

怀旧对创新技术反应的双刃剑模型

论文复现

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怀旧

More Than a Barrier: Nostalgia Inhibits, but Also Promotes, Favorable Responses to Innovative Technology

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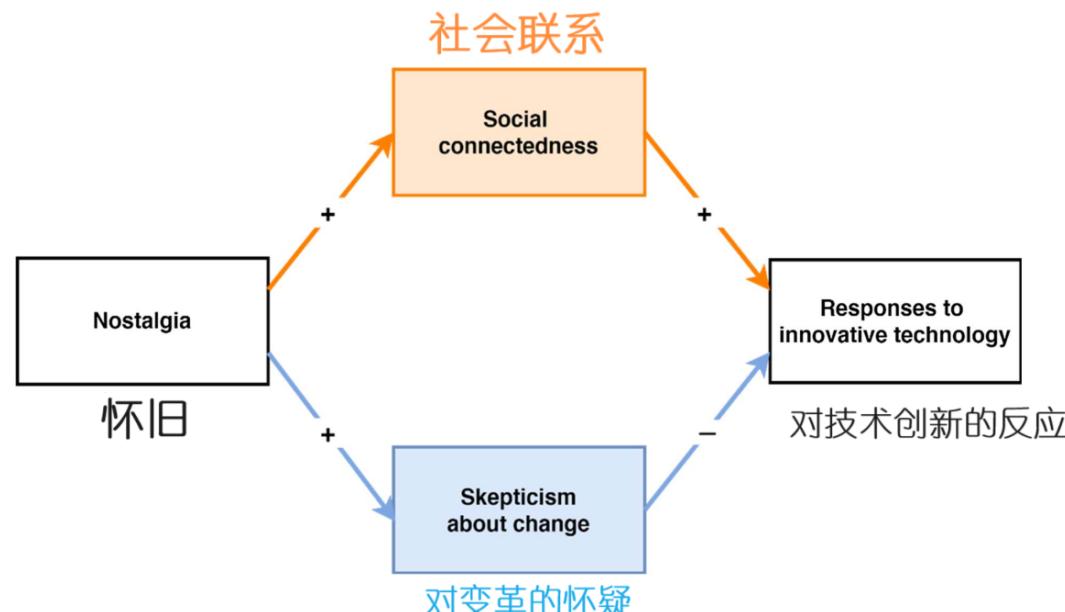
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双刃剑模型

文章提出一个**双刃剑模型**捕捉怀旧的双重性：

- 怀旧会通过增加对变革的怀疑来降低对创新技术的好感度。
- 同时，怀旧通过增加社会联系促进了对创新技术反应的好感度。



复现 Study 4

数据

```
library(tidyverse)
library(haven)
rawdat <- read_sav("data/Study 4/Study 4.sav")
```

ID	Name	Label	Values	Value Labels
1	Mnos	Nostalgia manipulation	range: 0-1	
2	NOS1	Nostalgia check1	range: 1-7	
3	NOS2	Nostalgia check2	range: 1-7	
4	NOS3	Nostalgia check3	range: 1-7	
5	SKEP1	Skepticism item1	range: 1-7	
6	SKEP2	Skepticism item2	range: 1-7	
7	SKEP3	Skepticism item3	range: 1-7	
8	SKEP4	Skepticism item4	range: 1-7	
9	SCN1	Social connectedness item1	range: 1-7	
10	SCN2	Social connectedness item2	range: 1-7	
11	SCN3	Social connectedness item3	range: 1-7	
12	SCN4	Social connectedness item4	range: 1-7	
13	SUPPORT1	Support for research on companion robot item1	range: 1-7	
14	SUPPORT2	Support for research on companion robot item2	range: 1-7	
15	SUPPORT3	Support for research on companion robot item3	range: 1-7	
16	ADOPT1	Adoption_child	range: 0-1	
17	ADOPT2	Adoption_dementia	range: 0-1	
18	ADOPT3	Adoption_delirious	range: 0-1	
19	ADOPT4	Adoption_older	range: 0-1	
20	ADOPT5	Adoption_autism	range: 0-1	
21	ADOPT6	Adoption_loneliness	range: 0-1	
22	PA1	Positive affect item1	range: 1-7	
23	PA2	Positive affect item2	range: 1-7	
24	NA1	Negative affect item1	range: 1-7	
25	NA2	Negative affect item2	range: 1-7	
26	SEX		range: 1-2	
27	AGE		range: 17-29	

数据

```

library(tidyverse)
library(haven)
rawdat <- read_sav("data/Study 4/Study 4.sav")

d <- rawdat %>%
  rowwise() %>%
  transmute(
    Mnos = Mnos,
    Nostalgia = mean(c_across(starts_with("NOS"))),
    Skepticism = mean(c_across(starts_with("SKEP"))),
    Social_connect = mean(c_across(starts_with("SCN"))),
    Support_robot = mean(c_across(starts_with("SUPPORT"))),
    Adoption_robot = sum(c_across(starts_with("ADOPT"))),
  ) %>%
ungroup()
  
```

Mnos	Nostalgia	Skepticism	Social_connect	Support_robot	Adoption_robot
0	5.33	3.00	2.25	5.33	4
0	5.33	4.75	3.00	4.33	3
1	7.00	3.75	4.50	4.67	0
1	5.33	5.00	5.00	5.00	3
1	7.00	5.25	6.00	5.33	4
0	2.00	1.00	6.00	5.67	5

ID	Name	Label	Values	Value Labels
1	Mnos	Nostalgia manipulation	range: 0-1	
2	NOS1	Nostalgia check1	range: 1-7	
3	NOS2	Nostalgia check2	range: 1-7	
4	NOS3	Nostalgia check3	range: 1-7	
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16	ADOPT1	Adoption_child	range: 0-1	
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26	SEX		range: 1-2	
27	AGE		range: 17-29	

Figure 5a

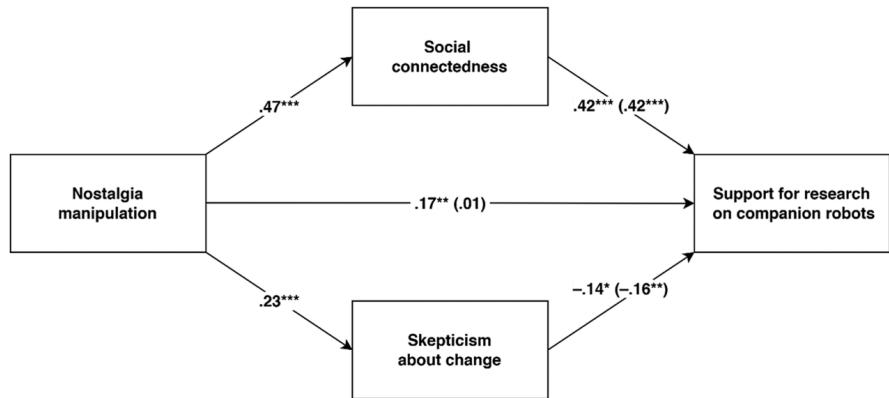


Figure 5a

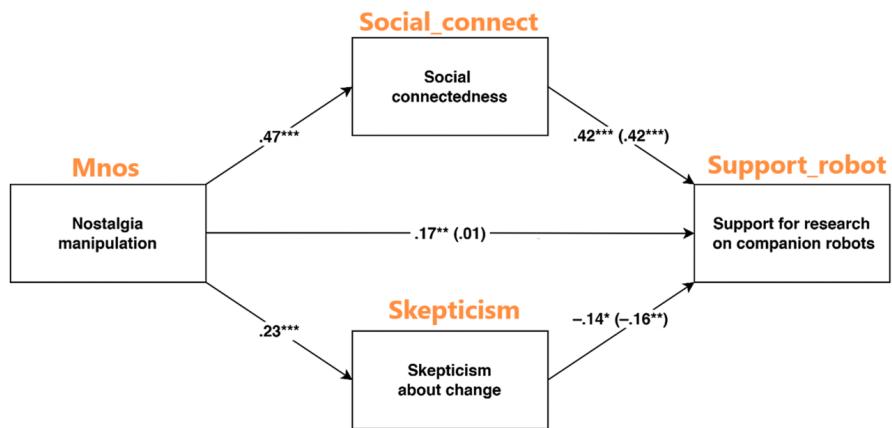
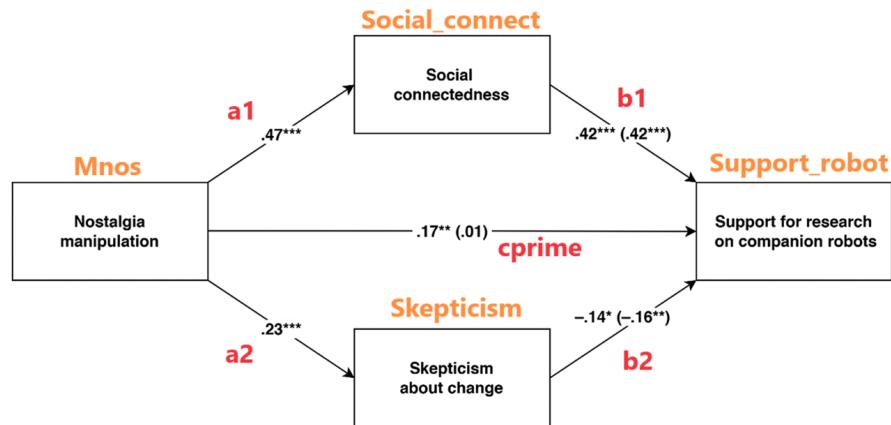


Figure 5a



```

library(lavaan)

model <- '
  Social_connect ~ a1 * Mnos
  Skepticism      ~ a2 * Mnos

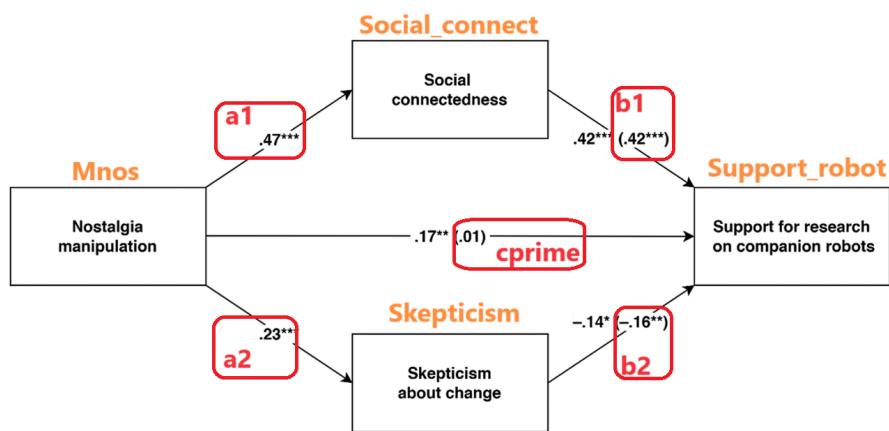
  Support_robot   ~ cprime * Mnos + b1 * Social_connect +
                    b2 * Skepticism

  # define parameters
  a1b1      := a1 * b1
  a2b2      := a2 * b2
  indirect  := a1 * b1 + a2 * b2

  '

fit <- sem(model,
            data      = d,
            estimator = "MLR",
            mimic    = "Mplus")
  
```

Figure 5a



```
fit %>%
  parameterestimates(standardized = T) %>%
  filter(op %in% c("~", ":=")) %>%
  select(label, est, se, pvalue,
         ci.lower, ci.upper, std.all)
```

label	est	se	pvalue	ci.lower	ci.upper	std.all
a1	1.6917	0.1844	0.0000	1.3302	2.0531	0.4680
b1	0.2856	0.0371	0.0000	0.2129	0.3583	0.4260
a2	0.5750	0.1437	0.0001	0.2933	0.8567	0.2251
b2	-0.1520	0.0540	0.0049	-0.2579	-0.0462	-0.1603
a1b1	0.4831	0.0771	0.0000	0.3319	0.6343	0.1994
a2b2	-0.0874	0.0377	0.0203	-0.1613	-0.0136	-0.0361
cprime	0.0132	0.1488	0.9291	-0.2784	0.3048	0.0055
indirect	0.3957	0.0889	0.0000	0.2215	0.5698	0.1633

Study 5a

Support for Research on Companion Robots. We specified a saturated model (Figure 5a). Nostalgia positively predicted social connectedness ($b = 1.69$, 95% CI [1.33, 2.05], $SE = 0.18$, $p < .001$, $z = 9.17$, $b^* = .47$), which in turn positively predicted support for research on companion robots ($b = 0.29$, 95% CI [0.07, 0.31], $SE = 0.04$, $z = 7.25$, $p < .001$, $b^* = .42$). At the same time, nostalgia positively predicted skepticism about change ($b = 0.58$, 95% CI [0.29, 0.86], $SE = 0.14$, $z = 4.00$, $p < .001$, $b^* = .23$), which in turn negatively predicted support for research on companion robots ($b = -0.15$, 95% CI [-0.40, -0.20], $SE = 0.05$, $z = -3.01$, $p = .003$, $b^* = -.16$). The indirect effects via social connectedness ($ab = 0.48$, 95% CI [0.35, 0.66]) and skepticism about change ($ab = -0.09$, 95% CI [-0.18, -0.02]) were significant. When controlling for these directionally opposite indirect effects, the direct effect of nostalgia on support for research on companion robots ($b = 0.01$, 95% CI [-0.20, 0.28], $SE = 0.15$, $z = 0.09$, $p = .927$, $b^* = .01$) was not statistically significant.

We also tested the tenability of an equality constraint on the absolute magnitude of the respective indirect effects via social

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fit %>%
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贝叶斯 recode

Figure 5a

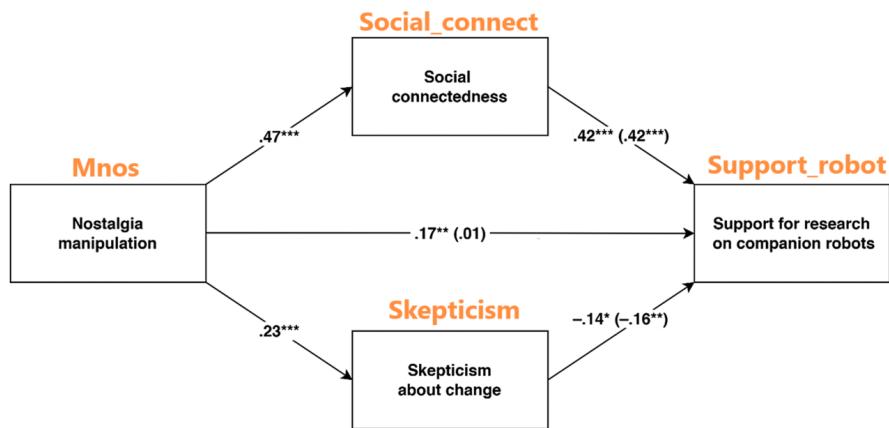
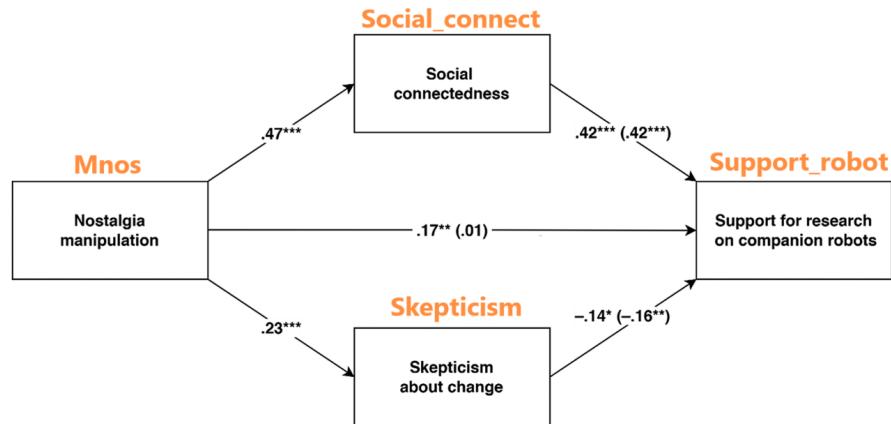


Figure 5a



```

library(brms)

mod <- brm(
  bf(Social_connect ~ Mnos) +
  bf(Skepticism ~ Mnos) +
  bf(Support_robot ~ Mnos + Social_connect + Skepticism) +
  set_rescor(FALSE),
  family = gaussian,
  data   = d,
  chains = 4,
  cores  = 4
)
  
```

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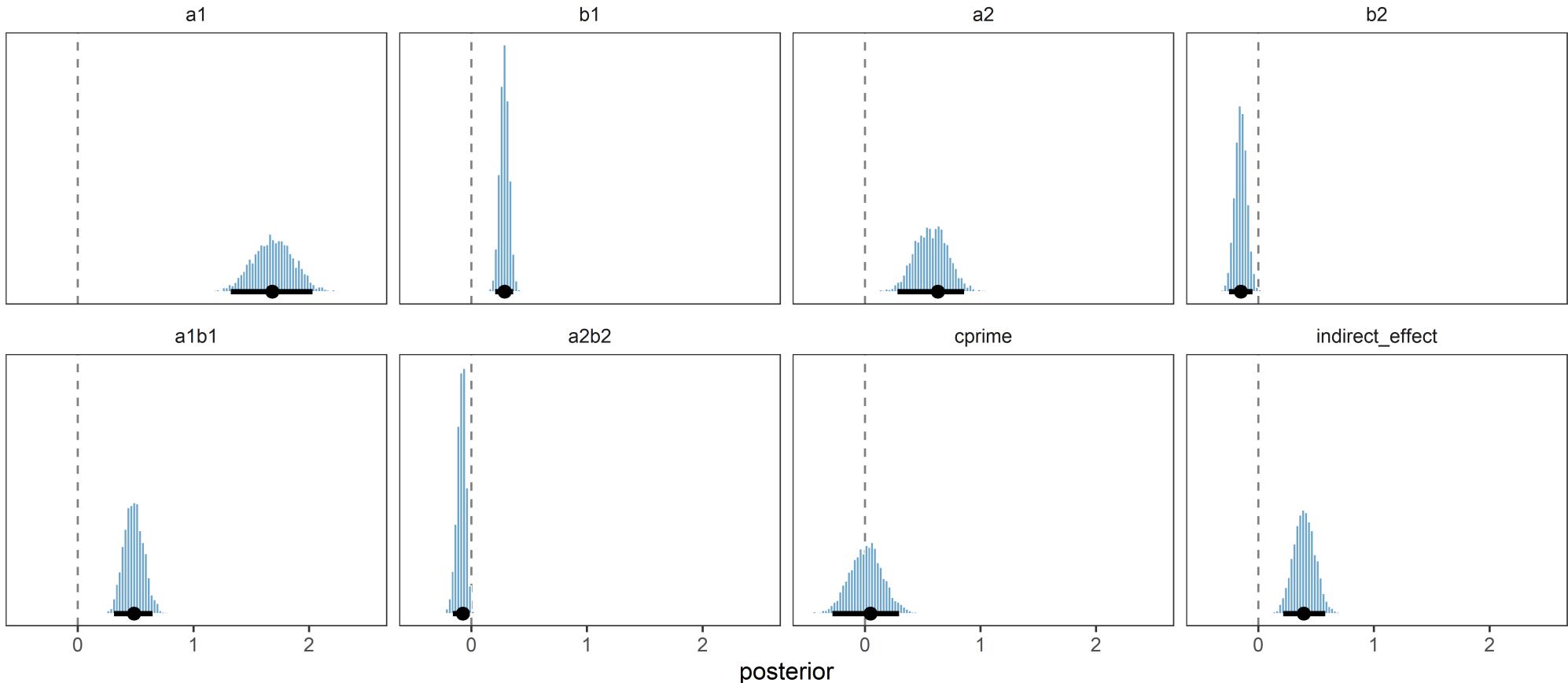
```

draws <- as_draws_df(mod)

draws %>%
  transmute(
    a1      = b_Socialconnect_Mnos,
    a2      = b_Skepticism_Mnos,
    cprime = b_Supportrobot_Mnos,
    b1      = b_Supportrobot_Social_connect,
    b2      = b_Supportrobot_Skepticism
  ) %>%
  mutate(
    a1b1            = a1 * b1,
    a2b2            = a2 * b2,
    indirect_effect = a1 * b1 + a2 * b2
  ) %>%
  pivot_longer(
    cols      = everything(),
    names_to = "item",
    values_to = "value"
  ) %>%
  group_by(item) %>%
  ggdist:::mean_hdi(.width = .95)
  
```

item	value	.lower	.upper	.width	.point	.interval
a1	1.692	1.323	2.031	0.950	mean	hdi
b1	0.286	0.207	0.362	0.950	mean	hdi
a2	0.575	0.282	0.858	0.950	mean	hdi
b2	-0.152	-0.253	-0.052	0.950	mean	hdi
a1b1	0.484	0.313	0.647	0.950	mean	hdi
a2b2	-0.087	-0.160	-0.014	0.950	mean	hdi
cprime	0.012	-0.280	0.295	0.950	mean	hdi
indirect_effect	0.397	0.215	0.578	0.950	mean	hdi

Bayesian interpretation



标准化后的结果

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```
standardize <- function(x) {  
  (x - mean(x)) / sd(x)  
}  
  
d_s <- d %>%  
  mutate(across(everything(), standardize))  
  
mod_s <- brm(  
  bf(Social_connect ~ Mnos) +  
  bf(Skepticism ~ Mnos) +  
  bf(Support_robot ~ Mnos + Social_connect + Skepticism) +  
  set_rescor(FALSE),  
  family = gaussian,  
  data   = d_s,  
  chains = 4,  
  cores  = 4  
)
```

标准化后的结果

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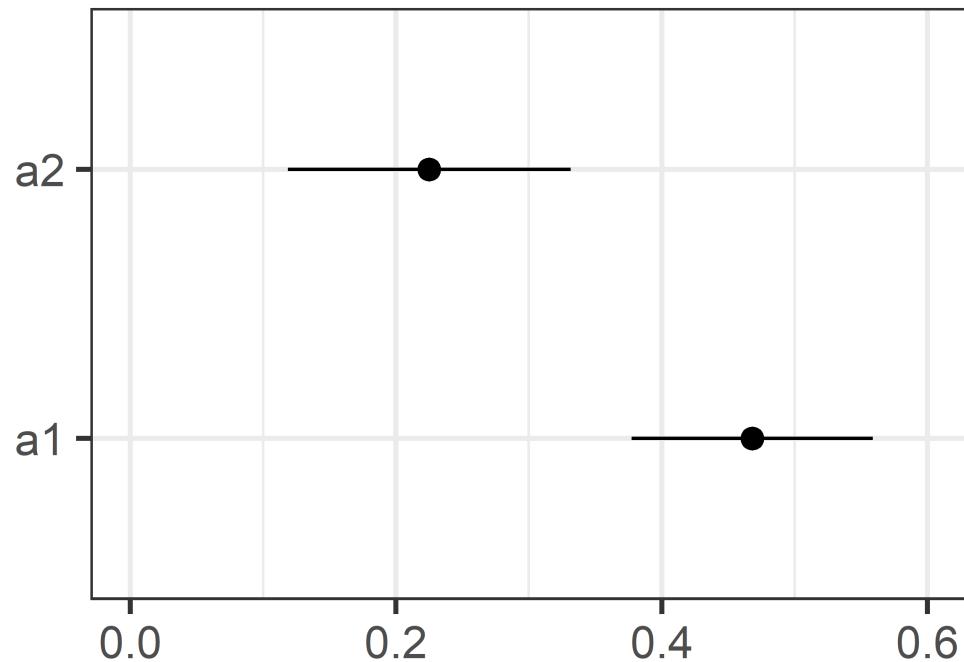
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draws <- as_draws_df(mod_s)

draws %>%
  transmute(
    a1      = b_Socialconnect_Mnos,
    a2      = b_Skepticism_Mnos,
    cprime = b_Supportrobot_Mnos,
    b1      = b_Supportrobot_Social_connect,
    b2      = b_Supportrobot_Skepticism
  ) %>%
  mutate(
    a1b1            = a1 * b1,
    a2b2            = a2 * b2,
    indirect_effect = a1 * b1 + a2 * b2
  ) %>%
  pivot_longer(
    cols           = everything(),
    names_to       = "item",
    values_to      = "value"
  ) %>%
  group_by(item) %>%
  ggdist:::mean_hdi(.width = .95)
```

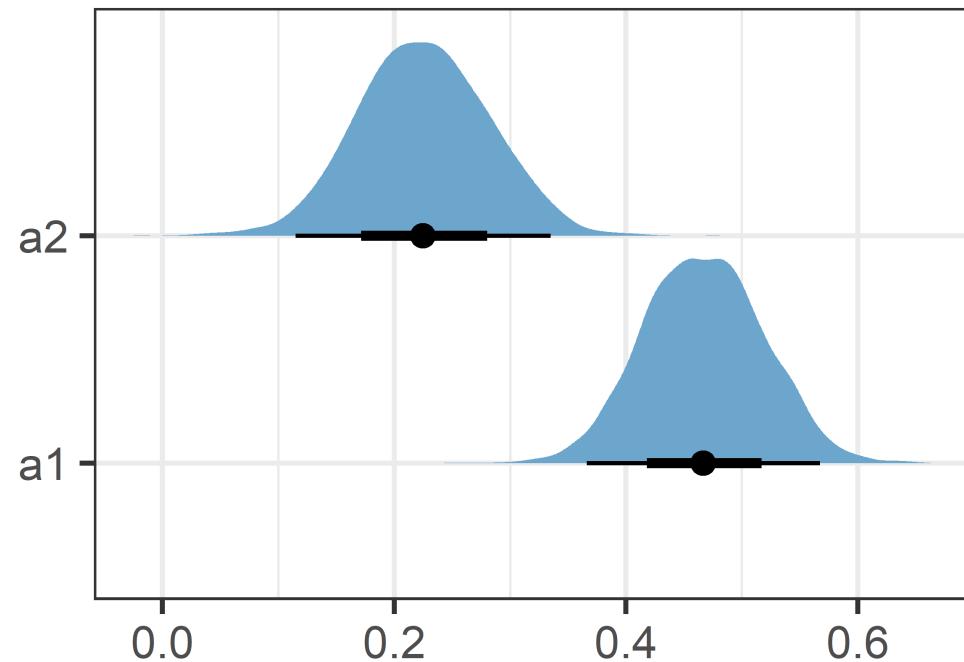
item	value	.lower	.upper	.width	.point	.interval
a1	0.467	0.373	0.574	0.950	mean	hdi
b1	0.423	0.297	0.532	0.950	mean	hdi
a2	0.225	0.123	0.341	0.950	mean	hdi
b2	-0.160	-0.266	-0.057	0.950	mean	hdi
a1b1	0.198	0.128	0.268	0.950	mean	hdi
a2b2	-0.036	-0.066	-0.008	0.950	mean	hdi
cprime	0.007	-0.106	0.124	0.950	mean	hdi
indirect_effect	0.162	0.088	0.241	0.950	mean	hdi

对比

Frequentist using lavaan

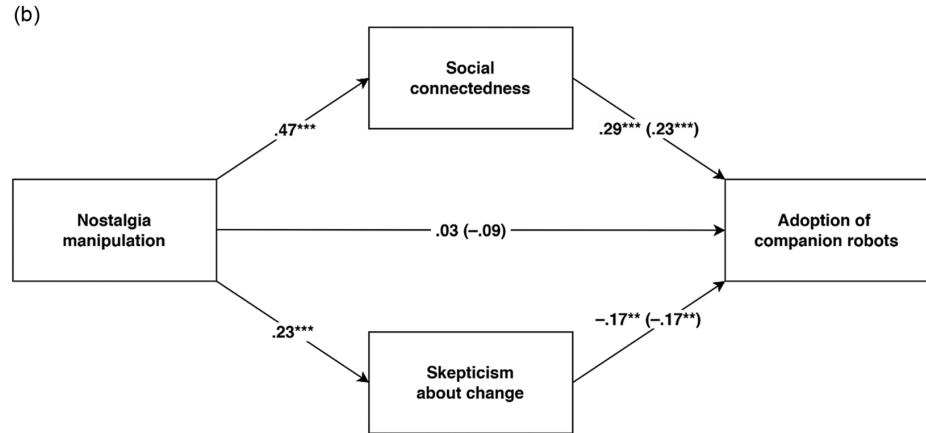


Bayesian using brms



练习题

Figure 5b



Study 5b

Adoption of Companion Robots. We conducted a mediation analysis on adoption of companion robots using Mplus 7.0. We specified a saturated model (Figure 5b). Nostalgia enhanced social connectedness ($b = 1.69$, 95% CI [1.33, 2.05], $SE = 0.18$, $z = 9.17$, $p < .001$, $b^* = .47$), which in turn positively predicted companion robot adoption ($b = 0.27$, 95% CI [0.17, 0.36], $SE = 0.05$, $z = 5.58$, $p < .001$, $b^* = .23$). At the same time, nostalgia enhanced skepticism about change ($b = 0.58$, 95% CI [0.29, 0.86], $SE = 0.14$, $z = 4.00$, $p < .001$, $b^* = .23$), which in turn negatively predicted companion robot adoption ($b = -0.19$, 95% CI [-0.31, -0.07], $SE = 0.06$, $z = -3.04$, $p = .002$, $b^* = -.17$). The indirect effects via social connectedness ($ab = 0.45$, 95% CI [0.29, 0.65]) and skepticism about change ($ab = -0.11$, 95% CI [-0.21, -0.04]) were significant. When controlling for these directionally opposite indirect effects, the direct effect of nostalgia on companion robot adoption ($b = -0.25$, 95% CI [-0.60, 0.10], $SE = 0.18$, $z = -1.41$, $p = .157$, $b^* = -.09$) was not statistically significant.

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本幻灯片由 R 包 **xaringan** 和 **flipbookr** 生成