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加载包

```
using CSV , DataFrames , Pipe  # @pipe
```

```
using FreqTables  # freqtable
```

```
using Statistics # Statistics : mean
```

```
using StatsPlots  # @df 做图
```

```
using GLM          # 推论统计
```

数据载入

```
cd("/Users/lzhan/Desktop/Negation/")
```

```
df = read_combine_csv_list();
```

```
# describe(df)
```

数据筛选

```
Other_Box = df[(df.Object_Number .!= df.Basket) .& (df.Object_Number .!= df.Agent_Choice), :]; # 筛选主体没选择，且不在篮子里的物体的评分。
```

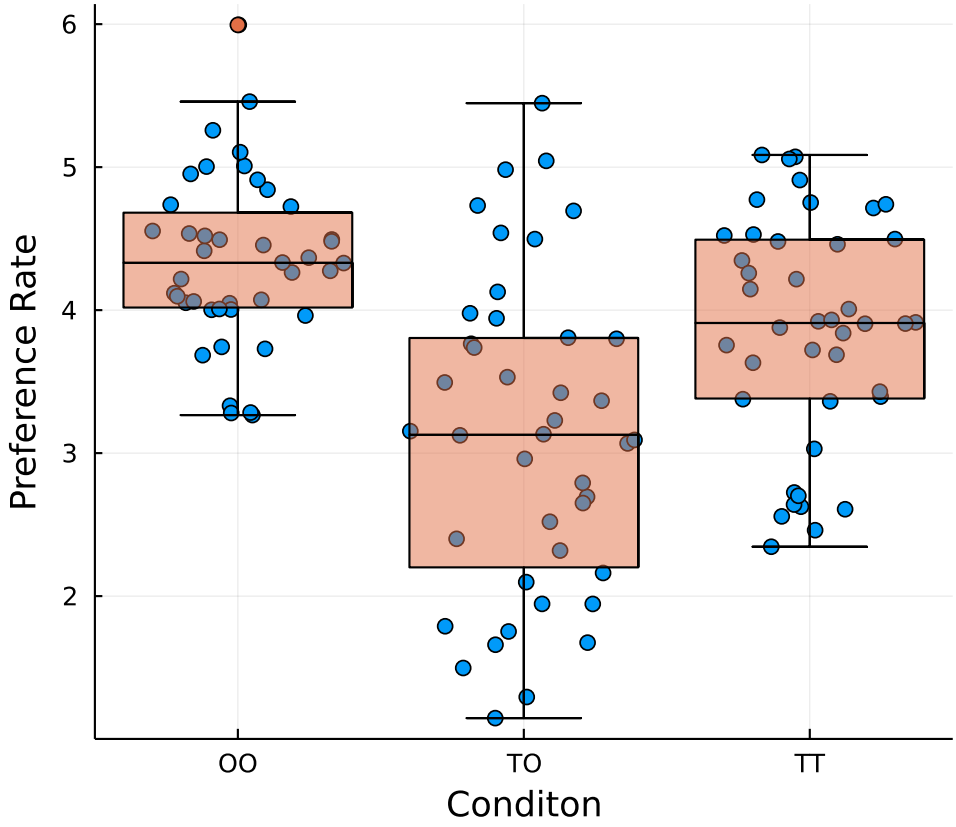
```
replace!(Other_Box.Box_Transparency, "OT" => "TO"); # 把'OT' 变成 'TO', 即合并 TO 和 OT
```

```
# freqtable(Other_Box, :Trial_Number, :Box_Transparency)
```

```
# @pipe Other_Box |> groupby(_, :Box_Transparency) |>  combine(_, :Object_Rate => mean)
```

描述统计

```
Other_Sum = @pipe Other_Box |>
    groupby(_, [:Participant, :Box_Transparency]) |>
    combine(_, :Object_Rate => mean => :Object_Rate);
```




```
@df Other_Sum plot(:Box_Transparency, :Object_Rate,
    seriestype = [:dotplot, :boxplot], fill = [1 0.5],
    xlim = (0, 3), xlabel = "Conditon", ylabel = "Preference Rate",
    legend = false, ratio = 0.5
)
```

推论统计

```
formula = @formula(Object_Rate ~ Box_Transparency);
```

```
contr = Dict(:Box_Transparency => DummyCoding(base = "TO"));
```

```
fm = fit(LinearModel, formula, Other_Sum, contrasts = contr);
```

	Coef.	Std. Error	t	Pr(>|t|)	Lower 95%	Upper 95%
(Intercept)	3.11923	0.13282	23.48	<1e-46	2.85632	3.38214
Box_Transparency: OO	1.22526	0.187836	6.52	<1e-08	0.853451	1.59707
Box_Transparency: TT	0.735945	0.187836	3.92	0.0001	0.364136	1.10775

```
coeftable(fm)
```

- 简单结论： `OO` 和 `TT` 条件下， 被试对行为主体没选择物体的偏好判断均低于 `TO` 条件， 符合我们最初的预期， 也与上图中的观察结果一致。

定义函数

- 定义函数 `read_combine_csv_list` 以整理文件夹中的 csv 文件列表， 并汇总成一个文件

```
read_combine_csv_list (generic function with 1 method)
```

```
function read_combine_csv_list(; directory = "data")
    csv_list = filter(endswith(".csv"), readdir(directory, join = true))
    df_list = [CSV_Read_Tidy(csv) for csv in csv_list]
    df = reduce(vcat, df_list)
    return df
end
```

- 定义函数 `CSV_Read_Tidy` 以读取和整理某个 CSV 中的数据

```
CSV_Read_Tidy (generic function with 1 method)
```

```
function CSV_Read_Tidy(
    csv;
    Image_Object = "Image_Object_Correspondance.csv",
    Video_Object = "Video_Object_Correspondance.csv"
    )

    df    = DataFrame(CSV.File(csv, stringtype = String))
    df    = dropmissing(df, :Numb)

    video_name = [first(split(last(split(v, '\\')), '.')) for v in df.Video_1]

    insertcols!(df,
```

```
        :Box_Color    => String.(SubString.(video_name, 1, 2)),
        :Trial_Number => "P" .* SubString.(video_name, 4, 5),
        :Chosed_Box =>
            [i == "Z" ? "Left" : "Right" for i in SubString.(video_name, 3, 3)]
    )

    rename!(df,  Dict(
        "slider_left.response"  => "Object_Left",
        "slider_mid.response"   => "Object_Middle",
        "slider_right.response" => "Object_Right")
    )

    df = stack(df, [:Object_Left, :Object_Middle, :Object_Right],
        variable_name = "Object_Position", value_name = "Object_Rate")

    Image_Object_Cor = DataFrame(CSV.File(Image_Object, stringtype = String));
    df = innerjoin(df, Image_Object_Cor, on = [:Trial_Number, :Object_Position])

    Video_Object_Cor = DataFrame(CSV.File(Video_Object, stringtype = String));
    df = innerjoin(df, Video_Object_Cor,
        on = [:Box_Color, :Chosed_Box, :Trial_Number])

    filter!(:Object_Rate => !=("None"), df)

    transform!(df, :Object_Rate =>
        ByRow(i -> isa(i, String) ? parse(Float64, i) : i) => :Object_Rate
    )

    insertcols!(df,
        :Agent_Choice => [df[i, "Chosed_Box"] == "Left" ?
            df[i, "Left_Box"] : df[i, "Right_Box"] for i in 1:nrow(df)]
    )

    replace!(df.Box_Color, "GG" => "OO", "GR" => "OT", "RG" => "TO", "RR" =>
"TT")
    rename!(df, "participant" => "Participant", "group" => "Group",
        "Box_Color" => "Box_Transparency")

    select!(df, [
        "Participant", "Trial_Number", "Box_Transparency",
        "Left_Box", "Right_Box", "Basket", "Agent_Choice",
        "Object_Number", "Object_Rate", "Group"]
    )

    return df
end
```