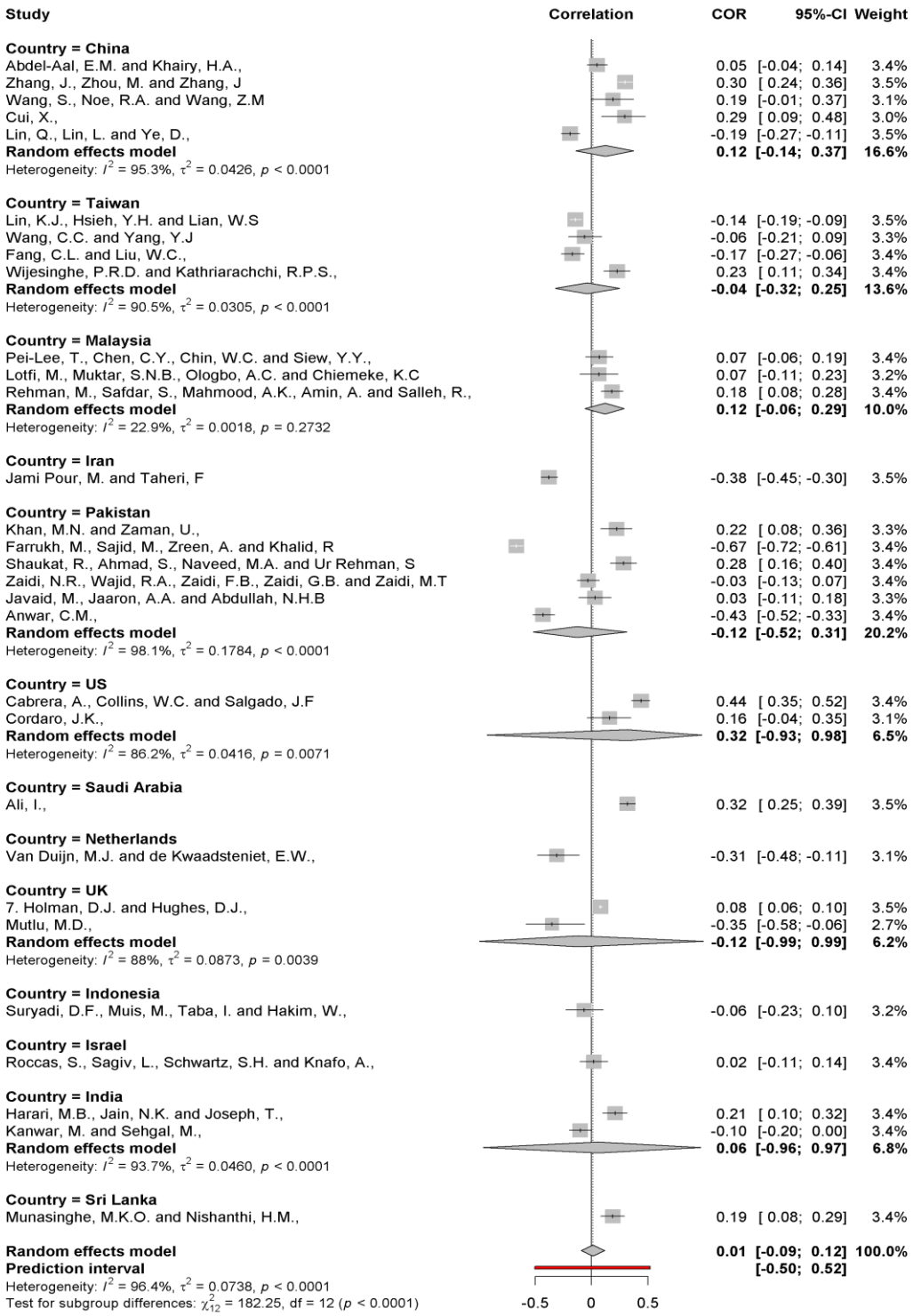

Figure 15. Neuroticism and knowledge-sharing (Sub-group analysis by country)

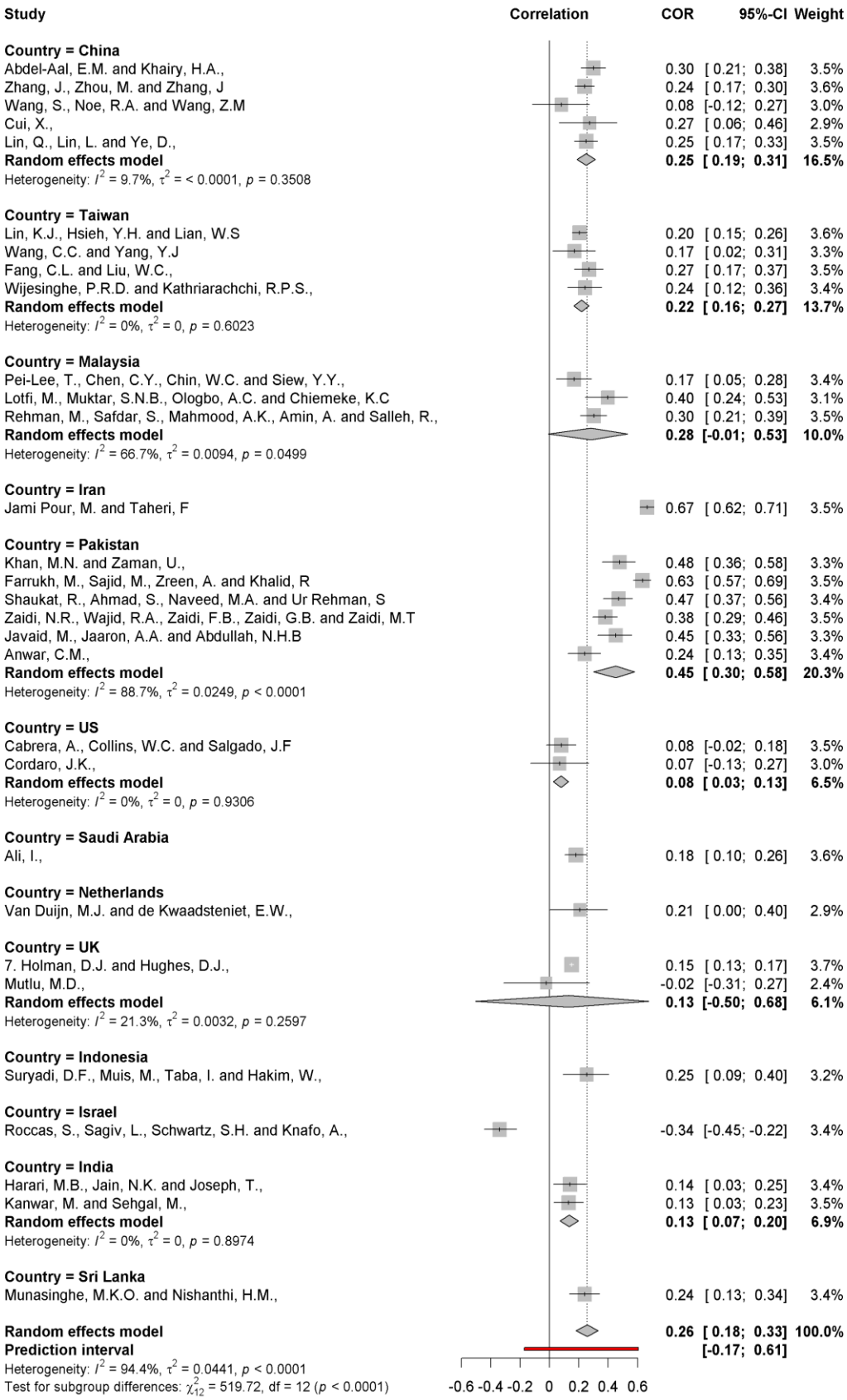

Figure 16. Openness and knowledge-sharing (Sub-group analysis by country)