Detailed Psychological Constructs v7.0–v7.2

scale/construct	construct	items	type	response_options	pre	mid1	mid2	post
Programming Sentiment	Positive Sentiment towards R	In this course, you will use r (a programming language) to analyze data. how do you feel about this?	single-choice	(1) Strongly negative	sent_pro_1			
Confidence	Confidence in R	How confident are you in your R skills?	single-choice	(1) Not at all confident	conf_1			
Programming Anxiety Scale	R Enjoyment	I think that learning R programming will be enjoyable/	single-choice	(1) Strongly disagree	r_joy_1			
	R Job Prospect	I welcome the possibility of having a job in the future that involves R programming.	single-choice	(1) Strongly disagree	r_job_1			
	Perceived R Difficulty	I believe that learning R programming will be difficult.	single-choice	(1) Strongly disagree	r_difficult_1			
	R Anxiety	I am anxious/nervous about learning R programming.	single-choice	(1) Strongly disagree	r_anx_1			
Behavioral Intention	Future interest	I look forward to learning more about math, statistics, or data science.	single-choice	(1) Strongly disagree	f1_1			
		I want to take more math, statistics, or data science classes in the future.	single-choice	(1) Strongly disagree	f2_1			
		I would be interested in having a job someday that involves things like math, science, statistics, or data science.	single-choice	(1) Strongly disagree	f3_1			
Student Mindset Beliefs	Student Statistics fixed mindset belief	You can learn new things, but you can't really change your statistics ability	single-choice	(1) Strongly disagree	ms1_1			
Mathematics and Statistics Beliefs	Confidence Advanced Stats	Given enough time, I feel confident that I could learn more advanced math/statistics.	single-choice	(1) Strongly disagree	conf_adv_stats_1			
	Perceived Utility Value of Algebra	I can see how algebra would be useful for solving real-world problems.	single-choice	(1) Strongly disagree	useful_alg _1			
	Perceived Utility Value of Statistics	I can see how statistics would be useful for solving real-world problems.	single-choice	(1) Strongly disagree	useful_stats_1			
	Relevance of Mathematics Through Data	Using data helps me see why we learn math in the first place.	single-choice	(1) Strongly disagree	data_value_math _1			
Academic-to-Future Confidence	Recognize durable skills	My ability to recognize the skills I am developing through my classes, projects, and other school experiences.	single-choice	(1) Not at all confident	recognize_skills_1			
	Apply learning	My ability to use what I learn in my courses to solve problems, answer questions, or complete tasks outside of school/in my future job.	single-choice	(1) Not at all confident	apply_learning_1			
	Describe skills	My ability to describe my skills and knowledge using specific examples from my academic work.	single-choice	(1) Not at all confident	describe_skills_1			
	Identify resources & next steps	My ability to identify people, resources, opportunities, or next steps that can help me work toward my future goals.	single-choice	(1) Not at all confident	identify_resources _1			
	Achieve goals	My ability to achieve my future goals.	single-choice	(1) Not at all confident	achieve_goals_1			
	Variable Listing	Write R code to find out what variables are included in the data set.	single-choice	(1) I definitely could no	rating1_1			
	Variable Roles	Explain the difference between an outcome variable and an explanatory variable.	single-choice	(1) I definitely could no	rating2_1			
	Variable vs. Value	Explain the difference between a variable and a value in a data set.	single-choice	(1) I definitely could no	rating3_1			
	Variable Types	Explain the difference between a quantitative and categorical variable.	single-choice	(1) I definitely could no	rating4_1			
	Histogram Creation	Create a histogram of a distribution of a quantitative variable using R.	single-choice	(1) I definitely could no	rating5_1			
	Histogram Analysis	Examine a histogram and describe its shape, center, spread, and any unusual patterns.	single-choice	(1) I definitely could no	rating6_1			
	Word Equation	Write a word equation to represent a hypothesis about the relationship between an explanatory and outcome variable.	single-choice	(1) I definitely could no	rating7_1			
	Visualization	Choose an appropriate visualization to represent the relationship between a quantitative outcome variable and a categorical explanatory variable.	single-choice	(1) I definitely could no	rating8_1			
	Scatter Plot	Use R to create a scatter plot to visualize a relationship between two quantitative variables.	single-choice	(1) I definitely could no	rating9_1			
	Scatter Plot Interpretation	Explain whether a scatterplot supports a hypothesized relationship between two quantitative variables.	single-choice	(1) I definitely could no	rating10_1			
	Save Empty Model	Write R code to fit and save an empty model.	single-choice	(1) I definitely could no	rating11_1			

Metacognitive Confidence Ratings	Save Two Group Model	Write R code to fit and save a two-group model.	single-choice	(1) I definitely could no	rating12_1				
	Model Fitting	Explain what it means to fit a model (i.e., find the best-fitting model).	single-choice	(1) I definitely could no	rating13_1				
	Empty Model	Draw the best-fitting empty model on top of a scatter plot (either by hand or using R).	single-choice	(1) I definitely could no	rating14_1				
	Two Group Model	Draw the best-fitting regression model on top of a scatter plot (either by hand or using R).	single-choice	(1) I definitely could no	rating15_1				
	Error Model Comparison	Visually compare the amount of error around the empty model versus a regression model on a scatter plot	single-choice	(1) I definitely could no	rating16_1				
	Parameter Interpretation	Interpret the parameter estimates that result from fitting a regression model.	single-choice	(1) I definitely could no	rating17_1				
	GLM Notation	Write a regression model using GLM notation.	single-choice	(1) I definitely could no	rating18_1				
	Model Fit Metrics	Name three quantitative measures that indicate how well a model fits the data.	single-choice	(1) I definitely could no	rating19_1				
	Model Evaluation	Use R to find out how well a model fits the data.	single-choice	(1) I definitely could no	rating20_1				
	PRE Statistics	Explain what the PRE statistic means for a model.	single-choice	(1) I definitely could no	rating21_1				
	Hypothesis Support	Explain how the results of a data analysis might support a hypothesis (or not).	single-choice	(1) I definitely could no	rating22_1				
	Real Word Implications	Discuss the implications of the results of a data analysis for a real-world contexts	single-choice	(1) I definitely could no	rating23_1				
	Context Importance	Explain why understanding the context of a dataset is important for interpreting the parameter estimates.	single-choice	(1) I definitely could no	rating24_1				
Programming Sentiment	Positive Sentiment towards R	In this class, you are using R to analyze data. How do you feel about this?	single-choice	(1) Strongly negative		sent_pro_2			
Confidence	Confidence in R	How confident are you in your R skills?	single-choice	(1) Not at all confident		conf_2			
Behavioral Intention	Future interest	I look forward to learning more about math, statistics, or data science.	single-choice	(1) Strongly disagree		f1_2			
	Future interest	I want to take more math, statistics, or data science classes in the future.	single-choice	(1) Strongly disagree		f2_2			
	Future interest	I would be interested in having a job someday that involves things like math, science, statistics, or data science.	single-choice	(1) Strongly disagree		f3_2			
Course advice		What advice would you give to future students who want to do well in this course?	open-ended	-		adv_2			
Class Learning & Interest	Class Learning	Was there an activity, lesson, or data set from your class thus far that helped you learn? If so, tell us about it.	open-ended	-		learning_ open_t2			
	Class Interest	We'd like to incorporate your interests and ideas into future class activities. Is there a topic you'd like to explore further using data?	open-ended	-		interest_ open_t2			
Value of Repeated Data Frames	Perceived Purpose of Dataframe	Why do you think the thumb length variable from Fingers is being used repeatedly?	open-ended	-		fingers1_t2			
	Emotional Response to Dataframe	How do you feel seeing the Fingers data set repeatedly throughout the book?	open-ended	-		fingers2_t2			
Programming Sentiment	Positive Sentiment towards R	In this class, you are using R to analyze data. How do you feel about this?	single-choice	(1) Strongly negative			sent_pro_3		
Confidence	Confidence in R	How confident are you in your R skills?	single-choice	(1) Not at all confident			conf_3		
Behavioral Intention	Future interest	I look forward to learning more about math, statistics, or data science.	single-choice	(1) Strongly disagree			f1_3		
	Future interest	I want to take more math, statistics, or data science classes in the future.	single-choice	(1) Strongly disagree			f2_3		
	Future interest	I would be interested in having a job someday that involves things like math, science, statistics, or data science.	single-choice	(1) Strongly disagree			f3_3		
Mathematics and Statistics Beliefs	Confidence Advanced Stats	Given enough time, I feel confident that I could learn more advanced math/statistics.	single-choice	(1) Strongly disagree			conf_adv_stats_3		
	Perceived Utility Value of Algebra	I can see how algebra would be useful for solving real-world problems.	single-choice	(1) Strongly disagree			useful_alg _3		
	Perceived Utility Value of Statistics	I can see how statistics would be useful for solving real-world problems.	single-choice	(1) Strongly disagree			useful_stats_3		
	Relevance of Mathematics Through Data	Using data helps me see why we learn math in the first place.	single-choice	(1) Strongly disagree			ata_value_math _		
	Variable Listing	Write R code to find out what variables are included in the data set.	single-choice	(1) I definitely could no			rating1_3		
	Variable Roles	Explain the difference between an outcome variable and an explanatory variable.	single-choice	(1) I definitely could no			rating2_3		

Metacognitive Confidence Ratings	Variable vs. Value	Explain the difference between a variable and a value in a data set.	single-choice	(1) I definitely could no			rating3_3	
	Variable Types	Explain the difference between a quantitative and categorical variable.	single-choice	(1) I definitely could no			rating4_3	
	Histogram Creation	Create a histogram of a distribution of a quantitative variable using R.	single-choice	(1) I definitely could no			rating5_3	
	Histogram Analysis	Examine a histogram and describe its shape, center, spread, and any unusual patterns.	single-choice	(1) I definitely could no			rating6_3	
	Word Equation	Write a word equation to represent a hypothesis about the relationship between an explanatory and outcome variable.	single-choice	(1) I definitely could no			rating7_3	
	Visualization	Choose an appropriate visualization to represent the relationship between a quantitative outcome variable and a categorical explanatory variable.	single-choice	(1) I definitely could no			rating8_3	
	Scatter Plot	Use R to create a scatter plot to visualize a relationship between two quantitative variables.	single-choice	(1) I definitely could no			rating9_3	
	Scatter Plot Interpretation	Explain whether a scatterplot supports a hypothesized relationship between two quantitative variables.	single-choice	(1) I definitely could no			rating10_3	
	Save Empty Model	Write R code to fit and save an empty model.	single-choice	(1) I definitely could no			rating11_3	
	Save Two Group Model	Write R code to fit and save a two-group model.	single-choice	(1) I definitely could no			rating12_3	
	Model Fitting	Explain what it means to fit a model (i.e., find the best-fitting model).	single-choice	(1) I definitely could no			rating13_3	
	Empty Model	Draw the best-fitting empty model on top of a scatter plot (either by hand or using R).	single-choice	(1) I definitely could no			rating14_3	
	Two Group Model	Draw the best-fitting regression model on top of a scatter plot (either by hand or using R).	single-choice	(1) I definitely could no			rating15_3	
	Error Model Comparison	Visually compare the amount of error around the empty model versus a regression model on a scatter plot	single-choice	(1) I definitely could no			rating16_3	
	Parameter Interpretation	Interpret the parameter estimates that result from fitting a regression model.	single-choice	(1) I definitely could no			rating17_3	
	GLM Notation	Write a regression model using GLM notation.	single-choice	(1) I definitely could no			rating18_3	
	Model Fit Metrics	Name three quantitative measures that indicate how well a model fits the data.	single-choice	(1) I definitely could no			rating19_3	
	Model Evaluation	Use R to find out how well a model fits the data.	single-choice	(1) I definitely could no			rating20_3	
	PRE Statistics	Explain what the PRE statistic means for a model.	single-choice	(1) I definitely could no			rating21_3	
	Hypothesis Support	Explain how the results of a data analysis might support a hypothesis (or not).	single-choice	(1) I definitely could no			rating22_3	
	Real Word Implications	Discuss the implications of the results of a data analysis for a real-world contexts	single-choice	(1) I definitely could no			rating23_3	
	Context Importance	Explain why understanding the context of a dataset is important for interpreting the parameter estimates.	single-choice	(1) I definitely could no			rating24_3	
Programming Sentiment	Positive Sentiment towards R	In this class, you used R to analyze data. How do you feel about this now?	single-choice	(1) Strongly negative				sent_pro_4
Confidence	Confidence in R	How confident are you in your R skills?	single-choice	(1) Not at all confident				conf_4
Programming Anxiety Scale	R Enjoyment	I think that learning R programming is enjoyable (	single-choice	(1) Strongly disagree				r_joy_4
	R Job Prospect	I welcome the possibility of having a job in the future that involves R programming.	single-choice	(1) Strongly disagree				r_job_4
	Perceived R Difficulty	I believe that learning R programming will be difficult (t1): I believe that learning R programming is dfficult (t4)	single-choice	(1) Strongly disagree				r_difficult_4
	R Anxiety	I am anxious/nervous about learning R programming.	single-choice	(1) Strongly disagree				r_anx_4
Behavioral Intention	Future interest	I look forward to learning more about math, statistics, or data science.	single-choice	(1) Strongly disagree				f1_4
	Future interest	I want to take more math, statistics, or data science classes in the future.	single-choice	(1) Strongly disagree				f2_4
	Future interest	I would be interested in having a job someday that involves things like math, science, statistics, or data science.	single-choice	(1) Strongly disagree				f3_4
Student Mindset Beliefs	Student Statistics fixed mindset belief	You can learn new things, but you can't really change your statistics ability.	single-choice	(1) Strongly disagree				ms1_4
Challenges	Course challenges	What, if anything, made it hard to succeed in this class?	open-ended	-				obst_t4
Class Learning & Interest	Class Learning	Was there an activity, lesson, or data set from your class thus far that helped you learn? If so, tell us about it.	open-ended	-				learn_t4
	Class Interest	We'd like to incorporate your interests and ideas into future class activities. Is there a topic you'd like to explore further using data?	open-ended	-				interest_t4