

## REPETITION AS THE CORNERSTONE OF SCIENCE AND A MEANS OF ACQUIRING KNOWLEDGE: PERSPECTIVES FROM ISLAMIC JURISPRUDENTIAL MAXIMS

Ahmad Farid Daanishi<sup>i</sup>

<sup>i</sup> (Corresponding author). Professor, Department of Pharmacology, Kabul University of Medical Sciences, Kabul, Afghanistan. daanish6694@gmail.com

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<b>Abstract</b>	<p><i>This article addresses the historical recognition of repetition in knowledge acquisition, as expressed in Islamic jurisprudential maxims, which has often been overlooked in discussions of scientific methodology. It fills a significant gap in contemporary literature regarding this topic. The objective is to identify the earliest known documentation written by humankind that highlights the importance of repetition, its requirements, and elaboration, and to examine its reflection in later works on the history of science. The method consists of reviewing prominent texts on Islamic jurisprudence and conducting a comprehensive literature review along with searches in databases such as Google Scholar and PubMed. Findings indicate that the maxim “Al-’Ādah muḥakkamah” (Custom is a basis for judgment) not only underscores the significance of repetition in jurisprudence but is also applicable to modern scientific principles. Besides mentioning and recording the importance of repetition in gathering knowledge, the explanatory maxims explicitly emphasize the necessity of continuity and prevalence, for validating repeated observations concepts that resonate deeply with contemporary scientific methods, such as many statistical methods, reference ranges, and meta-analysis. Although repetition does not yield absolute certainty, it approximates it, much like science does, and it is a cornerstone of science. The essential function of repetition in knowledge acquisition -far from being a modern scientific discovery- was systematically recognized, rigorously documented, and refined with specific prerequisites in Islamic jurisprudential maxims over a centuries ago. The history of science and scientific methodology have largely overlooked this fact. The research explains the enduring impact of Islamic jurisprudential maxims on the improvement of scientific inquiry and principles of modern science.</i></p> <p><b>Keywords:</b> Al-’Ādah, Maxims, Jurisprudence, History, Fiqh.</p>
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### INTRODUCTION

This article examines the significance of several Islamic jurisprudential maxims, or Al-qawā’id al-fiqhīyah, focusing on repetition as a key element in both jurisprudence and scientific inquiry.

### AL-QAWĀ’ID AL-FIQHĪYAH OR ISLAMIC JURISPRUDENTIAL MAXIMS

Al-qawā’id al-fiqhīyah or Islamic jurisprudential maxims have been defined as general rules that apply to most of their related particulars, from which the corresponding rulings for

those particulars can be understood (Al-Subkī, 1411). According to another definition, they are general rulings -not universal ones- that apply to most of their particulars to determine their rulings (Al-Ḥamawī, 1405).

Although these maxims apply to the majority of cases, meaning their rulings cover most situations, there are exceptions to these maxims as well (Ibn al-Mulaqqin, 1431; Afandi, 1411; Al-Sha'lān, 1421). All maxims, including those pertaining to repeated habits or customs, are deemed valid with certain conditions and limitations. The habit or custom must not contradict the Holy Quran and Sunnah, and it must meet other validity conditions that are not discussed here.

Researchers face challenges in identifying the specific time period during which these maxims were established (Al-Nadawi, 1414). This was a gradual process as prominent scholars developed rules and concepts over time, rather than establishing them all at once. Abū Ṭāhir al-Dabbās, one of the jurists of the fourth century AH, had collected the most important seventeen comprehensive general principles/maxims (Al-Suyūṭī, 1403; Ibn Nujaym, 1419). The 4th century Hijri is marked by the appearance of the first book in this discipline, signifying the beginnings of this field from a codification perspective (Al-Nadawi, 1414).

Following this development, numerous books on this subject were compiled in subsequent centuries (Al-Nadawi, 1414). In the 13th century AH, a committee of scholars compiled *Mejelle al-Ahkam al-'Adliyyah* (Al-Nadawi, 1414). According to the reprinted version of its English translation published in Lahore, the original text of the *Mejelle* was developed over the period from 1860 to 1876, and later translated into English and printed in 1901 (Tyser, Demetriades & Effendi, 1980). Islamic jurisprudential maxims have been applied to contemporary matters that require *ijtihad*, such as in the area of commercial and financial transactions, as well as medical practices (Shettima, Biu & Deribe, 2016; Belabes, A. 2016; Elgariani, 2012) and in environmental protection (Shettima, 2011; Nair & Ahmed, 2022).

Five major Islamic Jurisprudence Maxims are general rules applied to most cases. One of these maxims is *Al-'Ādah muḥakkamah* (العادة مُحَكَّمَة) (Al-Ḥamawī, 1405; Al-Nadawi, 1414), which has been translated as “custom [habit/custom] is a basis for judgment” (Fatima & Pakeeza, 2022; Rahmalan & Ramli, 2022) and several other phrasings with similar meanings.

This maxim highlights the significance of conditional repetitions in gaining insight. Although the maxim was originally intended for application in Islamic jurisprudence (*fiqh*), there is no inherent barrier to applying its conceptual principle to scientific domains. The application of this maxim in jurisprudence has been documented in various sources; this article focuses specifically on its historical significance and application in the field of science.

This emphasis on repetition not only applies to jurisprudential contexts but it is also a cornerstone of scientific methodology, where it is necessary for the validity of research findings.

### **THE IMPORTANCE OF REPETITION IN SCIENCE**

Despite repetition does not yield absolute certainty, it approximates it, much like science does, it is a cornerstone of science, forming the basis for knowledge acquisition within scientific inquiry. Repetition is an important element for validating scientific findings. While repeatability, reproducibility, and replicability have distinct definitions (Plesser, 2018; Begley & Ioannidis, 2015), for this article, they are all considered forms of repetition. Repeated observations and experiments are essential for gaining insight (Popper, 2005).

Replication studies are a usual and integral component in the process of validating and demonstrating the broader applicability of crucial research findings (Mackey, A., & Porte, G. 2012). This can be achieved through independent replication of the entire experiment multiple times or by designing experiments to generate independent data for statistical analysis (Vaux, Fidler & Cumming, 2012).

Demonstrating the reproducibility and replicability of findings from earlier studies has emerged as an important practice for fortifying the precision and credibility of scientific research (Wu et al., 2021). While reproducibility is a powerful tool for science, it is important to recognize that it is not the only way to understand reality. Science has limitations and cannot address all aspects of existence.

It should be noted that a jurisprudential discussion is not intended in this article.

### **PROBLEM STATEMENT**

While the importance of repetition in acquiring knowledge, which is a cornerstone of science, has been mentioned, recorded, and elaborated in Islamic jurisprudential maxims, it remains inadequately addressed in the existing literature and has not been clearly identified and detailed in literature on the history of science.

### **OBJECTIVE**

To identify the earliest known documentation written by humankind that highlights the importance of repetition in gathering knowledge (including its requirements, elaboration, and details) and to examine its reflection in subsequent works on the history of science.

### **METHOD**

Prominent books on the principles of Fiqh (Islamic jurisprudence) and maxims, such as the works of Tāj al-Dīn al-Subkī, Al-Ḥamawī, Ibn al-Mulaqqin, Al-Suyūṭī, Ibn Nujaym, Al-Zarqa', and Al-Nadawī were referred to. The digital library of Al-Maktabah Al-Shamilah, utilized in this article, contains over 8,000 books primarily related to Islamic subjects, including jurisprudence and jurisprudential rules dating back around a thousand years. It contains a text search facility and filters such as the date of the first handwritten copy, subject, subsection, and book title.

To determine whether this historical recognition of repetition and its conditions has been acknowledged in subsequent works on the history of science, databases of Google Scholar and PubMed were searched with the following search strategies and keywords:

In Google Scholar: ("custom is an arbiter" OR "custom is authoritative" OR "custom is a basis for judgment") AND ("repetition" OR "repeatability" OR "repeatable" OR "repeated" OR "replication" OR "replicability" OR "reproducibility" OR "reproducible" OR "probability" OR "probabilities") AND (science or statistics).

In PubMed: ("repetition"[all fields] or "repetitions"[all fields] or "repeatabilities"[all fields] or "repeatability"[all fields] or "repeatable"[all fields] or "repeated"[all fields] or "repeatability"[all fields]) or "replication"[all fields] or "replicability"[all fields] or "reproducibility"[all fields] or "reproducible"[all fields] or "statistics"[all fields] or ("probability"[mesh terms] or "probability"[all fields] or "probabilities"[all fields]) or ("science"[mesh terms] or "science"[all fields] or "sciences"[all fields] or "science s"[all fields] or "sciencing"[all fields])) and ("maxim"[all fields] or "maxims"[all fields] or "principle"[all fields] or "principles"[all fields]) and "Islamic"[all fields] and ("history"[mesh terms] or "history"[all fields] or "histories"[all fields] or "history"[mesh subheading]).

### **RESULTS AND DISCUSSION**

#### **Maxim That Indicates The Importance Of Repetition**

The maxim (العادة مُحْكَمَةٌ) "*Custom [habit] is a basis for judgment*", is said to have been collected by Abū Ṭāhir al-Dabbās, a scholar of the 4th century AH, i.e., more than ten centuries, along with other major maxims (Al-Nadawī, 1414). Numerous texts from the 5th century AH to the present day recorded the maxim (Al-Mawsū'ah al-Fiqhīyah al-Kuwaytīyah, 1409; Effendi, 1411; Al-Nadawī, 1414), although this maxim appears to have been in use among scholars before the 5th century AH (Al-Nadawī, 1414).

To gain a better comprehension of the meaning behind this maxim, it is first necessary to explore the connotations associated with the word of "al-'Ādah". The Arabic word "al-'Ādah" (custom/habit) originates from the root "al-'Awd" or "Al-Mu'awadah," meaning repetition (Al-Mawsū'ah al-Fiqhīyah al-Kuwaytīyah, 1414; Zarqā', 1425), and it is a term that refers to repetition (Al-Ḥamawī, 1405; Al Burnu, 1416; Al-Raghib al-Isfahani, 1412 AH). It refers to matters that have become firmly established in people's minds through common recurrence and acceptance according to sound human feeling (Ibn Nujaym, 1419; Al-Ḥamawī, 1405).

Its meaning extends beyond custom and it is applied in diverse areas, such as determining the age for child guardianship and menopause, and length of menstruation (Al Burnu, 1424; Zarqā, 1409AH; Al-Zuhaylī, ١٤٢٧) and encompasses any recurring event, applying to individual habits, societal customs and events that are beyond human control, such as the time of the ripening of fruits in various regions and temperatures, and more (Zarqā', 1425; Al Burnu, 1416). Nyazee (2016) has categorized these areas as scientific facts or physical facts (p. 197).

According to some scholars the terms al-'Ādah (habit) and al-'Urf (custom) have the same meaning (Qiwam al-Sunnah al-Asbahani, 1442 AH), others have differentiated between these two concepts, since al-'Urf (custom) is considered a subset of the broader term al-'Ādah (habit) (Al Burnu, 1416). The Arabic term "al-'Ādah" (habit) encompasses a broader scope than "al-'Urf" (custom), with every custom being a habit, but not every habit being a custom (Zarqā', 1425). Though, certain scholarly interpretations and English translations of the maxim have limited the meaning of "al-'Ādah," which denotes repetition, to "al-'Urf" (custom) thereby narrowing its applicability. This is significant because the general concept of repetition, derived from the meaning of "al-'Ādah," and its associated conditions are fundamental to scientific inquiry.

In conclusion, the maxim encompasses not only customs and personal habits but also any recurring events that occur regularly.

### **Criteria for The Al-'Ādah (The Repetition): The Significance of Prevalent and Continuous Events**

The first condition for this maxim, as with other maxims, is that it should not contradict the Quran and Sunnah. Here, two criteria for this specific maxim, 'The Significance of Prevalent and Continuous Events,' are explained in detail, while other conditions related to al-'Urf (custom/tradition) are not discussed.

A. Continuity and Preponderance: (إِنَّمَا تُعَبَّرُ الْعَادَةُ إِذَا اطَّرَدَتْ أَوْ عَلَبَتْ) meaning [habit or] custom is only considered valid when it is continuous or prevalent. This maxim has been mentioned in different manners by many scholars since 10<sup>th</sup> century AH (Zarqā, 1409AH; Ibn Nujaym, ١٤١٩). The English translators of the Mejlle (Tyser, Demetriades & Effendi, 1980) conveyed the meaning of the maxim that "[habit or] custom is only given effect to when it is continuous or preponderant". The synonyms of the Arabic word "ettaradat" are "tatabbo'," meaning to follow in sequence, and "Tasalsol," meaning to form a sequence or occur successively (Majma' al-Lugha al-'Arabiyya, 1429).

B. Predominance over Rarity: (الْعَبْرَةُ لِلْعَالِبِ الشَّائِعِ لَا لِلنَّادِرِ) (Zarqā, 1409AH; Afandi, 1411 AH), which translates to "Effect is given to what is of common occurrence, not to what happens infrequently" (Mohammad & Jan, 2024) or "That is esteemed preponderant which is commonly known and not that which rarely happens" (Tyser, Demetriades & Effendi, 1980). This maxim has been mentioned by many scholars in a little different words but the same meaning.

The two maxims highlight that both continuity (successive occurrences) and prevalence (predominance over rarity) are essential for a habit, custom, or repetition to be valid. These are preconditions for the main principle "Al-'Ādah muḥakkamah". These maxims are essential conditions for the foundational maxim of "Al-'Ādah muḥakkamah."

### **The Maxims Wider Application**

Although the aforementioned jurisprudential maxims were originally intended for application in Islamic jurisprudence (fiqh), there is no inherent barrier to applying their conceptual principles to scientific domains. By understanding the Arabic term "al-ʿĀdah" as encompassing repetition rather than solely custom, we can extend the maxim's applicability in science. Repetition and experimentation are essential components of scientific methods, whether directly or indirectly. By systematically repeating experiments, researchers can verify findings and reduce the impact of errors, leading to more consistent results. This practice is not only important for the strength and reliability of the data but also for validating the research findings.

These maxims highlight the importance of repetition and its consistency and prevalence in scientific inquiry. Long-run frequency, central to inferential statistics, used in the frequentist approach, is based on generalizable inferences according to common data patterns rather than rare outliers. This concept reflects the significance of continuous and prevalent events, with the long-run behavior of events. Similarly, the p-value, driven by common occurrences rather than rare exceptions, is related to these maxims. The principle of repetition is valuable in estimating population parameters, which is essential for statistical analysis (Hu, Bao, & Wang, 2011). Additionally, reproducibility and replicability are widely recognized as critical factors for the validity of research findings and experimental outcomes (Wu et al., 2021).

Reference ranges, commonly established through statistical analysis of large datasets (Liu, Bretz & Cortina-Borja, 2021), are grounded in the principles of the aforementioned maxims. Widely applied in the field of medicine, reference ranges, previously named normal ranges, include 95% of observed values within a reference sample, a method developed in the late 1960s (Boyd, J. C., 2010; Ceriotti & Panteghini, 2009). This approach underscores the significance of prevalent patterns over rare outliers, aligning with the principle that common occurrences are more meaningful than exceptional cases.

Meta-analysis, a valuable research tool across various scientific fields that integrates results from multiple studies, is connected to these maxims. This systematic approach synthesizes findings to draw more generalizable conclusions, focusing on prevalent values rather than being skewed by outliers or rare occurrences. This principle is evident in the forest plot, which visually represents the distribution of parameter values across studies.

By recognizing "al-ʿĀdah" as encompassing repetition, we can enhance the reliability of scientific methods and strengthen the validity of findings across various fields. This emphasis on repetition not only applies to jurisprudential contexts but also is a cornerstone of scientific methodology, where it is necessary for the validity of research findings.

In conclusion, the application of these maxims extends beyond Islamic jurisprudence to scientific domains, emphasizing that repetition is the cornerstone of rigorous science. Scientists perform their experiments several times to verify consistent results. Scientific findings are considered valid and reliable only after undergoing repeated testing. It is important for scientists to repeat their results before making general conclusions.

### **Recognition of the Importance of Repetition in Acquiring Knowledge: A Historical Perspective**

A search of PubMed and Google Scholar using the keywords mentioned in the method section yielded 40 and 42 articles, respectively. After reviewing the titles of the articles identified through the search, those that appeared most relevant to the study's objective were further screened by reading their abstracts. No articles were found addressing clearly and comprehensively that the prerequisites and elaboration detailing repetition's essential function in knowledge acquisition and confirmation is a centuries-old insight firmly established in Islamic legal maxims documented in Islamic jurisprudence, and that it

transcends modern science. This does not imply that earlier generations failed to recognize repetition's significance.

The importance of repetition in acquiring information has been recognized by humans for centuries. This principle is now widely recognized within scientific communities and increasingly acknowledged as valuable in various fields. The study demonstrates that the significance of repetition has been recognized, documented, and detailed in Islamic jurisprudence maxims for centuries, though this fact has been overlooked in discussions of scientific methodology.

## CONCLUSION

Islamic jurisprudential maxims centuries ago. The maxim *Al-Ādah muḥakkamah* ("Custom/Habit is a basis for judgment") and its subsidiary maxims explicitly emphasize the necessity of continuity and prevalence for validating repeated observations—concepts that align with contemporary scientific methods, such as many statistical methods, reference ranges, and meta-analysis.

The history of science and narratives about the development of scientific methodology have largely overlooked the early Islamic scholarly contributions to systematizing repetition as a methodological principle. The absence of identified works linking these maxims to scientific discourse underscores a significant gap in recognizing the interconnectedness of Islamic jurisprudence and modern scientific methodologies. The research explains the enduring impact of Islamic jurisprudential maxims on the improvement of scientific inquiry and the principles of modern science.

## REFERENCES

### Book

- Afandi, A. H. K. A. (1411 AH). *Durar al-ḥukām fī sharḥ majallah al-aḥkām* (F. al-Husainī, Trans.). Dar al-Jil.
- Al Burnu, M. S. (1416AH/1996). *Al-wajiz fī idah qawa'id al-fiqh al-kulliyah (4th ed.)*. Beirut: Mu'assasat al-Risalah al-'Alamiyyah.
- Al Burnu, M. S. (1424AH/2003). *Mawsu'at al-qawa'id al-fiqhiyyah*. Beirut: Mu'assasat al-Risalah.
- Al-Ḥamawī. (1405 AH). *Ghamz 'uyūn al-baṣā'ir fī sharḥ al-ashbāh wa-al-naḏā'ir*. Dār al-Kutub al-'Ilmiyyah.
- Al-Mawsū'ah al-Fiqhiyyah al-Kuwaytiyyah. (1404-1427 AH). Kuwait: Dār al-Salāsil.
- Al-Nadawi, A. A. (1414AH/1994). *Al-qawā'id al-Fiqhiyyah: Mafhumuha, nash'atuha, tatawwuruha, dirasat mu'allafatiha adillatuha, muhimmatuha*. Dar al-Qalam.
- Al-Raghib al-Isfahani. A. (1412 AH). *Al-Mufradat fī Gharib al-Quran (S. A. Daoudi, Ed.)*. Dar al-Qalam & Dar al-Shamiyyah.
- Al-Subkī. (1411 AH). *Al-Ashbāh wa-al-naḏā'ir (p. 11)*. Dār al-Kutub al-'Ilmiyyah.
- Al-Suyūṭī, J. A. (1983). *Al-ashbāh wa-al-naḏā'ir fī qawā'id wa-furū' fiqh al-Shāfi'iyyah*. Dār al-Kutub al-'Ilmiyyah.
- Al-Zuhaylī, M. M. (1427 AH/2006). *Al-Qawā'id al-Fiqhiyyah wa-Taṭbīqātuhā fī al-Madhāhib al-Arba'ah*. Dār al-Fikr.
- Effendi, Ali Haidar Khawaja Amin (d. 1353 AH). (1411 AH). *Durar al-Hukam fī Sharh Majallat al-Ahkam (Fahmi al-Husseini, translator)*. Dar al-Jil.
- Ibn al-Mulaqqin. (1431 AH). *Al-Ashbāh wa-al-Naḏā'ir fī Qawā'id al-Fiqh (M. M. al-Azhari, Ed.)*. Dār Ibn al-Qayyim; Dār Ibn 'Affān.
- Ibn Nujaym. (1999). *Al-ashbāh wa-al-naḏā'ir 'alā madhhab Abī Ḥanīfah al-Nu'mān*. Beirut: Dār al-Kutub al-'Ilmiyyah.
- Majma' al-Lughah al-'Arabiyya. (1429AH/2008). *Al-Mu'jam al-Wasīṭ*. Maktabat al-Shurūq al-Duwaliyya.
- Popper, K. (2005). *The Logic of Scientific Discovery*. Routledge.
- Qiwam al-Sunnah al-Asbahani, (d. 535 AH). (1442 AH/2021). *Sharh Sahih al-Bukhari (al-Azzawi, Ed.)*. Dar Asfar.

- Tyser, C. R., Demetriades, D. G., & Effendi, I. H. (Trans.). (1980). *The Mejlle: Being an English Translation of Majallah el-Ahkam-I-Adliyyah* (Reprint of 1901 edition). Lahore: Law Publishing Company. (Originally enacted in Turkey between 1869 and 1876).
- Zarqā, A. (1409AH/1989). *Sharḥ al-Qawā'id al-Fiqhiyya* (2nd ed). Dār al-Qalam. <https://shamela.ws/book/6330/186>
- Zarqā, M. A. (1425 AH/2004). *Al-madkhal al-fiqhī al-'āmm*. Dimashq: Dār al-Qalam.
- Nyazee, I. A. K. (2016). *Islamic Legal Maxims*. Advanced Legal Studies Institute.

### Journal

- Al-Sha'lān, A. A. (1426 AH). *Al-mustasniyāt min al-qawā'id al-fiqhīyah: Anwā'uhā wa-al-qiyyās 'alayhā. Majallat Jāmi'at Umm al-Qurā li-'Ulūm al-Sharī'ah wa al-Lughah al-'Arabiyyah wa Ādābihā*, 17(34), 32-33.
- Begley CG, Ioannidis JP. Reproducibility in Science: Improving the Standard for Basic and Preclinical Research. (2015). *Circulation Research*, 116(1), 116-26.
- Belabes, A. (2016). Book Review: *al-Madkhal Ila Qawā 'Id al-Fiqh al-Mālī* (Introduction to Financial Legal Maxims). *Islamic Economic Studies*, 24(1), 131-136
- Boyd, J. C. (2010). Defining Laboratory Reference Values and Decision Limits: Populations, Intervals, and Interpretations. *Asian Journal of Andrology*, 12(1), 83.
- Cerioti, F., Hinzmann, R., & Panteghini, M. (2009). Reference intervals: The Way Forward. *Annals of Clinical Biochemistry*, 46(1), 8-17.
- Rahmalan, M. T., & Ramli, R. (2022). Sales Contract of Commodity Murabahah Via Tawarruq Arrangement in Supporting Maqasid of Shariah in Economy. *International Journal of Academic Research in Economics and Management and Sciences*, 11(4), 107-122.
- Fatima, F., & Pakeeza, S. (2022). Application of Islamic Legal Maxims to Qiṣāṣ and Diyat Crimes and Their Punishments. *Peshawar Islamicus*, 13(02), 50-67.
- Hu, L. P., Bao, X. L., & Wang, Q. (2011). The Repetition Principle in Scientific Research. *Zhong xi yi jie he xue bao= Journal of Chinese Integrative Medicine*, 9(9), 937-940.
- Liu, W., Bretz, F., & Cortina-Borja, M. (2021). Reference range: Which Statistical Intervals to Use?. *Statistical Methods in Medical Research*, 30(2), 523-534.
- Mohammad, M. T. S., & Jan, M. N. I. (2024). Intention To Create Legal Relations In Islamic Law Of Contracts. *al-Qanatir: International Journal of Islamic Studies*, 33(2), 62-83.
- Nair, M. S., & Ahmed, P. K. (2022). Environmental Sustainability and Contemporary Islamic Society: A Shariah Perspective. *Asian Academy of Management Journal*, 27(2), 211-231
- Plessner, H. E. (2018). Reproducibility vs. Replicability: A Brief History of a Confused terminology. *Frontiers in Neuroinformatics*, 11(76), 1-4.
- Shettima, M. (2011). Effects of the Legal Maxim: "No Harming and No Counter-Harming" on the Enforcement of Environmental Protection. *IIUMLJ*, 19(2), 291-308.
- Shettima, M., Biu, H. A., & Deribe, M. A. (2016). The Relevance of Islamic Legal Maxims in Determining Some Contemporary Legal Issues. *IIUMLJ*, 24(2), 415-451.
- Vaux, D. L., Fidl, F., & Cumming, G. (2012). Replicates and Repeats—What is the Difference and is it Significant? A Brief Discussion of Statistics and Experimental Design. *EMBO Reports*, 13(4), 291-296.
- Wu, C. Y., Beattie, Z., Mattek, N., Sharma, N., Kaye, J., & Dodge, H. H. (2021). Reproducibility and Replicability of High-Frequency, In-Home Digital Biomarkers in Reducing Sample Sizes for Clinical Trials. *Alzheimer's & Dementia: Translational Research & Clinical Interventions*, 7(1), e12220.
- Mackey, A., & Porte, G. (2012). Why (or why not), When and How to Replicate Research. *Replication Research in Applied Linguistics*, 2146, 21-46.

### Dissertation

- Elgariani, F. S. (2012). *Al-Qawa'id Al-Fiqhiyyah (Islamic Legal Maxims): Concept, Functions, History, Classifications and Application to Contemporary Medical Issues*. Doctoral dissertation. University of Exeter.

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