

# 怀旧对创新技术反应的双刃剑模型

论文复现

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# 我们的目标论文



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怀旧

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

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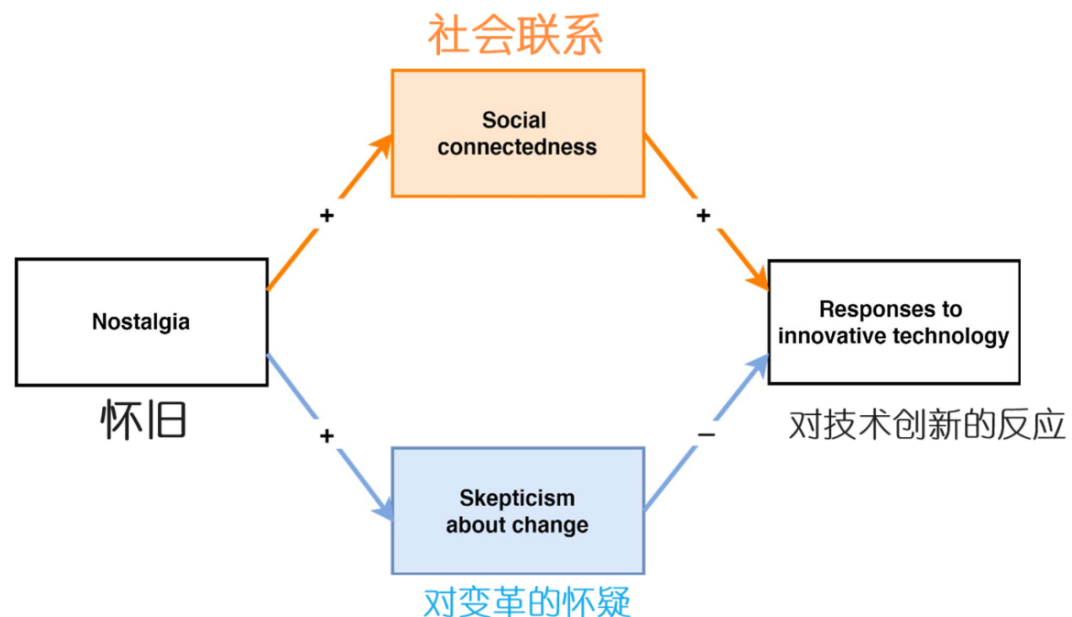
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# 双刃剑模型

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

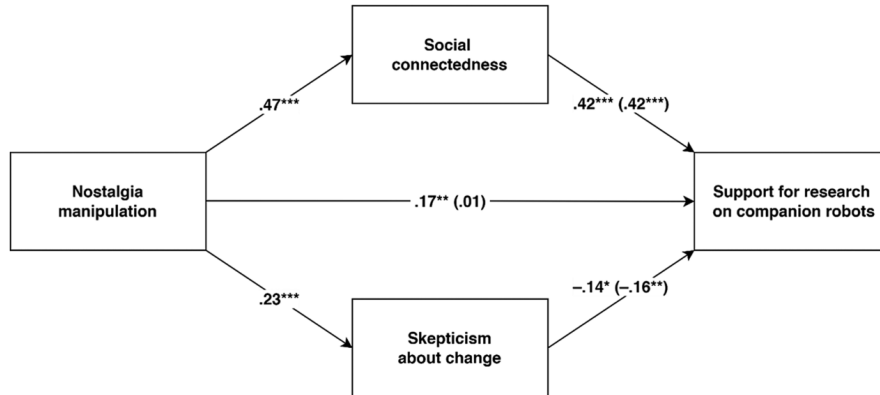
```
library(tidyverse)

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

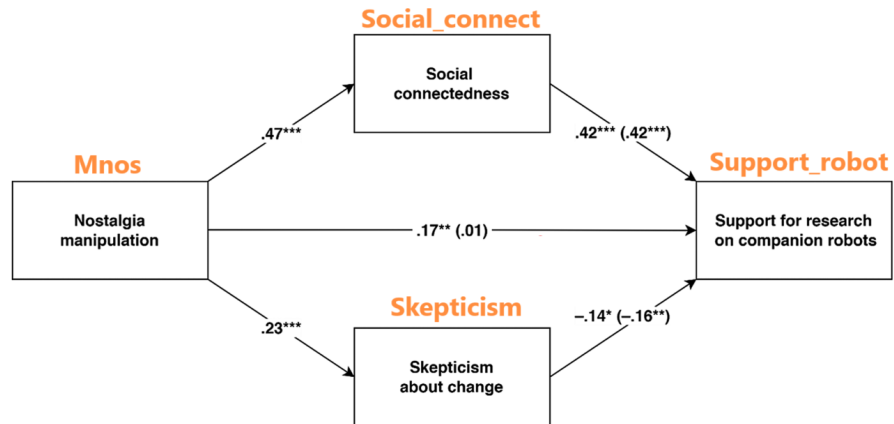
d <- rawdat %>%
  rowwise() %>%
  mutate(
    Nostalgia      = mean(c_across(starts_with("NOS"))),
    Skepticism     = mean(c_across(starts_with("SKEP"))),
    Social_connect = mean(c_across(starts_with("SCN"))),
    Support_robot  = mean(c_across(starts_with("SUPPORT"))),
    Adoption_robot = sum(c_across(starts_with("ADOPT"))),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

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

# Figure 5

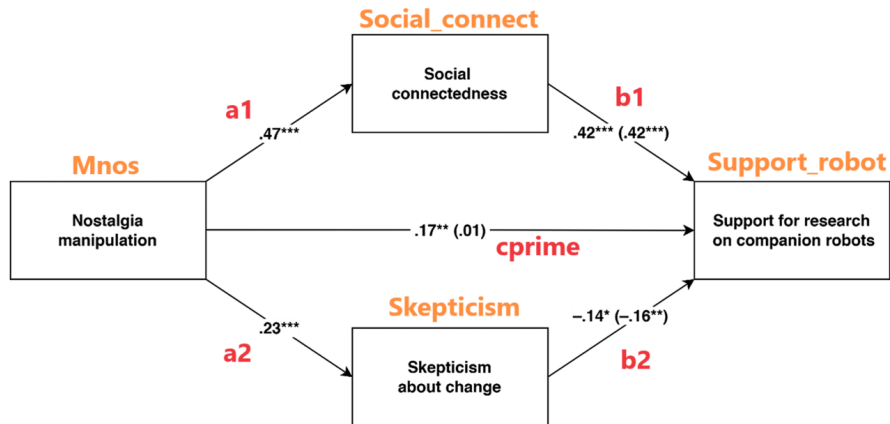


# Figure 5





# Figure 5



```
library(lavaan)

model <- '

  Social_connect ~ a1 * Mnos
  Skepticism      ~ a2 * Mnos

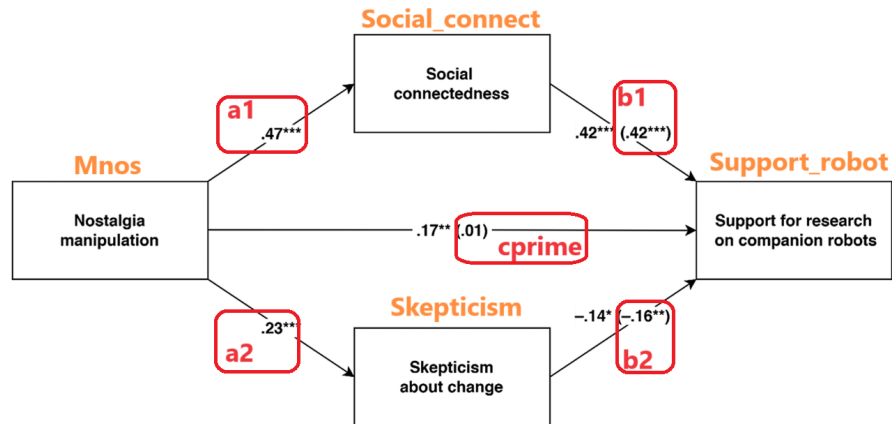
  Support_robot ~ cprime * Mnos + b1 * Social_connect +
                  b2 * Skepticism

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

'

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

# Figure 5

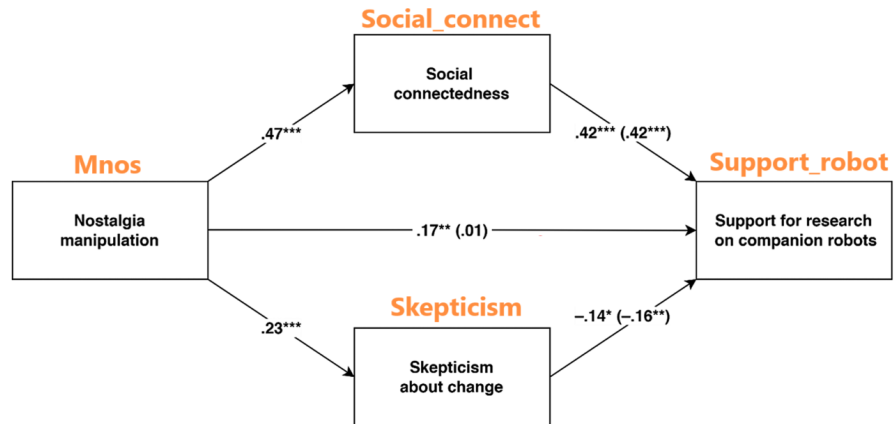


```
fit %>%
  standardizedSolution(type = "std.all") %>%
  filter(op %in% c("~", "!=")) %>%
  select(label, estimate = est.std, se,
         pvalue, ci.lower, ci.upper)
```

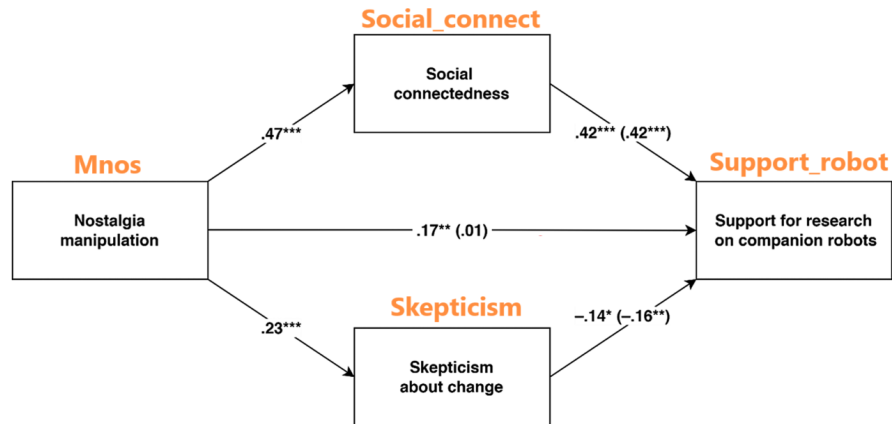
label	estimate	se	pvalue	ci.lower	ci.upper
a1	0.4680	0.0463	0.0000	0.3773	0.5587
a2	0.2251	0.0543	0.0000	0.1186	0.3316
cprime	0.0055	0.0614	0.9291	-0.1149	0.1258
b1	0.4260	0.0517	0.0000	0.3246	0.5274
b2	-0.1603	0.0559	0.0042	-0.2699	-0.0507
indirect	0.1633	0.0355	0.0000	0.0938	0.2328

# 贝叶斯 recode

# Figure 5



# Figure 5



```
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
)
```

# Figure 5

**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

# Figure 5

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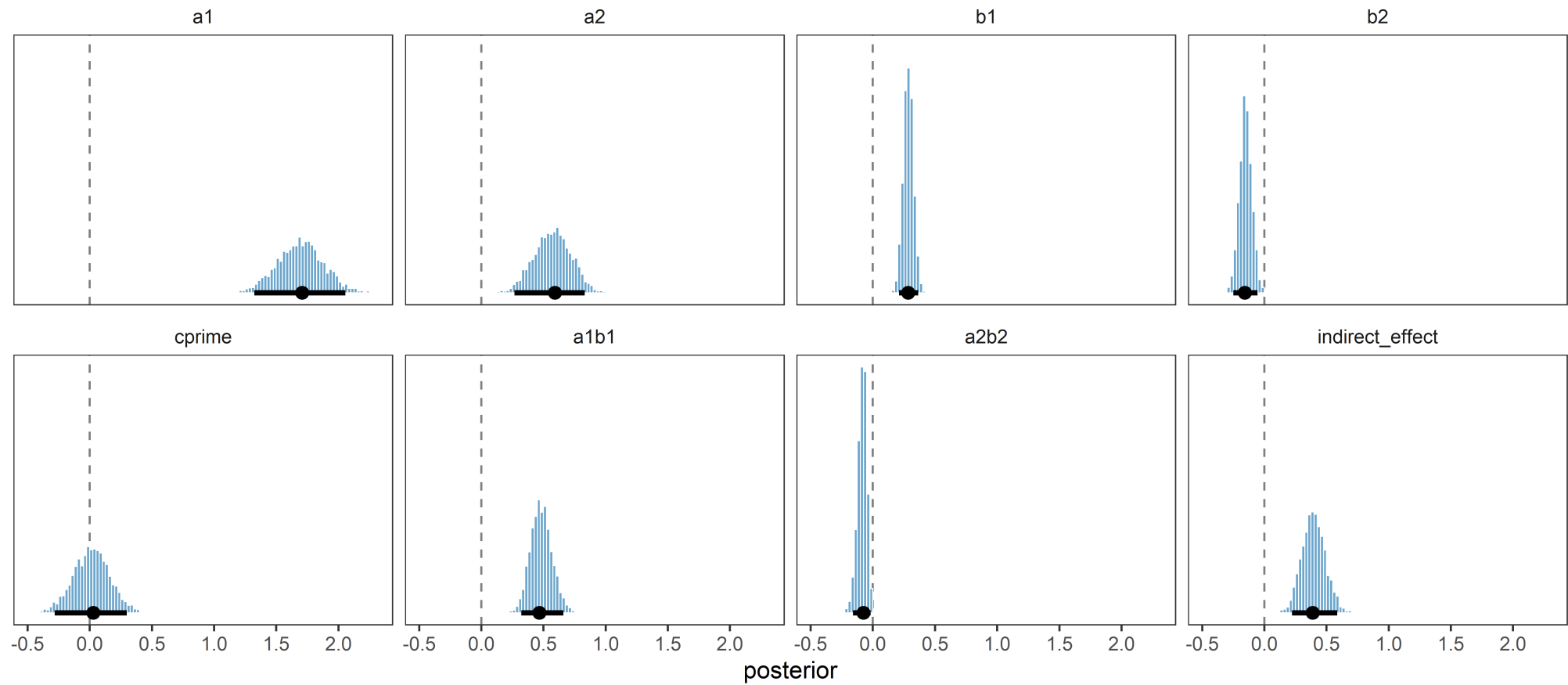
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```
draws <- as_draws_df(mod)

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	1.694	1.324	2.056	0.950	mean	hdi
a2	0.572	0.266	0.832	0.950	mean	hdi
b1	0.285	0.211	0.366	0.950	mean	hdi
b2	-0.152	-0.249	-0.054	0.950	mean	hdi
cprime	0.015	-0.282	0.298	0.950	mean	hdi
a1b1	0.483	0.323	0.660	0.950	mean	hdi
a2b2	-0.087	-0.159	-0.018	0.950	mean	hdi
indirect_effect	0.396	0.222	0.587	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  
)
```

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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
a2	0.225	0.123	0.341	0.950	mean	hdi
b1	0.423	0.297	0.532	0.950	mean	hdi
b2	-0.160	-0.266	-0.057	0.950	mean	hdi
cprime	0.007	-0.106	0.124	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
indirect_effect	0.162	0.088	0.241	0.950	mean	hdi

# 感谢 R 和 Stan 语言之美!

本幻灯片由 R 包 `xaringan` 和 `flipbookr` 生成