# Article information:

Is Bigger Better? Comparing User-Generated Passwords on 3x3 vs. 4x4 Grid Sizes for Android's Pattern Unlock | Proceedings of the 31st Annual Computer Security Applications Conference
<https://dl.acm.org/doi/abs/10.1145/2818000.2818014>

# Article summary:

1. Increasing the grid size from 3x3 to 4x4 for Android's pattern unlock does not necessarily increase the security of user-generated patterns.

2. Many 4x4 patterns are simply expanded versions of 3x3 patterns, and there is a high incidence of repeated patterns and symmetric pairs.

3. An advanced guessing algorithm was developed and used to quantify the strength of patterns, revealing that guessing the first 20% of both 3x3 and 4x4 patterns can be done as efficiently as guessing a random 2-digit PIN.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article "Is Bigger Better? Comparing User-Generated Passwords on 3x3 vs. 4x4 Grid Sizes for Android's Pattern Unlock" presents a study that aims to determine whether increasing the grid size of Android's pattern unlock mechanism from 3x3 to 4x4 improves the security of user-generated patterns. The authors conducted two large studies and developed an advanced guessing algorithm to quantify the strength of the patterns using partial guessing entropy.

The article provides a clear and concise abstract that summarizes the main findings of the study. However, upon closer examination, several potential biases and limitations become apparent.

Firstly, the study assumes that human-generated patterns are weak and easily guessable. While this may be true for some users, it is not necessarily representative of all users. The study does not consider individual differences in pattern creation strategies or user behavior, which could affect the security of their chosen patterns.

Secondly, the study focuses solely on Android's pattern unlock mechanism and does not consider other forms of authentication such as PINs or passwords. This limits the generalizability of the findings to other authentication methods.

Thirdly, while the study acknowledges that increasing the grid size may improve security to some extent, it concludes that most patterns chosen by users will remain trivially guessable and insecure against broad guessing attacks. However, this claim is not supported by evidence from real-world data breaches or hacking attempts.

Fourthly, the article does not explore counterarguments or alternative solutions to improving pattern unlock security beyond increasing grid size. For example, educating users on best practices for creating secure patterns or implementing additional layers of authentication could also improve security.

Finally, there is no discussion of potential risks associated with implementing larger grid sizes for pattern unlock. For example, larger grids may be more difficult for some users to navigate or remember, leading to increased frustration and decreased usability.

In conclusion, while "Is Bigger Better?" presents an interesting study on the security of Android's pattern unlock mechanism, it is important to consider its potential biases and limitations. The study's focus on human-generated patterns may not be representative of all users, and its conclusions about the effectiveness of larger grid sizes are not supported by real-world evidence. Additionally, the article does not explore alternative solutions or potential risks associated with increasing grid size.

# Topics for further research:

* Alternative methods for improving Android pattern unlock security
* User behavior and individual differences in pattern creation strategies
* Real-world data breaches and hacking attempts on Android pattern unlock
* Risks and drawbacks of increasing grid size for Android pattern unlock
* Best practices for creating secure patterns on Android pattern unlock
* Comparison of Android pattern unlock to other forms of authentication (e.g. PINs
* passwords)

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