UnderStandingAmericaStudy

UAS 668: STOP AND GO SWITCH COGNITIVE TEST WAVE 3

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1 INTRODUCTION

This UAS panel survey, titled "UAS 668: Stop and Go Switch Cognitive Test Wave 3" asks people to play the Stop and Go Switch game. Related surveys are Wave 1 surveys UAS323 to UAS325, and Wave 2 survey UAS488. This survey is currently in the field. Respondents were paid $5 to complete the survey.

1.1 Topics

This survey contains questions (among others) on the following topics: Cognitive Abilities. A complete survey topic categorization for the UAS can be found here.

1.2 Experiments

This survey did not include any experiments. A complete survey experiment categorization for the UAS can be found here.

1.3 Citation

Each publication, press release or other document that cites results from this survey must include an acknowledgment of UAS as the data source and a disclaimer such as, 'The project described in this paper relies on data from survey(s) administered by the Understanding America Study, which is maintained by the Center for Economic and Social Research (CESR) at the University of Southern California. The content of this paper is solely the responsibility of the authors and does not necessarily represent the official views of USC or UAS.' For any questions or more information about the UAS, contact Tania Gutsche, Project and Panel Manager, Center for Economic and Social Research, University of Southern California, at tgutsche@usc.edu.

2 SURVEY RESPONSE AND DATA

2.1 Sample selection and response rate

The sample selection for this survey was:

All active respondents who completed UAS488 more than two years ago.

As such, this survey has so far been made available to 5945 UAS participants. Of those 5945 participants, 5005 completed the survey and are counted as respondents. Of those who are not counted as respondents, 104 started the survey without completing and 836 did not start the survey. The preliminary overall response rate is 84.19%.

Note: We are unable to provide sample weights for a small number of UAS members (see the Sample and weighting section below for details). If they completed the survey, these members are included in the data set with a weight of zero, but accounted for in the computation of total sample size and survey response rate.%.

The detailed survey response rate is as follows:

UAS668 - Response Overview	
Size of selected sample	5945
Completed the survey	5005
Started but did not complete the survey	104
Did not start the survey	836
Response rate	84.19%

2.2 Timings

All reported timings and response rate statistics are as of June 24, 2025. The survey took respondents an average of 6 minutes, and the full distribution of survey response times is in the figure below. Times per question are available upon request.

Distribution of Respondents' Survey Response Times
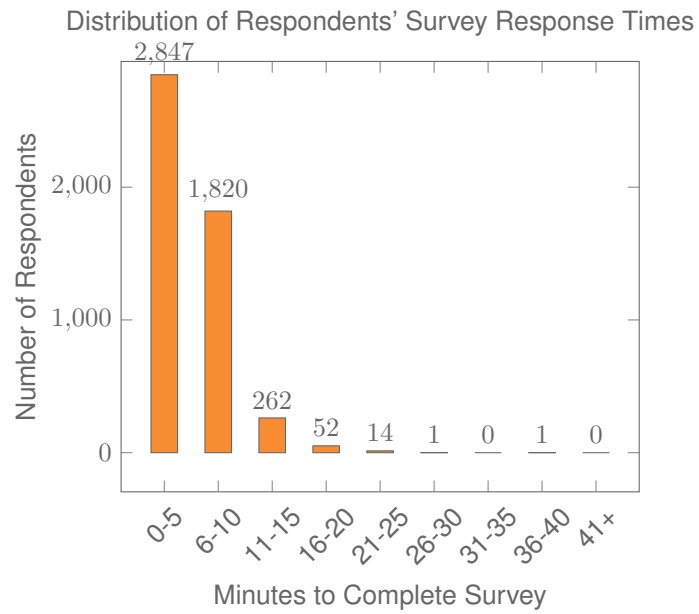
2.3   Weighting

Weights are not (yet) available for this survey. Please contact UAS staff with any questions.

3 STANDARD VARIABLES

Each Understanding America Study data contains a series of standard variables, consisting of individual, household and sample identifiers, language indicator, time stamps and a rating by the respondent of how much he or she liked the survey:

- ○ **uasid**: the identifier of the respondent. This identifier is assigned to a respondent at recruitment and stays with the respondent throughout each and every survey he/she participates in. When analyzing data from multiple surveys, the 'uasid' can be used to merge data sets.

- ○ **uashhid**: the household identifier of the respondent. Every member is assigned a household identifier, stored in the variable 'uashhid'. For the primary respondent this identifier equals his or her 'uasid'. All other eligible members of the primary respondent's household (everyone who is 18 or older in the household) who become UAS respondents receive the 'uasid' of the primary respondent as their household identifier. The identifier 'uashhid' remains constant over time for all respondents. Thus it is always possible to find the original UAS household of an UAS panel member (even after they, for example, have moved out to form another household).

- ○ **survhhid**: uniquely identifies the household a UAS panel member belongs to in a given survey. For instance, if the primary respondent and his/her spouse are both UAS members at the time of a given survey, they both receive the same 'survhhid' identifier for that survey. If they subsequently split, they receive two different 'survhhid' in subsequent surveys. They, however, always share the same 'uashhid'. The identifier 'survhhid' is set to missing (.) if no other household members are UAS panel members at the time of the survey. Since individuals can answer the same survey at different points in time (which can be relatively far apart if the survey is kept in the field for a prolonged time), it may be possible that, within the same data set, household members have different 'survhhid' reflecting different household compositions at the time they answered the survey. For instance, suppose that the primary respondent and his/her spouse are both UAS members. If the primary respondent answers the survey when he/she is living with the spouse, but the spouse answers the survey when the couple has split, they receive different 'survhhid'. Hence, the variable 'survhhid' identifies household membership of UAS panel members, at the time the respondent answers the survey. Note: in the My Household survey 'survhhid' is set to unknown (.u) for respondents who last participated in the My Household survey prior to January 21, 2015.

- ○ **uasmembers**: is the number of other household members who are also UAS panel members at the time of the survey. Since individuals can answer the same survey at different points in time (which can be relatively far apart is the survey is kept in the field for a prolonged time), it may be possible that, within the same data set, the primary respondent of a household has a value of '0', whereas the second UAS household respondent has a value of '1'. Therefore 'uasmembers' should be interpreted as the

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number of household and UAS panel members at the time the respondent answers the survey. Note: in the My Household survey 'uasmembers' is set to unknown (.u) for respondents who last participated in the My Household survey prior to January 21, 2015.

○ **sampleframe**: indicates the sampling frame from which the household of the respondent was recruited. All UAS recruitment is done through address based sampling (ABS) in which samples are acquired based on postal records. Currently, the variable 'sampleframe' takes on four values reflecting four distinct sample frames used by the UAS over the year (in future data sets the number of sample frames used for recruitment may increase if additional specific populations are targeted in future recruitment batches):

1. U.S. National Territory: recruited through ABS within the entire U.S.
2. Areas high concentration Nat Ame: recruited through ABS in areas with a high concentration of Native Americans in the zip-code. Within these batches, individuals who are not Native Americans are not invited to join the UAS.
3. Los Angeles County: recruited through ABS within Los Angeles County.
4. California: recruited through ABS within California.

Note: prior to March 6, 2024 this variable was called sampletype and had the following value labels for the above list in UAS data sets:

1. Nationally Representative Sample: recruited through ABS within the entire U.S.
2. Native Americans: recruited through ABS in areas with a high concentration of Native Americans. Within these batches, individuals who are not Native Americans are not invited to join the UAS.
3. LA County: recruited through ABS within Los Angeles County.
4. California: recruited through ABS within California.

○ **batch**: indicates the batch from which the respondent was recruited. Currently, this variable takes the following values (in future data sets the number of batches may increase as new recruitment batches are added to the UAS):

1. ASDE 2014/01
2. ASDE 2014/01
3. ASDE 2014/01
4. Public records 2015/05
5. MSG 2015/07
6. MSG 2016/01
7. MSG 2016/01
8. MSG 2016/01
9. MSG 2016/02

10. MSG 2016/03
11. MSG 2016/04
12. MSG 2016/05
13. MSG 2016/08
14. MSG 2017/03
15. MSG 2017/11
16. MSG 2018/02
17. MSG 2018/08
18. MSG 2019/04
19. MSG 2019/05
20. MSG 2019/11
21. MSG 2020/08
22. MSG 2020/10
23. MSG 2021/02
24. MSG 2021/08
25. MSG 2021/08
26. MSG 2022/02
27. MSG 2022/02
28. MSG 2022/08
29. MSG 2022/11
30. MSG 2022/11
31. MSG 2023/01
32. MSG 2023/06
33. MSG 2023/09
34. MSG 2023/10
35. MSG 2025/02

Note: prior to March 6, 2024 this variable had the following value labels for the above list in UAS data sets:

1. ASDE 2014/01 Nat.Rep.
2. ASDE 2014/01 Native Am.
3. ASDE 2014/11 Native Am.
4. LA County 2015/05 List Sample
5. MSG 2015/07 Nat.Rep.
6. MSG 2016/01 Nat.Rep. Batch 2

7. MSG 2016/01 Nat.Rep. Batch 3

8. MSG 2016/01 Nat.Rep. Batch 4

9. MSG 2016/02 Nat.Rep. Batch 5

10. MSG 2016/03 Nat.Rep. Batch 6

11. MSG 2016/04 Nat.Rep. Batch 7

12. MSG 2016/05 Nat.Rep. Batch 8

13. MSG 2016/08 LA County Batch 2

14. MSG 2017/03 LA County Batch 3

15. MSG 2017/11 California Batch 1

16. MSG 2018/02 California Batch 2

17. MSG 2018/08 Nat.Rep. Batch 9

18. MSG 2019/04 LA County Batch 4

19. MSG 2019/05 LA County Batch 5

20. MSG 2019/11 Nat. Rep. Batch 10

21. MSG 2020/08 Nat. Rep. Batch 11

22. MSG 2020/10 Nat. Rep. Batch 12

23. MSG 2021/02 Nat. Rep. Batch 13

24. MSG 2021/08 Nat. Rep. Batch 15

25. MSG 2021/08 Nat. Rep. Batch 16

26. MSG 2022/02 Nat. Rep. Batch 17 (priority)

27. MSG 2022/02 Nat. Rep. Batch 17 (regular)

28. MSG 2022/08 Nat. Rep. Batch 18

29. MSG 2022/11 LA County Batch 6

30. MSG 2022/11 Nat. Rep. Batch 20

31. MSG 2023/01 Nat. Rep. Batch 21

32. MSG 2023/06 Nat. Rep. Batch 22

33. MSG 2023-09 Native Am. Batch 3

34. MSG 2023-10 Nat. Rep. Batch 23

○ **primary_respondent**: indicates if the respondent was the first person within the household (i.e. to become a member or whether s/he was added as a subsequent member. A household in this regard is broadly defined as anyone living together with the primary respondent. That is, a household comprises individuals who live together, e.g. as part of a family relationship (like a spouse/child/parent) or in context of some other relationship (like a roommate or tenant).

- **hardware**: indicates whether the respondent ever received hardware or not. Note: this variable should not be used to determine whether a respondent received hardware at a given point in time and/or whether s/he used the hardware to participate in a survey. Rather, it indicates whether hardware was ever provided:

  1. None
  2. Tablet (includes Internet)

- **language**: the language in which the survey was conducted. This variable takes a value of 1 for English and a value of 2 for Spanish.

- **start_date (start_year, start_month, start_day, start_hour, start_min, start_sec)**: indicates the time at which the respondent started the survey.

- **end_date (end_year, end_month, end_day, end_hour, end_min, end_sec)**: indicates the time at which the respondent completed the survey.

- **cs_001**: indicates how interesting the respondent found the survey.

4 BACKGROUND DEMOGRAPHICS

Every UAS survey data set includes demographic variables, which provide background information about the respondent and his/her household. Demographic information such as age, ethnicity, education, marital status, work status, state of residence, family structure is elicited every quarter through the "My Household" survey. The demographic variables provided with each survey are taken from the most recent 'MyHousehold' survey answered by the respondent. If at the time of a survey, the information in "My Household" is more than three months old, a respondent is required to check and update his or her information before being able to take the survey.

The following variables are available in each survey data set:

○ **gender**: the gender of the respondent.

○ **dateofbirth_year**: the year of birth of the respondent.

○ **age**: the age of the respondent at the start of the survey.

○ **agerange**: if the respondent's age cannot be calculate due to missing information, 'agerange' indicates the approximate age. Should a value for both the 'age' and 'agerange' be present, then 'age' takes precedence over 'agerange'.

○ **citizenus**: indicates whether the respondent is a U.S. citizen.

○ **bornus**: indicates whether the respondent was born in the U.S.

○ **stateborn**: indicates the state in which the respondent was born. This is set to missing (.) if the respondent was not born in the U.S.

○ **countryborn**: indicates the country in which the respondent was born. This is set to missing (.) if the respondent was born in the U.S.

○ **countryborn_other**: indicates the country of birth if that country is not on the drop down list of countries shown to the respondent'.

○ **statereside**: the state in which the respondent is living.

○ **immigration_status**: indicates whether the respondent is an immigrant. It takes one of the following values: 0 Non-immigrant, 1 First generation immigrant (immigrant who migrated to the U.S), 2 Second generation immigrant (U.S.-born children of at least one foreign-born parent), 3 Third generation immigrant (U.S.-born children of at least one U.S.-born parent, where at least one grandparent is foreign-born), or 4 Unknown immigrant status.

○ **maritalstatus**: the marital status of the respondent.

○ **livewithpartner**: indicates whether the respondent lives with a partner.

- **education**: the highest level of education attained by the respondent.

- **hisplatino**: indicates whether the respondent identifies him or herself as being Hispanic or Latino. This variable is asked separately from race.

- **hisplatinogroup**: indicates which Hispanic or Latino group a respondent identifies him or herself with. This is set to missing (.) if the respondent does not identify him or herself as being Hispanic or Latino.

- **white**: indicates whether the respondent identifies him or herself as white (Caucasian).

- **black**: indicates whether the respondent identifies him or herself as black (African-American).

- **nativeamer**: indicates whether the respondent identifies him or herself as Native American (American Indian or Alaska Native).

- **asian**: indicates whether the respondent identifies him or herself as Asian (Asian-American).

- **pacific**: indicates whether the respondent identifies him or herself as Native Hawaiian or Other Pacific Islander.

- **race**: indicates the race of the respondent as singular (e.g., '1 White' or '2 Black') or as mixed (in case the respondent identifies with two or more races). The value '6 Mixed' that the respondent answered 'Yes' to at least two of the single race categories. This variable is generated based on the values of the different race variables (white, black, nativeamer, asian, pacific). This composite measure is not conditional on hisplatino, so an individual may identify as Hispanic or Latino, and also as a member of one or more racial groups.

- **working**: indicates whether the respondent is working for pay.

- **sick_leave**: indicates whether the respondent is not working because sick or on leave.

- **unemp_layoff**: indicates whether the respondent is unemployed or on lay off.

- **unemp_look**: indicates whether the respondent is unemployed and looking for a job.

- **retired**: indicates whether the respondent is retired.

- **disabled**: indicates whether the respondent has a disability.

- **lf_other**: specifies other labor force status.

- **laborstatus**: indicates the labor force status of the respondent as singular (e.g., '1 Working for pay' or '2 On sick or other leave') or as mixed (in case the respondent selects two or more labor statuses). The value '8 Mixed' indicates that the respondent answered 'Yes' to at least two of the single labor force status variables. This variable is generated based on the values of the different labor status variables (working, sick_leave, unempl_layoff, unempl_look, retired, disabled, lf_other).

- **employmenttype**: indicates the employment type of the respondent (employed by the government, by a private company, a nonprofit organization, or self-employed). This is set to missing (.) if the respondent is not currently working or currently on sick or other leave.

- **workfullpart**: indicates whether the respondent works full or part-time. This is set to missing (.) if the respondent is not currently working or currently on sick or other leave.

- **hourswork**: indicates the number of hours the respondent works per week. This is set to missing (.) if the respondent is not currently working or currently on sick or other leave.

- **hhincome**: is the total combined income of all members of the respondent's household (living in their household) during the past 12 months.

- **anyhhmember**: indicates whether there were any members in the respondent's household at the time he/she answered the survey as reported by the respondent.

- **hhmembernumber**: indicates the number of household members in the respondent's household at the time of the survey as reported by the respondent. It may be that 'anyhhmember' is 'Yes', but 'hhmembernumber' is missing if the respondent did not provide the number of household members at the time of the survey.

- **hhmemberin_#**: indicates whether a household member is currently in the household as reported by the respondent. Household members are never removed from the stored household roster and their information is always included in survey data sets. The order of the roster is the same order in which household members were specified by the respondent in the 'MyHousehold' survey. The order is identified by the suffix _# (e.g., _1 indicates the first household member, _2 the second household member, etc.).

  As an example, if the first household member is in the household at the time of the survey, 'hhmemberin_1' is set to '1 HH Member 1 is in the HH'; if he/she has moved out, 'hhmemberin_1' is set to '0 HH member 1 is no longer in the HH'. Since information of other household members (stored in the variables listed below) is always included in survey data sets, information about 'hhmemberin_1' is available whether this person is still in the household or has moved out.

- **hhmembergen_#**: indicates the gender of another household member as reported by the respondent.

- **hhmemberage_#**: indicates the age of another household member. The age is derived from the month and year of birth of the household member as reported by the respondent.

- **hhmemberrel_#**: indicates the relationship of the respondent to the other household member as reported by the respondent.

- ○ **hhmemberuasid_#**: is the 'uasid' of the other household member if this person is also a UAS panel member. It is set to missing (.) if this person is not a UAS panel member at the time of the survey. Since this identifier is directly reported by the respondent (chosen from a preloaded list), it may differ from the actual (correct) 'uasid' of the UAS member it refers to because of reporting error. Also, this variable should not be used to identify UAS members in a given household at the time of the survey. This is because the variables 'hhmemberuasid_#' are taken from the most recent 'My Household' and changes in household composition involving UAS members may have occurred between the time of the respondent answered 'My Household' and the time the respondent answers the survey. To follow UAS members of a given household, it is advised to use the identifiers 'uashhid' and 'survhhid'.

- ○ **lastmyhh_date**: the date on which the demographics variables were collected through the 'My Household' survey.

In addition, data sets created after May 8, 2025 include an urbanicity variable. It is based on panel members' current census tract of residence and the 2010 Rural-Urban Commuting Area (RUCA) codes released by the US Department of Agriculture's Economic Research Service. To preserve confidentiality, the UAS collapses the 10 primary RUCA codes to 4 levels: Metropolitan, Micropolitan, Small/Rural, and Unknown. The Metropolitan level corresponds to primary RUCA codes 1-3, the Micropolitian level corresponds to RUCA codes 4-6, and the Small/Rural UAS classification corresponds to RUCA codes 7-10.

For detailed information and definitions of the 10 primary RUCA codes, please visit the USDA ERS Rural-Urban Commuting Area Codes site. Surveys conducted completely prior to May 8, 2025 will have an urbanicity data set available on request.

5   MISSING DATA CONVENTIONS

Data files provide so-called clean data, that is, answers given to questions that are not applicable anymore at survey completion (for example because a respondent went back in the survey and skipped over a previously answered question) are treated as if the questions were never asked. In the data files all questions that were asked, but not answered by the respondent are marked with (.e). All questions never seen by the respondent (or any dirty data) are marked with (.a). The latter may mean that a respondent did not view the question because s/he skipped over it; or alternatively that s/he never reached that question due to a break off. If a respondent did not complete a survey, the variables representing survey end date and time are marked with (.c). Household member variables are marked with (.m) if the respondent has less household members (e.g. if the number of household members is 2, any variables for household member 3 and up are marked with (.m).

UAS provides data in STATA and CSV format. Stata data sets come with include variable labels that are not available in the CSV files. Value labels are provided for single-response answer option. In STATA these labels will include the labels 'Not asked' and 'Not answered' for (.a) and (.e), and will show in tabulations such as 'tab q1, missing'. For multiple-response questions a binary variable is created for each answer option indicating whether the option was selected or not. A summary variable is also provided in string format reflecting which options were selected and in which order. For example, if a question asked about favorite animals with options cat, dog, and horse, then if a respondent selected horse and then cat, the binary variables for horse and cat will be set to yes, while the overall variable would have a string value of '3-1'. If no answer was given, all binary variables and the summary variable will be marked with '.e'.

Questions that are asked multiple times are often implemented as so-called array questions. Supposing the name of such question was Q1 and it was asked in 6 different instances, your data set would contain the variables Q1_1_ to Q1_6_. To illustrate, if a survey asked the names of all children, then child_1_ would contain the name of the first child the respondent named and so on.

More information about the UAS data in general can be found on the UAS Data Pages web site.

6 ROUTING SYNTAX

The survey with routing presented in the next section includes all of the questions that make up this survey, the question answers when choices were provided, and the question routing. The routing includes descriptions of when questions are grouped, conditional logic that determines when questions are presented to the respondent, randomization of questions and answers, and fills of answers from one question to another.

If you are unfamiliar with conditional logic statements, they are typically formatted so that *if* the respondent fulfills some condition (e.g. they have a cellphone or a checking account), *then* they are presented with some other question or the value of some variable is changed. If the respondent does not fulfill the condition (e.g. they are not a cellphone adopter or they do not have a checking account), something *else* happens such as skipping the next question or changing the variable to some other value. Some of the logic involved in the randomization of questions or answers being presented to the respondent is quite complex, and in these instances there is documentation to clarify the process being represented by the routing.

Because logic syntax standards vary, here is a brief introduction to our syntax standards. The syntax used in the conditional statements is as follows: '=' is equal to, '<' is less than, '>' is greater than, and '!=' is used for does not equal. When a variable is set to some number N, the statement looks like 'variable := N'.

The formatting of the questions and routing are designed to make it easier to interpret what is occurring at any given point in the survey. Question ID is the bold text at the top of a question block, followed by the question text and the answer selections. When a question or variable has associated data, the name links to the appropriate data page, so you can easily get directly to the data. Text color is used to indicate the routing: red is conditional logic, gold is question grouping, green is looping, and orange is used to document randomization and other complex conditional logic processes. The routing is written for a computer to parse rather than a human to read, so when the routing diverges significantly from what is displayed to the respondent, a screenshot of what the respondent saw is included.

The name of the randomization variables are defined in proximity to where they are put into play, and like the question ID the names of the randomization variables can be used to link directly to the associated data page.

7   SURVEY WITH ROUTING

/* This survey administers the Stop and Go Switch Test game. The cognitive test is designed to work on devices with a large screen (such as desktop or laptop computers) as well as for devices with a smaller screen (such as tablets or smart phones). In contrast to the Wave 1 surveys UAS324 and UAS325, respondents choose their own device in the Wave 3 survey.

At the beginning of the game, participants are given a brief introduction of the task (see the left panel in the figure below) followed by a demonstration (right panel). Practice trials are provided with feedback before the participants are asked to start the testing. They are also instructed to set aside uninterrupted time to complete the tasks.

Practice trials are included prior to the start of each of the three tasks. Respondents are then asked to complete three tasks:

- Normal baseline: a series of stop-and-go trials in the normal condition in which respondents press "S" (for STOP) to "RED" and "G" (for GO) to "GREEN" (captured in the SW001 variables).

- Reverse baseline: a series of stop-and-go trial in the reverse condition in which respondents press "G" (for GO) to "RED" and "S" (for STOP) to "GREEN" (captured in the SW002 variables).

- Mixed: a series of stop-and-go trials in the mixed condition in which instructions alternate between the normal and reverse condition (captured in the SW003 variables).

The results of the three tasks are captured in the following variables:

- Normal baseline:

  - nb_1_time to nb_10_time: indicate the time passed in seconds between the screen having fully loaded and the respondent pressing a key.
  - nb_1_correct to nb_10_correct: indicate if the respondent answer for the trial was correct (i.e. the right key was pressed).
  - nb_1_wrong to nb_10_wrong: indicate if the respondent answer was wrong (i.e. the right key was pressed).
  - nb_1_skip to nb_10_skip: indicate if the respondent skipped the trial (i.e. no key was pressed).
  - nb_1_notreach to nb_10_notreach: indicate if the respondent did not reach the trial.
  - nitem_nb_correct indicates the number of normal baseline answers that are correct.
  - nitem_nb_wrong indicates the number of normal baseline answers that are wrong.

- nitem_nb_skip indicates the number of normal baseline trials that are skipped.
- nitem_nb_notreach indicates the number of normal baseline trials that are not reached.

○ Reverse baseline:

- rb_1_time to rb_10_time: indicate the time passed in seconds between the screen having fully loaded and the respondent pressing a key.
- rb_1_correct to rb_10_correct: indicate if the respondent answer for the trial was correct (i.e. the right key was pressed).
- rb_1_wrong to rb_10_wrong: indicate if the respondent answer was wrong (i.e. the right key was pressed).
- rb_1_skip to rb_10_skip: indicate if the respondent skipped the trial (i.e. no key was pressed).
- rb_1_notreach to rb_10_notreach: indicate if the respondent did not reach the trial.
- nitem_rb_correct indicates the number of reverse baseline answers that are correct.
- nitem_rb_wrong indicates the number of reverse baseline answers that are wrong.
- nitem_rb_skip indicates the number of reverse baseline trials that are skipped.
- nitem_rb_notreach indicates the number of reverse baseline trials that are not reached.

○ Mixed (Note: trials 1 to 3 are not scored since they are only present to precede the first switch item):

- nsw_4_time to nsw_32_time" indicate the time passed in seconds between the screen having fully loaded and the respondent pressing a key. Note: items 4, 9, 15, 19, 24, 29 are switch items, meaning that the condition reversed. The variables for these trials start with sw_ as opposed to nsw_.
- nsw_4_correct to nsw_32_correct" indicate if the respondent answer for the trial was correct (i.e. the right key was pressed). Note: trials 4, 9, 15, 19, 24, 29 are switch trials, meaning that the condition reversed. The variables for these trials start with sw_ as opposed to nsw_.
- nsw_4_wrong to nsw_32_wrong" indicate if the respondent answer for the trial was wrong (i.e. the right key was pressed). Note: trials 4, 9, 15, 19, 24, 29 are switch trials, meaning that the condition reversed. The variables for these trials start with sw_ as opposed to nsw_.
- nsw_4_skip to nsw_32_skip" indicate if the respondent skipped the trial. Note: trials 4, 9, 15, 19, 24, 29 are switch trials, meaning that the condition reversed. The variables for these trials start with sw_ as opposed to nsw_.
- nsw_4_notreach to nsw_32_notreach" indicate if the respondent did not reach the item.

- – nitem_nsw_correct" indicates the number of non-switch trial answers that are correct.
- – nitem_nsw_wrong" indicates the number of non-switch trial answers that are wrong.
- – nitem_nsw_skip" indicates the number of non-switch trials that are skipped.
- – nitem_nsw_notreach" indicates the number of non-switch trials that are not reached.
- – nitem_sw_correct" indicates the number of switch trial answers that are correct.
- – nitem_sw_wrong" indicates the number of switch trial answers that are wrong.
- – nitem_sw_skip" indicates the number of switch trials that are skipped.
- – nitem_sw_notreach" indicates the number of switch trials that are not reached.

○ Scoring:
- – nb_score: indicates the normal baseline trials score for those who met the 70% correctness cutoff. The score represents the median response time based on all normal baseline trials (including any incorrect ones). The score is empty if the 70% correctness cutoff is not met per variable flag_correct.
- – rb_score: indicates the reversal baseline trials score for those who met the 70% correctness cutoff. The score represents the median response time based on all reverse baseline trials (including any incorrect ones). The score is empty if the 70% correctness cutoff is not met per variable flag_correct.
- – sw_score: indicates the switch trials score for those who met the 70% correctness cutoff. The score represents the median response time based on all switch trials (including any incorrect ones). The score is empty if the 70% correctness cutoff is not met per variable flag_correct.
- – nsw_score: indicates the non-switch trials score for those who met the 70% correctness cutoff. The score represents the median response time based on all non-switch trials (including any incorrect ones). The score is empty if the 70% correctness cutoff is not met per variable flag_correct.
- – nb_score_all: indicates the normal baseline trials score regardless of the 70% correctness cutoff. The score represents the median response time based on all normal baseline trials (including any incorrect ones).
- – rb_score_all: indicates the reversal baseline trials score regardless of the 70% correctness cutoff. The score represents the median response time based on all reverse baseline trials (including any incorrect ones).
- – sw_score_all: indicates the switch trials score regardless of the 70% correctness cutoff. The score represents the median response time based on all switch trials (including any incorrect ones).
- – nsw_score_all: indicates the non-switch trials score regardless of the 70% correctness cutoff. The score represents the median response time based on all non-switch trials (including any incorrect ones).

Figure 1: *Example screens*
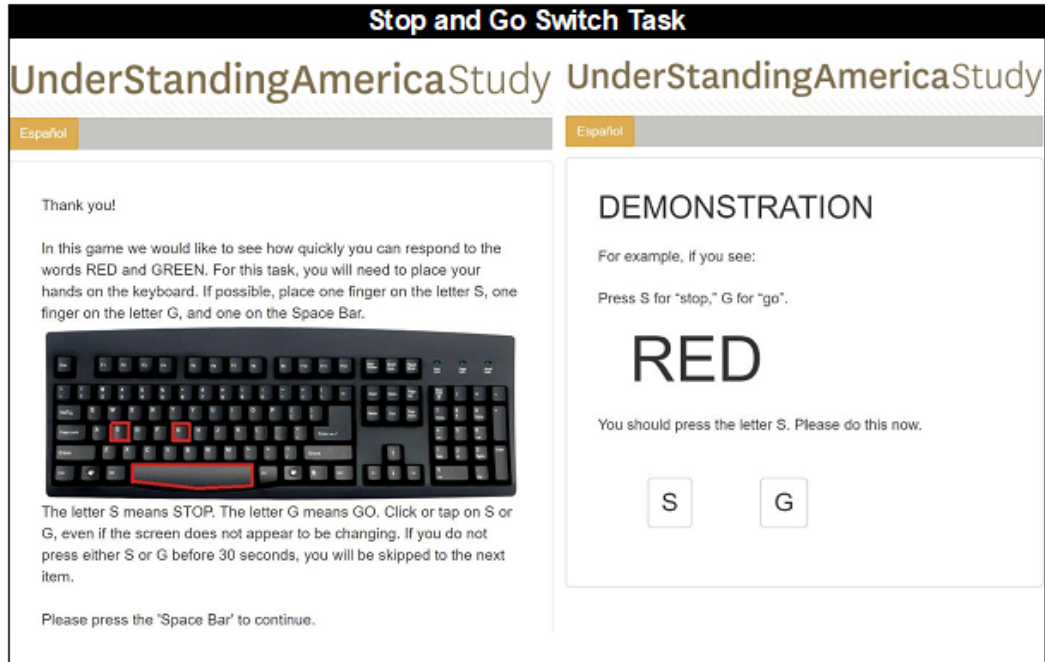
Start of section **Devicecheck**

onmobile_scan := isOnMobile()

ondeviceask (Ask device in section Devicecheck)
Welcome and thanks for your interest in playing this game!

Before we get started could you please tell us what kind of device you are currently using?
1 I am currently using a computer or laptop which uses a keyboard
2 I am currently using a smartphone or tablet without a keyboard

IF ondeviceask = 1 THEN
  onmobile := 2
ELSEIF ondeviceask = 2 THEN
  onmobile := 1
END OF IF

End of section **Devicecheck**

Start of section **Btac**

timeout := 30000
FLSkip := 30
Fill code of question FL_keyboard executed
Fill code of question FLSpace executed

IF onmobile = 1 THEN
  GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

  sw001_intro_mobile2 (Section Btac)
  Thank you!

  For the best experience please turn your phone or tablet to a **vertical position** now. Reading glasses are recommended for those who wear them.

  (Please press the 'Space Bar' to continue./Space Bar)

  spacescript (Section Btac)

  END OF GROUP

  GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

  sw001_intro_mobile (Section Btac)
  In this game we would like to see how quickly you can respond to the words RED and GREEN. For this task, you will need to navigate using three buttons that will be located on the bottom of the screen. If possible, place one finger on the S button, one finger on the G button and one finger on the Space Bar button.

  The letter S means STOP. The letter G means GO. Click or tap on S or G, even if the screen does not appear to be changing. If you do not press either S or G before (()) seconds, you will be skipped to the next item.

  (Please press the 'Space Bar' to continue./Space Bar)

  spacescript (Section Btac)

  END OF GROUP
ELSE
  GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw001_intro (Section Btac)
Thank you!

In this game we would like to see how quickly you can respond to the words RED and GREEN. For this task, you will need to place your hands on the keyboard. If possible, place one finger on the letter S, one finger on the letter G, and one on the Space Bar.

The letter S means STOP. The letter G means GO. Click or tap on S or G, even if the screen does not appear to be changing. If you do not press either S or G before (()) seconds, you will be skipped to the next item.

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

END OF GROUP
END OF IF

IF onmobile = 1 THEN
GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw001_intro2_mobile (Section Btac)
For the first several items, if you see RED you will indicate STOP by pressing the S button. If you see GREEN you will choose GO by pressing the G button.

Please keep your hands on the buttons during this whole task. This will help you complete the task more quickly.

Try to be accurate, but respond as quickly as you can.

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

END OF GROUP
ELSE
GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw001_intro2 (Section Btac)
For the first several items, if you see RED you will indicate STOP by pressing the letter S. If you see GREEN you will choose GO by pressing the letter G.

Please keep your hands on the keyboard during this whole task. This will help

you complete the task more quickly.

Try to be accurate, but respond as quickly as you can.

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

END OF GROUP
END OF IF

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw001_example1 (Section Btac)
DEMONSTRATIONFor example, if you see:

Press S for "stop," G for "go".
RED
You should press the letter S. Please do this now. (SG//)

sw001_example1_result (sw001 result example 1 in section Btac)
STRING

END OF GROUP

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw001_example2 (Section Btac)
DEMONSTRATIONAnd if you see:

Press S for "stop," G for "go".
GREEN
You should press the letter G. Please do this now. (SG//)

sw001_example2_result (sw001 result example 2 in section Btac)
STRING

END OF GROUP

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw001_intro3_practice (Section Btac)
PRACTICENow you try it a few times. Remember, click or tap on S or G, even if the screen does not appear to be changing. You will be corrected if you press the wrong key.

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

sw001_practice1 (Section Btac)
PRACTICEPress S for "stop," G for "go".
GREEN
(SG//)

sw001_practice1_result (sw001 result practice 1 in section Btac)
STRING

sw001_practice2 (Section Btac)
PRACTICEPress S for "stop," G for "go".
RED
(SG//)

sw001_practice2_result (sw001 result practice 2 in section Btac)
STRING

sw001_practice3 (Section Btac)
PRACTICEPress S for "stop," G for "go".
RED
(SG//)

sw001_practice3_result (sw001 result practice 3 in section Btac)
STRING

sw001_intro3 (Section Btac)
Now here is a larger set that will last about 1 minute. You will no longer be corrected if you press the wrong key.

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

LOOP FROM 1 TO 10

Fill code of question FL_sw001(cnt) executed
Fill code of question FL_sw001_key(cnt) executed
Fill code of question FL_sw001_key_wrong(cnt) executed

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw001 (first trial in section Btac)
Press S for "stop, " G for "go".
(GREEN/RED/GREEN/RED/RED/GREEN/RED/GREEN/RED/GREEN)(SG//) Loading

sw001_result (result first trial in section Btac)
STRING

END OF GROUP

END OF LOOP

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw002_intro2 (Section Btac)
DEMONSTRATIONNow you will do just the REVERSE of what you have been doing. So when you see RED you will press the letter G for "go." When you see GREEN you will press the letter S for "stop."

Try to be accurate, but answer as quickly as you can.

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

END OF GROUP

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw002_example1 (Section Btac)
DEMONSTRATIONFor example, if you see:

Press S for "stop," G for "go".
RED
Because the rules are "REVERSE," you should press the letter G for "go." Please do this now. (SG//)

sw002_example1_result (sw002 result example 1 in section Btac)
STRING

sw002_example2 (Section Btac)
DEMONSTRATIONAnd if you see:

Press S for "stop," G for "go".
GREEN
You should press the letter S for "stop." Please do this now. (SG//)

sw002_example2_result (sw002 result example 2 in section Btac)
STRING

sw002_intro3_practice (Section Btac)
PRACTICENow you try it a few times. You will be corrected if you press the wrong key.

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

sw002_practice1 (Section Btac)
PRACTICEPress S for "stop," G for "go".
RED(SG//)

sw002_practice1_result (sw002 result practice 1 in section Btac)

| STRING

sw002_practice2 (Section Btac)
PRACTICEPress S for "stop," G for "go".
GREEN(SG//)

sw002_practice2_result (sw002 result practice 2 in section Btac)
STRING

sw002_practice3 (Section Btac)
PRACTICEPress S for "stop," G for "go".
GREEN(SG//)

sw002_practice3_result (sw002 result practice 3 in section Btac)
STRING

sw002_intro3 (Section Btac)
Now here is a larger set that will last about 1 minute. You will no longer be corrected if you press the wrong key.

Remember, RED means "go" (G) and GREEN means "stop" (S).

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

LOOP FROM 1 TO 10

Fill code of question FL_sw002(cnt) executed
Fill code of question FL_sw002_key(cnt) executed

sw002 (second trial in section Btac)
Press S for "stop," G for "go".
(GREEN/RED/GREEN/RED/RED/GREEN/RED/GREEN/RED/GREEN)(SG//) Loading

sw002_result (result second trial in section Btac)
STRING

END OF GROUP

END OF LOOP

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw003_intro2 (Section Btac)
DEMONSTRATIONNow we are going to mix up these two types of responses. When you see the word NORMAL, you will respond the way you did at first: RED means "stop" (S), GREEN means "go" (G). But when you see the word REVERSE, you will give the reverse responses: RED means "go" (G), GREEN means "stop" (S).

We will alternate between the NORMAL and the REVERSE every few trials.

Try to be accurate, but answer as quickly as you can.

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

END OF GROUP

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw003_intro3 (Section Btac)
DEMONSTRATIONCurrent rules:

NORMAL
(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

END OF GROUP

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw003_example1 (Section Btac)
DEMONSTRATIONSo if you see:

Press S for "stop," G for "go".
RED
You should press the letter S for "stop." This is because the last screen said "NORMAL,"
and this screen says "RED." Please do this now. (SG//)

sw003_example1_result (sw003 result example 1 in section Btac)
STRING

sw003_example2 (Section Btac)
DEMONSTRATIONAnd if you see:

Press S for "stop," G for "go".
GREEN
You should press the letter G for "go." This is because the rules screen said "NORMAL,"
and this screen says "GREEN." Please do this now. (SG//)

sw003_example2_result (sw003 result example 2 in section Btac)
STRING

sw003_example3 (Section Btac)
DEMONSTRATIONAnd if you see:

Press S for "stop," G for "go".
RED
You should press the letter S. Please do this now. (SG//)

sw003_example3_result (sw003 result example 3 in section Btac)
STRING

sw003_intro4 (Section Btac)
DEMONSTRATIONCurrent rules:

REVERSE
(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

sw004_example1 (Section Btac)
DEMONSTRATIONSo if you see:

Press S for "stop," G for "go."
GREEN
You should press the letter S for "stop." This is because the last screen said "REVERSE,"
and this screen says "GREEN." Please do this now.(SG//)

sw004_example1_result (sw004 result example 1 in section Btac)
STRING

sw004_example2 (Section Btac)
DEMONSTRATIONOr if you see:

Press S for "stop," G for "go".
RED
You should press the letter G for "go." This is because the rules screen said "REVERSE,"
and this screen says "RED." Please do this now.(SG//)

sw004_example2_result (sw004 result example 2 in section Btac)
STRING

sw004_example3 (Section Btac)
DEMONSTRATIONOr if you see:

Press S for "stop," G for "go".
RED
You should press the letter G for "go." Please do this now.(SG//)

sw004_example3_result (sw004 result example 3 in section Btac)
STRING

sw004_intro1 (Section Btac)
PRACTICENow, please try it a few times on your own. You will be corrected if you press the wrong key.

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

sw004_intro2 (Section Btac)
PRACTICECurrent rules:

NORMAL
(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

sw005_example1 (Section Btac)
PRACTICEPress S for "stop," G for "go".
GREEN
(SG//)

sw005_example1_result (sw005 result example 1 in section Btac)
STRING

sw005_example2 (Section Btac)
PRACTICEPress S for "stop," G for "go".
RED
(SG//)

sw005_example2_result (sw005 result example 2 in section Btac)
STRING

sw005_example3 (Section Btac)
PRACTICEPress S for "stop," G for "go".
GREEN
(SG//)

sw005_example3_result (sw005 result example 3 in section Btac)
STRING

sw005_intro2 (Section Btac)
PRACTICECurrent rules:

REVERSE
(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

sw006_example1 (Section Btac)
PRACTICEPress S for "stop," G for "go".
GREEN
(SG//)

sw006_example1_result (sw006 result example 1 in section Btac)
STRING

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw006_example2 (Section Btac)
PRACTICEPress S for "stop," G for "go".
RED
(SG//)

sw006_example2_result (sw006 result example 2 in section Btac)
STRING

END OF GROUP

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw003_intro (Section Btac)
We are now ready to do a longer set. This will take about two minutes. You will no longer be corrected if you press the wrong key.

(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

END OF GROUP

LOOP FROM 1 TO 32

Fill code of question FL_sw003(cnt) executed
Fill code of question FL_sw003_color(cnt) executed
Fill code of question FL_sw003_key(cnt) executed
Fill code of question FL_sw003_key_wrong executed

IF cnt IN (1,9,19,29) THEN

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

sw007_intro (Section Btac)
Current rules:

NORMAL
(Please press the 'Space Bar' to continue./Space Bar)

spacescript (Section Btac)

| END OF GROUP

ELSEIF cnt IN (4,15,24) THEN

  GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

   sw007_intro_reverse (Section Btac)
   Current rules:

   REVERSE
   (Please press the 'Space Bar' to continue./Space Bar)

   spacescript (Section Btac)

  END OF GROUP

END OF IF

GROUP OF QUESTIONS PRESENTED ON THE SAME SCREEN

   sw003 (third trial in section Btac)
   Press S for "stop," G for "go".
   (GREEN/RED/GREEN/RED/RED/GREEN/RED/RED/RED/GREEN/RED/GREEN/GREEN/RED/GREEN/GREEN
   (SG//) Loading

   sw003_result (result third trial in section Btac)
   STRING

END OF GROUP

END OF LOOP

End of section **Btac**

Start of section **Feedback**

fe001 (how clear screen in section Feedback)
Aside from the ease or difficulty of clicking or tapping the right letter in the game, how clearly or not clearly were you able see the text and buttons on your screen?
1 Very clearly
2 Not very clearly
3 Not clearly at all

fe002 (difficulty screen navigation in section Feedback)
How easy or difficult was it for you to navigate the screen on your device while playing the

game, in terms of tapping, clicking, needing to scroll, etc.?
1 Very easy
2 Somewhat easy
3 Somewhat difficult
4 Very difficult

fe002a (experience with game in section Feedback)
Which of the following best fits your experience with playing the game on your device?
1 I often or always had to scroll or move the screen to be able to see all of the text and buttons on the same screen
2 I sometimes had to scroll or move the screen to be able to see all of the text and buttons on the same screen
3 All of the text and buttons fit on the same screen but they were sometimes obscured by something else
4 All of the text and buttons fit on the same screen with no technical difficulties

fe002b (other problem in section Feedback)
If you had some other problem with playing the game on your device that has not already been addressed, please briefly describe (or leave empty if not applicable):
STRING

IF onmobile = 1 THEN
  fe003 (screen device in section Feedback)
  How large is the screen on the device you used to play the game? If you aren't sure, you can just tell us the make and model of the phone or tablet you are using.
  STRING
END OF IF

End of section **Feedback**

Start of section **Environment**

en001 (location in section Environment)
When you completed this survey were you (choose one)
1 At home / in the place where you live
2 At work
3 At school
4 In a public place (e.g. store, sidewalk, park, shops, restaurant, etc.)
5 Riding in a car or other form of transportation
6 Walking outside
7 Somewhere else

en002 (conditions in section Environment)
While you completed this survey were you also... (select all that apply)
1 Talking with other people

2 Listening to music or a book or a podcasts or radio
3 Watching television
4 Playing an online or handheld game (not this game)
5 Following YouTube, social media, online news, etc.
6 Texting, checking email
7 None of these

en003 (interruption in section Environment)
While you completed this survey were you ever interrupted (e.g. doorbell, phone call, text message, someone speaking to you, moving from one place to another) or did you complete the survey without interruption?
1 I was interrupted while completing the survey
2 I was not interrupted while completing the survey

End of section **Environment**

Start of section **Closing**

CS_001 (HOW PLEASANT INTERVIEW in section Closing)
Could you tell us how interesting or uninteresting you found the questions in this survey?
1 Very interesting
2 Interesting
3 Neither interesting nor uninteresting
4 Uninteresting
5 Very uninteresting

CS_003 (comments in section Closing)
Do you have any comments on the game? Please type these in the box below. (If you have no comments, please click next to continue.)
STRING

End of section **Closing**

/* Please note that although question CS_003 is listed in the routing, the answers are not included in the microdata in the event identifiable information is captured. Cleaned responses are available by request. */