Package 'SSRTcalc'

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Type Package

Title Easy SSRT Calculation

Version 0.3.3

Description This is a collection of functions to calculate stop-signal reaction time (SSRT). Includes functions for both ``integration'' and ``mean'' methods; both fixed and adaptive stop-signal delays are supported (see appropriate functions). Calculation is based on Verbruggen et al. (2019) <doi:10.7554/eLife.46323.001> and Verbruggen et al. (2013) <doi:10.1177/0956797612457390>.

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RoxygenNote 7.1.1

LazyData True

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Imports stats (>= 4.0.5)

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R topics documented:

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adaptive   *Adaptive-SSD dataset for stop-signal task*

Description

Data from a mouse movement-based stop-signal experiment, using dynamically set stop-signal delays, with random dot kinematogram as the "go" task, collected from 63 participants

Usage

```
data(adaptive)
```

Format

A data frame with 36288 rows and 7 variables

new_id Subject identifier

soa stop-signal delay (ignore for "go" trials)

vol stop (1) or go (0) trial

coh Percent coherent dots in the kinematogram go task

RT_exp Response time in seconds, NA if no response was made

correct Did the participant correctly respond in "go" trials/omit response in "stop" trials (1) or not(0)?

Source

[OSF archive](#)

References

Leontyev and Yamauchi (2019) PLoS One (doi: [10.1371/journal.pone.0225437](#))

Examples

```
data(adaptive)
head(adaptive)
```

---

fixed	*Fixed-SSD dataset for stop-signal task*

Description

Data from a mouse movement-based stop-signal experiment, using preset stop-signal delays, with random dot kinematogram as the "go" task, collected from 51 participants

Usage

```
data(fixed)
```

Format

A data frame with 29376 rows and 7 variables

new_id Subject identifier

soa stop-signal delay (ignore for "go" trials)

vol stop (1) or go (0) trial

coh Percent coherent dots in the kinematogram go task

RT_exp Response time in seconds, NA if no response was made

response Which button did the participant click?

acc Did the participant respond in "go" trials/omit response in "stop" trials (1) or not(0)?

Source

[OSF archive](#)

References

Leontyev and Yamauchi (2019) PLoS One (doi: [10.1371/journal.pone.0225437](#))

Examples

```
data(fixed)
head(fixed)
```

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integration_adaptiveSSD

> *SSRT using integration method for studies with "adaptive" method of setting SSD*

Description

Estimating SSRT using integration method for studies that use adaptive (increasing/decreasing by a given increment) stop-signal delays.

Usage

```
integration_adaptiveSSD(df, stop_col, rt_col, acc_col, ssd_col)
```

Arguments

df	Dataframe with response time, accuracy, indication whether trial is stop or go, and delays for a given trial.
stop_col	Name of the column in the dataframe df that indicates whether a given trial is a "stop" or a "go" trial (0 = go, 1 = stop)
rt_col	Name of the column in the dataframe df that contains response time in seconds
acc_col	Name of the column in the dataframe df that contains accuracy of inhibition (0 = incorrect, 1 = correct)
ssd_col	Name of the column in the dataframe df that contains stop-signal delays

Value

SSRT corresponding to the `nth rt -ssd`; n = `p(respond|signal)*number of goRTs`

Examples

```
data(adaptive)
sapply(split(adaptive, adaptive$new_id), integration_adaptiveSSD, stop_col = 'vol',
ssd_col = 'soa', rt_col = 'RT_exp', acc_col = 'correct')
```

---

integration_fixedSSD *SSRT using integration method for studies with "fixed" method of setting SSD*

Description

Estimating SSRT using integration method for studies that use fixed (randomly chosen on each trial from a pre-determined set) stop-signal delays.

Usage

```
integration_fixedSSD(df, stop_col, rt_col, acc_col, ssd_col, ssd_list)
```

Arguments

df	Dataframe with response time, accuracy, indication whether trial is stop or go, and delays for a given trial.
stop_col	Name of the column in the dataframe df that indicates whether a given trial is a "stop" or a "go" trial (0 = go, 1 = stop)
rt_col	Name of the column in the dataframe df that contains response time in seconds
acc_col	Name of the column in the dataframe df that contains accuracy of inhibition (0 = incorrect, 1 = correct)
ssd_col	Name of the column in the dataframe df that contains stop-signal delays
ssd_list	List of stop-signal delays used in the experiment

Value

SSRT corresponding to the nth rt -ssd; n = p(respond|signal)*number of goRTs

Examples

```
data(fixed)
sapply(split(fixed, fixed$new_id), integration_fixedSSD, stop_col = 'vol',acc_col ='acc',
rt_col = 'RT_exp', ssd_col = 'soa',ssd_list = c(0.1, 0.2,0.3, 0.4, 0.5, 0.6))
```

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mean_adaptiveSSD	*SSRT using mean method for studies with "adaptive" method of setting SSD*

Description

Estimating SSRT using mean method for studies that use adaptive (increasing/decreasing by a given increment) stop-signal delays

Usage

```
mean_adaptiveSSD(df, rt_col, ssd_col, stop_col)
```

Arguments

df	Dataframe with response time, accuracy, indication whether trial is stop or go, and delays for a given trial.
rt_col	Name of the column in the dataframe df that contains response time in seconds
ssd_col	Name of the column in the dataframe df that contains stop-signal delays
stop_col	Name of the column in the dataframe df that indicates whether a given trial is a "stop" or a "go" trial (0 = go, 1 = stop)

Value

Spline-interpolated stop-signal reaction time corresponding roughly to 50

Examples

```
data(adaptive)
sapply(split(adaptive, adaptive$new_id), mean_adaptiveSSD, stop_col = 'vol',
ssd_col = 'soa', rt_col = 'RT_exp')
```

---

mean_fixedSSD	*Estimating SSRT using mean method for studies that use fixed (randomly chosen on each trial from a pre-determined set) stop-signal delays*

Description

Estimating SSRT using mean method for studies that use fixed (randomly chosen on each trial from a pre-determined set) stop-signal delays

Usage

```
mean_fixedSSD(df, stop_col, rt_col, acc_col, ssd_col, ssd_list)
```

Arguments

df	Dataframe with response time, accuracy, indication whether trial is stop or go, and delays for a given trial.
stop_col	Name of the column in the dataframe df that indicates whether a given trial is a "stop" or a "go" trial (0 = go, 1 = stop)
rt_col	Name of the column in the dataframe df that contains response time in seconds
acc_col	Name of the column in the dataframe df that contains accuracy of inhibition (0 = incorrect, 1 = correct)
ssd_col	Name of the column in the dataframe df that contains stop-signal delays
ssd_list	List of stop-signal delays used in the experiment

Value

Stop-signal reaction time corresponding roughly to 50 percent inhibition accuracy.

Examples

```
data(fixed)
sapply(split(fixed, fixed$new_id), mean_fixedSSD, stop_col = 'vol',acc_col ='acc',
rt_col = 'RT_exp', ssd_col = 'soa',ssd_list = c(0.1, 0.2,0.3, 0.4, 0.5, 0.6))
```

| plotInhFunc | *Plots and prints stop-signal delays and accuracies* |

Description

Plots and prints stop-signal delays and corresponding accuracies. For studies that use fixed (randomly chosen on each trial from a pre-determined set) stop-signal delays.

Usage

```
plotInhFunc(df, stop_col, ssd_col, acc_col)
```

Arguments

df	Dataframe with response time, accuracy, indication whether trial is stop or go, and delays for a given trial.
stop_col	Name of the column in the dataframe df that indicates whether a given trial is a "stop" or a "go" trial (0 = go, 1 = stop)
ssd_col	Name of the column in the dataframe df that contains stop-signal delays
acc_col	Name of the column in the dataframe df that contains accuracy of inhibition (0 = incorrect, 1 = correct)

Value

Line plot of the inhibition function.

Examples

```
data(fixed)
df <- subset(fixed, new_id == 3)
plotInhFunc(df = df, stop_col='vol', ssd_col='soa', acc_col='acc')
```

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