LESSON PLAN TEMPLATE:

Name of the class:	Research Methods: The Generalizability Crisis
Suitable context: (e.g., entry-level/ undergraduate/postgraduate	Undergraduate/postgraduate-introduce the generalizability crisis and discuss implication (an introduction to generalizability and neurodiversity in OS).
Total time: (e.g., 1 hour, 2 hours, 1 day)	~ 1 hour
Pre-requisites:	The basic concept of Open Scholarship, especially in relation to transparency, replicability and reproducibility) and its connection to Neurodiversity.
Related resources (e.g. slides, assignment materials, lecture recordings, etc)	
Learning outcomes:	• Understand the concept of generalizability in research • Recognize the factors that contribute to the generalizability crisis • Discuss the implications of the generalizability crisis in various fields

Time	Activity	Instructor notes
5 minutes	Begin by introducing the concept of generalizability in research. Then explain that generalizability refers to the extent to which the results of a study can be applied to the larger population. Ask the students to share their understanding of generalizability in research.	Students may need a moment to think / brainstorm ideas.
20 minutes	Activity 1 and 2: Factors contributing to the generalizability crisis – matching and case studies.	Discuss factors that contribute to the generalizability crisis including sampling bias, lack of diversity in the sample, measurement error,

	Answers to the case studies task: *1. Study sample not representative of the population of interest *2. Study sample not diverse enough *3. Study conducted in a single geographic location *4. Study conducted in a single cultural context *5. Study conducted using a single method or measurement tool *6. Study conducted at a single point in time *7. Study results not sufficiently robust or consistent across different settings	and lack of ecological validity. Get students to do the matching activity. Provide examples and discuss how these factors impact the generalizability of research. Ask students too look at the case studies and explain what problems relating to study design they can see.
15 minutes	Consequences Based on the case studies ask the students to discuss the potential harms this may lead to.	Here are some examples of what could be discussed (make it specific to students' field). Implications of the generalizability crisis in different fields: Medicine: If a treatment is found to be effective in a homogenous sample, but not generalizable to a more diverse population, it can lead to harmful medical practices. Psychology: Studies conducted in a single culture may not be generalizable to other cultures, leading to inaccurate conclusions about human behavior. Sociology: Studies conducted on a single community may not be generalizable to other communities, leading to

		inadequate policies and interventions.
15 minutes	Strategies for mitigating the crisis: Undergraduates: If students have little experience with research – choose the following instead of the ones presented to the right: Increasing sample size: A larger sample size can increase the generalizability of the study. Using stratified sampling: This involves selecting participants from different subgroups of the population to ensure a more representative sample. Ensuring diversity in the sample: Including participants from different demographic groups can increase the generalizability of the study. Improving the measurement tools: Using reliable and valid measurement tools can increase the accuracy of the results and improve generalizability. Enhancing ecological validity: This involves making sure that the conditions of the study resemble the real-world situations that the study is meant to represent, thereby increasing generalizability.	Strategies for mitigating the crisis: Graduates: - Increase sample size Explain how increasing the sample size can help to improve generalizability Provide examples of studies where a small sample size may have limited generalizability Discuss potential challenges with increasing sample size (e.g., cost, feasibility) - Improve sample representativeness Discuss the importance of ensuring that study samples are representative of the population of interest Provide examples of studies where the sample may not have been representative Discuss potential strategies for improving sample representativeness (e.g., stratified sampling, oversampling) - Increase sample diversity Discuss the importance of diversity in study samples for improving generalizability

		Provide examples of studies where the sample may have lacked diversity Discuss potential strategies for increasing sample diversity (e.g., targeted recruitment efforts, collaborations with community organizations) - Conduct multi-site studies Discuss how conducting studies across multiple sites can help to improve generalizability Provide examples of studies where a single-site design may have limited generalizability Discuss potential challenges with conducting multi-site studies (e.g., coordinating data collection, ensuring consistency across sites) - Conduct meta-analyses Discuss how meta-analyses can help to improve generalizability by synthesizing data from multiple studies Provide examples of studies where a single study may not provide a comprehensive picture of the phenomenon of interest Discuss potential challenges with conducting meta-analyses (e.g., variability in study design and quality) - Conduct replication studies Discuss how replication studies can help to improve generalizability by

		providing evidence that the findings are consistent across different contexts and populations
		Provide examples of studies where replication would be particularly important
		Discuss potential challenges with conducting replication studies (e.g., difficulty securing funding, time constraints)
		- Use mixed-methods approaches
		Discuss how mixed-methods approaches can help to improve generalizability by providing a more comprehensive understanding of the phenomenon of interest
		Provide examples of studies where a single method may not provide a complete picture
		Discuss potential challenges with using mixed-methods approaches (e.g., requiring expertise in multiple methods)
Final: ~ 3 minutes	End with a recap of contributing factors, implications and strategies to address the problem.	Close the discussion: Generalizability is an important concept in research, and it is important to consider factors that contribute to the generalizability crisis. By employing strategies for addressing generalizability issues in research design and interpretation, researchers can increase the accuracy and

		generalizability of their findings.