**Concerns about Hypothesis Testing: Measuring Effect Size**

**I. Key Concerns About Hypothesis Testing:**

* **Focus on Data, Not Hypothesis:** Rejecting the null hypothesis primarily indicates the sample data is unlikely if the null were true, not that the null is definitively false.
* **Statistical Significance vs. Practical Significance:** A statistically significant result (p < .05) doesn't necessarily mean the treatment effect is large or meaningful. It only shows the effect is unlikely due to chance.
* **Influence of Sample Size:** With a large enough sample size, even a very small treatment effect can be statistically significant. This highlights the relative nature of hypothesis testing, comparing the effect to the standard error.

**II. Importance of Effect Size:**

* To address the lack of information about the absolute size of a treatment effect, researchers should report effect size alongside hypothesis test results.
* Effect size measures the magnitude of the treatment effect independently of sample size.

**III. Cohen's d (thước đo kích thích hiệu ứng thống kê):**

* Cohen's d is a common measure of effect size, calculated as:
  + Cohen’s d =
  + Estimated Cohen's d =
* It standardizes the mean difference in terms of the standard deviation, providing a measure of the treatment effect's magnitude.
* It is not influenced by sample size.
* Interpretation of Cohen's d:
  + d = 0.2: Small effect
  + d = 0.5: Medium effect
  + d = 0.8: Large effect
* Overlapping Distribution: Even with a large cohens d, there will likely be overlapping distributions between the control and experimental groups.

Key Takeaways:

* Hypothesis testing alone can be misleading.
* Reporting effect size, especially Cohen's d, provides a more complete understanding of the treatment effect.
* Cohen’s d allows for comparison of treatment effects across studies, regardless of sample size.
* A diagram of a normal distribution

  AI-generated content may be incorrect.The standard deviation influences the cohens d. A small standard deviation will increase the cohens d value, while a large standard deviation will decrease the cohen’s d.