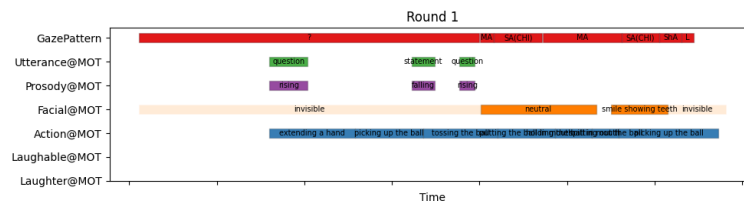


Round Evolution Analysis - final

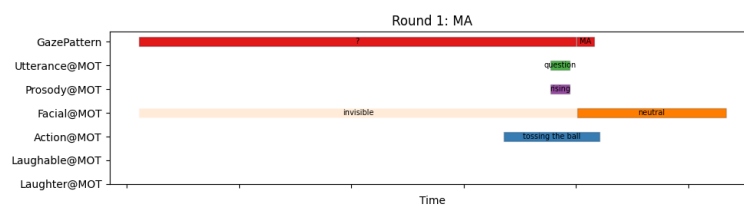
Round 1



Gaze Patterns

?→MA

Utterance@MOT(Ready?) 0, GazePattern(MA) 0



After the mother asks a question, the child looks at her. Their gaze overlaps → mutual attention.

```
[ 'Gaze@CHI(mom)-AFTER-Utterance@MOT(question)',
  'Gaze@CHI(mom)-AFTER-Gaze@MOT(invisible)',
  'Gaze@CHI(mom)-OVERLAPPED_BY-Gaze@MOT(child)',
  1],
```

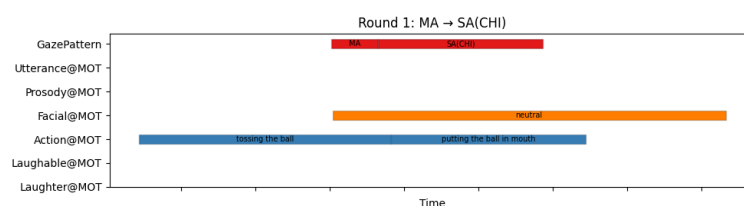
```
[ 'Gaze@CHI(mom)-AFTER-Utterance@MOT(question)',
  'Gaze@CHI(mom)-AFTER-Gaze@MOT(invisible)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-OVERLAPPED_BY-Action@MOT(tossing the ball)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(putting the ball in mouth)',
  1],
```

```
[ 'Utterance@MOT(question)-EQUALS-Prosody@MOT(rising)',
  'Utterance@MOT(question)-DURING-Gaze@MOT(invisible)',
  'Utterance@MOT(question)-BEFORE-GazePattern(MA)',
  1],
```

```
[ 'Utterance@MOT(question)-EQUALS-Prosody@MOT(rising)',
  'Utterance@MOT(question)-DURING-Gaze@MOT(invisible)',
  'Utterance@MOT(question)-BEFORE-Gaze@MOT(child)',
  'Utterance@MOT(question)-DURING-Action@MOT(tossing the ball)',
  'Utterance@MOT(question)-DURING-GazePattern(?)',
  'Utterance@MOT(question)-BEFORE-GazePattern(MA)',
  1],
```

MA→SA(CHI)

GazePattern(SA(CHI)) 0, GazePattern(SA(CHI)) 0



```
[ 'Action@MOT(tossing the ball)-MEETS-Action@MOT(putting the ball in mouth)',
  'Action@MOT(tossing the ball)-CONTAINS-GazePattern(MA)',
  'Action@MOT(tossing the ball)-OVERLAPS-GazePattern(SA(CHI))',
  'Action@MOT(putting the ball in mouth)-AFTER-GazePattern(MA)',
  'Action@MOT(putting the ball in mouth)-OVERLAPPED_BY-GazePattern(SA(CHI))',
  'GazePattern(MA)-MEETS-GazePattern(SA(CHI))',
  1],
```

```
[ 'Action@MOT(tossing the ball)-OVERLAPS-GazePattern(SA(CHI))',
  'Action@MOT(putting the ball in mouth)-AFTER-GazePattern(MA)',
  'Action@MOT(putting the ball in mouth)-OVERLAPPED_BY-GazePattern(SA(CHI))',
  'GazePattern(MA)-MEETS-GazePattern(SA(CHI))',
  1],
```

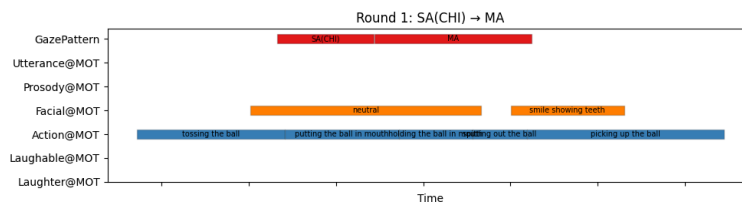
The mother looks at the distance (while putting the ball in her mouth) and then looks at the child again.

```
[ 'Gaze@CHI(mom)-OVERLAPPED_BY-Gaze@MOT(child)(1)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(into the distance)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)(2)',
  1],
```

```
[ 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(into the distance)',
  'Gaze@CHI(mom)-OVERLAPPED_BY-Action@MOT(tossing the ball)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(putting the ball in mouth)',
  1]
```

SA(CHI)→MA

"GazePattern(SA(CHI))", 0, "GazePattern(MA)", 1



```
[ 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(into the distance)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(holding the ball in mouth)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
  1],
```

- The beginning of MA (participants obtain mutual gaze when mother is putting the ball in her mouth):

```
[ 'Action@MOT(putting the ball in mouth)-MEETS-Action@MOT(holding the ball in mouth)',
  'Action@MOT(putting the ball in mouth)-OVERLAPPED_BY-GazePattern(SA(CHI))',
  'Action@MOT(putting the ball in mouth)-OVERLAPS-GazePattern(MA)',
  1],
```

- Continuation of MA (participants keep mutual gaze when mother is holding the ball in her mouth - preparation/pause for the unexpected event):

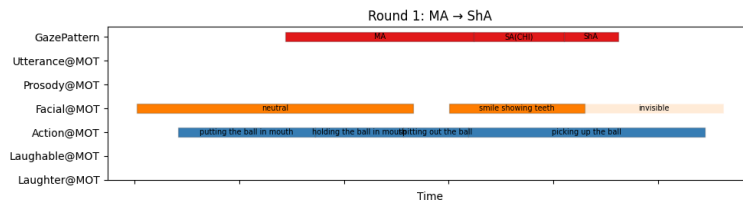
```
[ 'Action@MOT(holding the ball in mouth)-AFTER-GazePattern(SA(CHI))',
  'Action@MOT(holding the ball in mouth)-DURING-GazePattern(MA)',
  'Action@MOT(spitting out the ball)-DURING-GazePattern(MA)',
  1],
```

- End of MA (Mutual attention finishes when mother is picking up the ball after spitting it out, her gaze transmits to the ball):

```
[ 'Action@MOT(spitting out the ball)-MEETS-Action@MOT(picking up the ball)',
  'Action@MOT(spitting out the ball)-DURING-GazePattern(MA)',
  'Action@MOT(picking up the ball)-OVERLAPPED_BY-GazePattern(MA)',
  1]
```

MA→ShA

"GazePattern(MA)", 1, "GazePattern(ShA)", 0



After the mother spits out the ball, both the mother and the child shift their gaze to the ball, indicating shared attention.

```
[ 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(ball)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
  1],
```

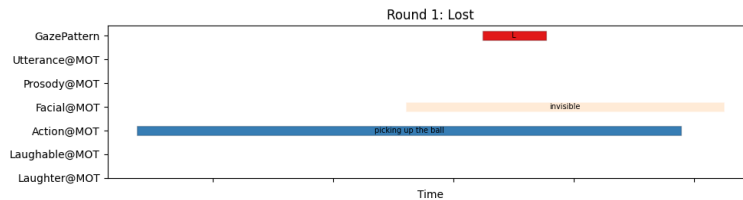
```
[ 'Gaze@CHI(mom)-MEETS-Gaze@CHI(ball)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(ball)',
  1],
```

```
[ 'Gaze@CHI(ball)-AFTER-Gaze@MOT(child)',
  'Gaze@CHI(ball)-DURING-Gaze@MOT(ball)',
  'Gaze@CHI(ball)-AFTER-Action@MOT(spitting out the ball)',
  1],
```

```
[ 'Action@MOT(picking up the ball)-OVERLAPPED_BY-GazePattern(MA)',
  'Action@MOT(picking up the ball)-CONTAINS-GazePattern(SA(CHI))',
  'Action@MOT(picking up the ball)-CONTAINS-GazePattern(ShA)',
  1],
```

Lost

"GazePattern(L)", 0, "GazePattern(L)", 0



When mother is picking up the ball, she looks at the ball, while the child looks at the floor (probably looking for the ball)

```
[ 'Gaze@CHI(floor)-OVERLAPPED_BY-Gaze@MOT(ball)',
  'Gaze@CHI(floor)-DURING-Action@MOT(picking up the ball)',
  'Gaze@MOT(ball)-DURING-Action@MOT(picking up the ball)',
  1],
```

```
[ 'Gaze@MOT(ball)-DURING-Action@MOT(picking up the ball)',
  'Action@MOT(picking up the ball)-CONTAINS-GazePattern(L)',
  1],
```

Emotion Pattern

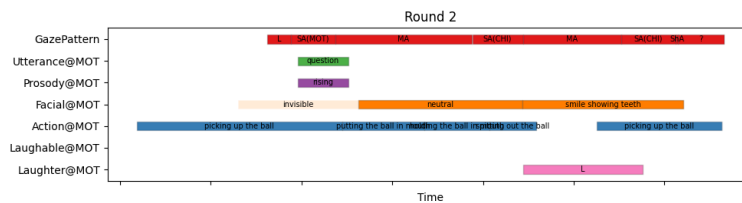


```
[ 'Action@MOT(spitting out the ball)-OVERLAPS-Facial@MOT(smile showing teeth)',
  'Action@MOT(spitting out the ball)-MEETS-Action@MOT(picking up the ball)',
  'Action@MOT(spitting out the ball)-BEFORE-Gaze@MOT(ball)',
  'Action@MOT(spitting out the ball)-BEFORE-Laughter@CHI(L)',
  'Action@MOT(spitting out the ball)-BEFORE-Gaze@CHI(ball)',
  1],
```

```
[ 'Action@MOT(picking up the ball)-CONTAINS-Gaze@MOT(ball)',
  'Action@MOT(picking up the ball)-CONTAINS-Laughter@CHI(L)',
  'Action@MOT(picking up the ball)-CONTAINS-Gaze@CHI(ball)',
  1],
```

```
[ 'Facial@MOT(smile showing teeth)-OVERLAPS-Action@MOT(picking up the ball)',
  'Facial@MOT(smile showing teeth)-OVERLAPS-Gaze@MOT(ball)',
  'Facial@MOT(smile showing teeth)-OVERLAPS-Laughter@CHI(L)',
  'Facial@MOT(smile showing teeth)-OVERLAPS-Gaze@CHI(ball)',
  'Facial@MOT(smile showing teeth)-MEETS-Facial@MOT(invisible)',
  1],
```

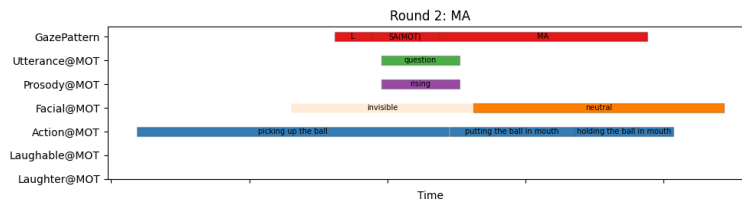
Round 2



Gaze Patterns

L→MA

"GazePattern(SA(MOT))", 0, "GazePattern(MA)", 0



The mother first looks at the ball when shifts her gaze to the child. While the baby is looking at the floor, she asks a question to attract the child's attention. The child turns her gaze toward the mom.

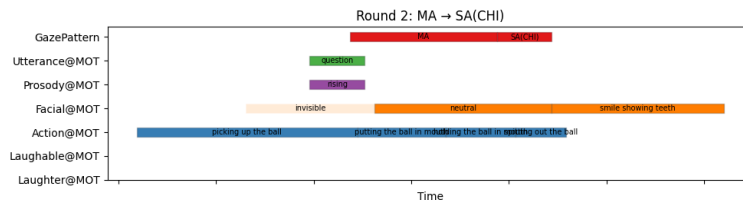
```
[ 'Gaze@CHI(floor)-MEETS-Gaze@CHI(mom)',
  'Gaze@CHI(floor)-OVERLAPS-Utterance@MOT(question)',
  'Gaze@CHI(floor)-OVERLAPPED_BY-Gaze@MOT(ball)',
  'Gaze@CHI(floor)-OVERLAPS-Gaze@MOT(child)',
  1],
```

While the mother is asking a question, she is looking at the child. The child then looks at the mother, resulting in mutual gaze.

```
[ 'Gaze@CHI(mom)-MEETS-Gaze@CHI(ball)',
  'Gaze@CHI(mom)-OVERLAPPED_BY-Utterance@MOT(question)',
  'Gaze@CHI(mom)-AFTER-Gaze@MOT(ball)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  1],
```

MA→SA(CHI)

"GazePattern(MA)", 0, "GazePattern(SA(CHI))", 0

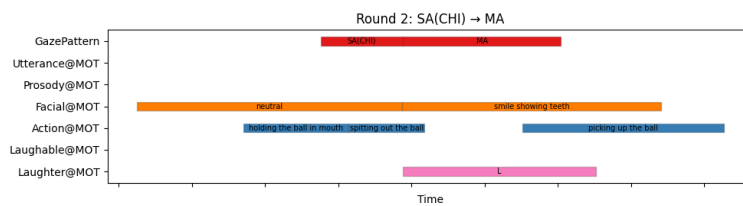


While holding the ball in mouth, the mother shifts her gaze from the child to the floor - potentially looking for a place where to spit out the ball.

```
[ 'Gaze@CHI(mom)-OVERLAPPED_BY-Gaze@MOT(child)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(floor)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(holding the ball in mouth)',
  1],
```

SA(CHI) → MA

"GazePattern(SA(CHI))", 0, "GazePattern(MA)", 1



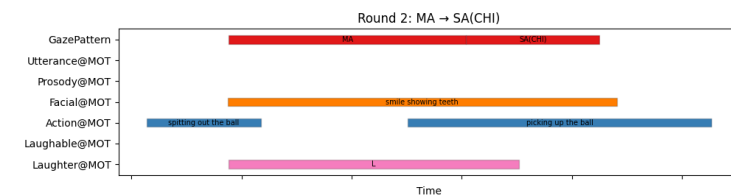
During spitting out the ball, mother looks at the floor (at the aim for the ball) and then she shifts her gaze to the child (to see her reaction). Mutual gaze lasts till the beginning of the picking up the ball action.

```
[ 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(floor)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
  'Gaze@CHI(mom)-OVERLAPS-Action@MOT(picking up the ball)',
  1],
```

```
[ 'Action@MOT(spitting out the ball)-OVERLAPPED_BY-GazePattern(SA(CHI))',
  'Action@MOT(spitting out the ball)-OVERLAPS-GazePattern(MA)',
  'Action@MOT(picking up the ball)-OVERLAPPED_BY-Laughter@MOT(L)',
  'Action@MOT(picking up the ball)-OVERLAPPED_BY-GazePattern(MA)',
  1],
```

MA → SA(CHI)

"GazePattern(MA)", 1, "GazePattern(SA(CHI))", 1



The child's gaze is attracted to the mother while she is doing something with the ball. The mother looks at child but then switches to the ball while picking it up.

```
[ 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(ball)',
  'Gaze@CHI(mom)-OVERLAPS-Action@MOT(picking up the ball)',
  1],
```

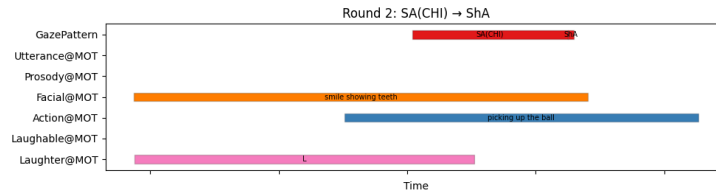
```
[ 'Action@MOT(picking up the ball)-OVERLAPPED_BY-GazePattern(MA)',
  'Action@MOT(picking up the ball)-CONTAINS-GazePattern(SA(CHI))',
  1],
```

```
[ 'Action@MOT(picking up the ball)-OVERLAPPED_BY-GazePattern(MA)',
  'Action@MOT(picking up the ball)-CONTAINS-GazePattern(SA(CHI))',
```

'Laughter@MOT(L)-STARTED_BY-GazePattern(MA)',
1],

SA(CHI)→ShA

"GazePattern(SA(CHI))", 1, "GazePattern(ShA)", 0

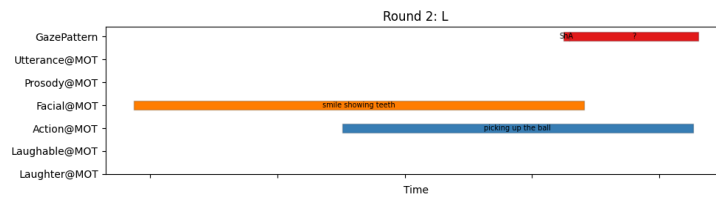


The mother and the child gain shared attention after mom spit out the ball and was picking it up. Mom was focused on the ball to pick it up and this focus attracted child to look at ball too.

['Gaze@CHI(ball)-AFTER-Gaze@MOT(child)',
'Gaze@CHI(ball)-OVERLAPPED_BY-Gaze@MOT(ball)',
'Gaze@CHI(ball)-AFTER-Action@MOT(spitting out the ball)',
'Gaze@CHI(ball)-OVERLAPPED_BY-Action@MOT(picking up the ball)',
1],

['Action@MOT(picking up the ball)-CONTAINS-GazePattern(SA(CHI))',
'Action@MOT(picking up the ball)-CONTAINS-GazePattern(ShA)',
1]

"GazePattern(ShA)", 0



The child's follows the ball with her gaze and the mother's attention shifts away.

['Gaze@CHI(ball)-AFTER-Gaze@MOT(child)',
'Gaze@CHI(ball)-CONTAINS-Gaze@MOT(invisible)',
'Gaze@CHI(ball)-AFTER-Action@MOT(spitting out the ball)',
1],

['Action@MOT(picking up the ball)-CONTAINS-GazePattern(ShA)',
'Action@MOT(picking up the ball)-OVERLAPS-GazePattern(?)',
1]

Emotion Pattern

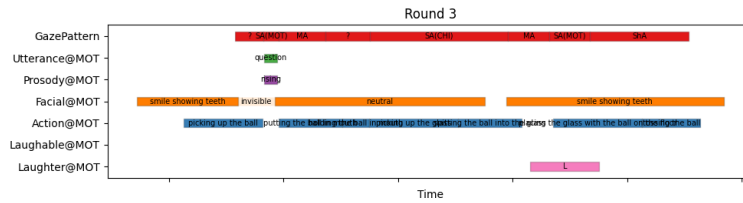


['Facial@MOT(smile showing teeth)-OVERLAPS-Gaze@CHI(ball)',
'Facial@MOT(smile showing teeth)-OVERLAPS-Gaze@MOT(invisible)',
'Laughter@MOT(L)-STARTED_BY-Gaze@MOT(child)',
'Laughter@MOT(L)-OVERLAPS-Laughter@CHI(L)',

'Laughter@MOT(L)-OVERLAPS-Action@MOT(picking up the ball)',
1],

['Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
'Gaze@CHI(mom)-OVERLAPS-Facial@MOT(smile showing teeth)',
'Gaze@CHI(mom)-CONTAINS-Laughter@MOT(L)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
'Gaze@CHI(mom)-OVERLAPS-Laughter@CHI(L)',
1],

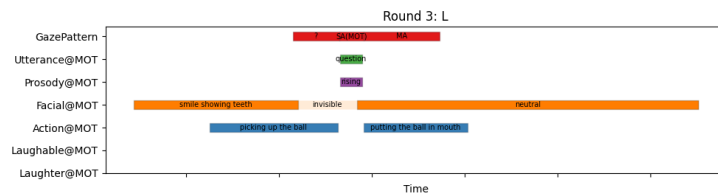
Round 3



Patterns

?→MA

"GazePattern(?)", 0, "GazePattern(MA)", 0



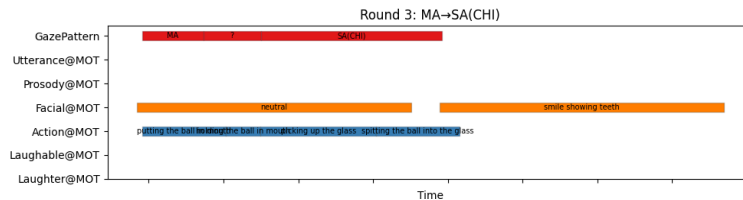
Mother is asking a question to a child and then gains a mutual attention.

['Utterance@MOT(question)-AFTER-Action@MOT(picking up the ball)',
'Utterance@MOT(question)-AFTER-GazePattern(?)',
'Utterance@MOT(question)-DURING-GazePattern(SA(MOT))',
'Utterance@MOT(question)-BEFORE-GazePattern(MA)',
1],

['Gaze@CHI(mom)-AFTER-Utterance@MOT(question)',
'Gaze@CHI(mom)-AFTER-Gaze@MOT(invisible)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(invisible)',
'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
1],

MA→SA(CHI)

"GazePattern(MA)", 0, "GazePattern(SA(CHI))", 0



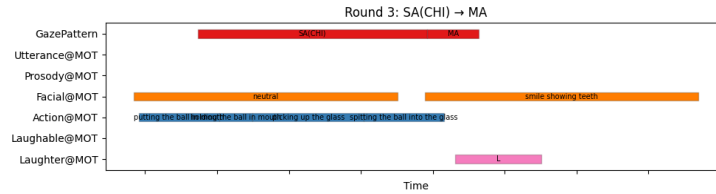
The attention of mother is being shifted to the glass - the aim for spitting out the ball.

['Gaze@MOT(child)-OVERLAPS-Action@MOT(putting the ball in mouth)',
'Gaze@MOT(child)-OVERLAPS-Gaze@CHI(mom)',
'Gaze@MOT(child)-BEFORE-ActionTemporal@MOT(holding the ball in mouth-FOLLOWED_BY(putting the ball in mouth)-FOLLOWS(picking up the glass))',
'Gaze@MOT(child)-BEFORE-Action@MOT(holding the ball in mouth)',

```
'Gaze@MOT(child)-BEFORE-Action@MOT(picking up the glass)',
'Gaze@MOT(child)-BEFORE-ActionTemporal@MOT(picking up the glass-FOLLOWED_BY(holding the ball in mouth)-FOLLOWS(spitting the ball into the glass))',
'Gaze@MOT(child)-BEFORE-Gaze@MOT(glass)',
1],
```

SA(CHI)→MA

"GazePattern(SA(CHI))", 0, "GazePattern(MA)", 1

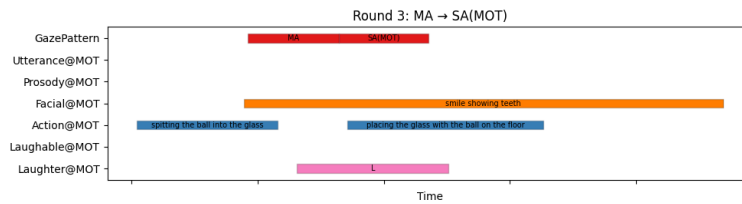


While the child looks at mother, she spits out the ball into the glass (while being focused on the glass) and then moves her gaze to child to see her reaction.

```
['Gaze@CHI(mom)-CONTAINS-Gaze@MOT(glass)',
'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting the ball into the glass)',
'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
1],
```

MA → SA(MOT)

"GazePattern(MA)", 1, "GazePattern(SA(MOT))", 1



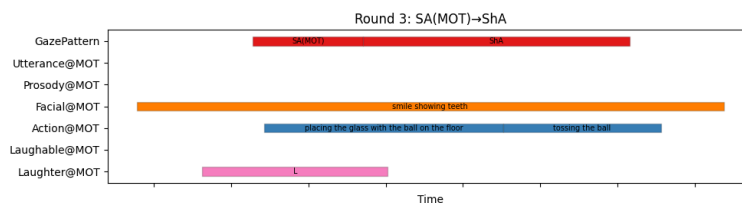
After spitting out the ball, the mother is placing the glass with the ball on the floor while child's gaze is being attached to the ball.

```
['Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
'Gaze@CHI(mom)-MEETS-Gaze@CHI(ball)',
'Gaze@CHI(mom)-BEFORE-Action@MOT(placing the glass with the ball on the floor)',
1],
```

```
['Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting the ball into the glass)',
'Gaze@CHI(mom)-CONTAINS-ActionTemporal@MOT(spitting the ball into the glass-FOLLOWS(placing the glass with the ball on the floor))',
'Gaze@CHI(mom)-OVERLAPS-Facial@MOT(smile showing teeth)',
'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
'Gaze@CHI(mom)-MEETS-Gaze@CHI(ball)',
1],
```

SA(MOT) → MA

"GazePattern(SA(MOT))", 1



While placing the glass with the ball, the mother is looking at the child for her reaction and the child is attracted to the ball. Then, the mother shifts her gaze to the ball and they obtain shared attention.

```
['Gaze@MOT(child)-OVERLAPS-Gaze@CHI(ball)',
'Gaze@MOT(child)-OVERLAPS-Action@MOT(placing the glass with the ball on the floor)',
```


'Gaze@MOT(child)-MEETS-Gaze@MOT(ball)',
 'Gaze@MOT(child)-BEFORE-Action@MOT(tossing the ball)',
 'Gaze@MOT(child)-BEFORE-ActionTemporal@MOT(tossing the ball-FOLLOWED_BY(placing the glass with the ball on the floor))',
 1],

Laughter Pattern



First

['Facial@MOT(smile showing teeth)-OVERLAPS-Action@MOT(picking up the ball)',
 'Facial@MOT(smile showing teeth)-MEETS-Facial@MOT(invisible)',
 'Laughter@CHI(L)-OVERLAPS-Action@MOT(picking up the ball)',
 'Laughter@CHI(L)-OVERLAPS-Gaze@CHI(ball)',
 'Laughter@CHI(L)-OVERLAPS-Gaze@MOT(invisible)',
 1],

Second

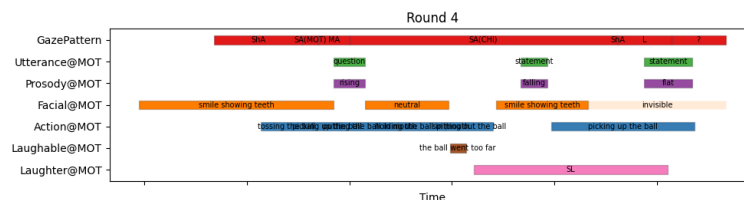
['Facial@MOT(neutral)-CONTAINS-Laughter@CHI(L)',
 'Facial@MOT(neutral)-OVERLAPS-Action@MOT(spitting the ball into the glass)',
 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(glass)',
 1],

['Gaze@CHI(mom)-CONTAINS-Laughter@CHI(L)',
 'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting the ball into the glass)',
 'Action@MOT(picking up the glass)-EQUALS-ActionTemporal@MOT(picking up the glass-FOLLOWS(spitting the ball into the glass))',
 'Action@MOT(picking up the glass)-OVERLAPS-Gaze@MOT(glass)',
 'Action@MOT(picking up the glass)-OVERLAPS-Laughter@CHI(L)',
 1],

Third

['Laughter@CHI(L)-STARTED_BY-Laughter@MOT(L)',
 'Laughter@CHI(L)-OVERLAPS-Gaze@CHI(ball)',
 'Laughter@CHI(L)-OVERLAPS-Action@MOT(placing the glass with the ball on the floor)',
 'Laughter@CHI(L)-OVERLAPS-Gaze@MOT(ball)',
 'Laughter@MOT(L)-OVERLAPS-Gaze@CHI(ball)',
 1],

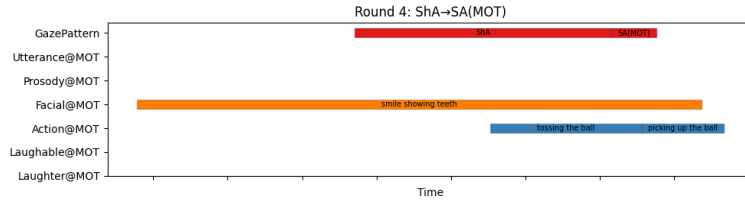
Round 4



Gaze Patterns

ShA → SA(MOT)

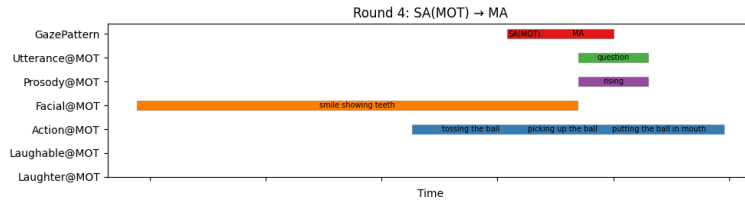
"GazePattern(ShA)", 0, "GazePattern(SA(MOT))", 0



```
[ 'Gaze@CHI(ball)-CONTAINS-Action@MOT(tossing the ball)',
  'Gaze@CHI(ball)-OVERLAPS-Gaze@MOT(child)',
  'Gaze@CHI(ball)-OVERLAPS-Action@MOT(picking up the ball)',
  'Gaze@MOT(ball)-OVERLAPS-Action@MOT(tossing the ball)',
  'Gaze@MOT(ball)-MEETS-Gaze@MOT(child)',
  1],
```

SA(MOT)→MA

"GazePattern(SA(MOT))", 0, "GazePattern(MA)", 0



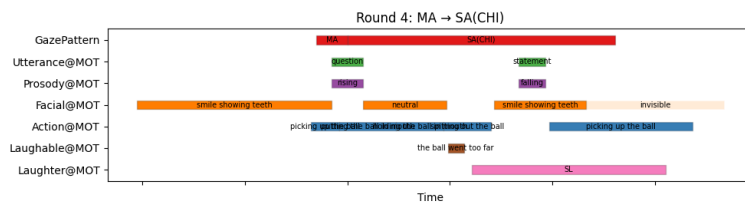
```
[ 'Gaze@CHI(ball)-BEFORE-Action@MOT(putting the ball in mouth)',
  'Action@MOT(tossing the ball)-OVERLAPS-Gaze@MOT(child)',
  'Action@MOT(tossing the ball)-MEETS-ActionTemporal@MOT(picking up the ball-FOLLOWED_BY(tossing the ball)-FOLLOWS(putting the ball in mouth))',
  'Action@MOT(tossing the ball)-BEFORE-Gaze@CHI(mom)',
  'Action@MOT(tossing the ball)-BEFORE-Utterance@MOT(question)',
  1],
```

```
[ 'Action@MOT(picking up the ball)-MEETS-Action@MOT(putting the ball in mouth)',
  'Gaze@CHI(mom)-CONTAINS-Utterance@MOT(question)',
  1],
```

```
[ 'GazePattern(SA(MOT))-BEFORE-Action@MOT(putting the ball in mouth)',
  'Action@MOT(picking up the ball)-OVERLAPS-GazePattern(MA)',
  'Action@MOT(picking up the ball)-OVERLAPS-Utterance@MOT(question)',
  'Action@MOT(picking up the ball)-OVERLAPS-Prosody@MOT(rising)',
  'Action@MOT(picking up the ball)-MEETS-Action@MOT(putting the ball in mouth)',
  1],
```

MA→SA(CHI)

"GazePattern(MA)", 0, "GazePattern(SA(CHI))", 0

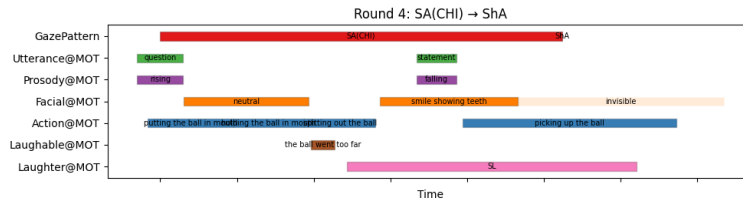


```
[ 'Gaze@MOT(child)-OVERLAPS-Gaze@CHI(mom)',
  'Gaze@MOT(child)-OVERLAPS-Utterance@MOT(question)',
  'Gaze@MOT(child)-OVERLAPS-Prosody@MOT(rising)',
  'Gaze@MOT(child)-OVERLAPS-Action@MOT(putting the ball in mouth)',
```

'Gaze@MOT(child)-MEETS-Gaze@MOT(into the distance)',
1],

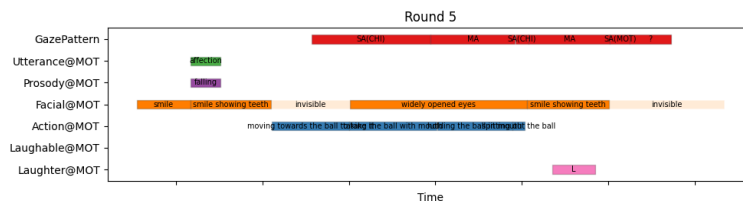
SA(CHI) → ShA

"GazePattern(SA(CHI))", 0, "GazePattern(ShA)", 0



ShA → L

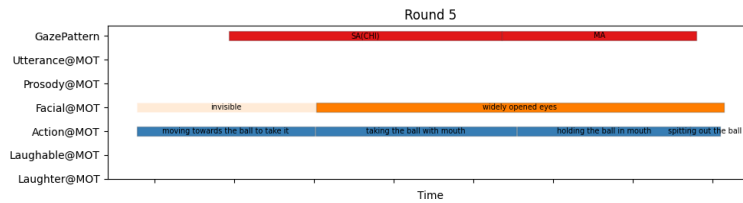
Round 5



Gaze Patterns

SA(CHI) → MA

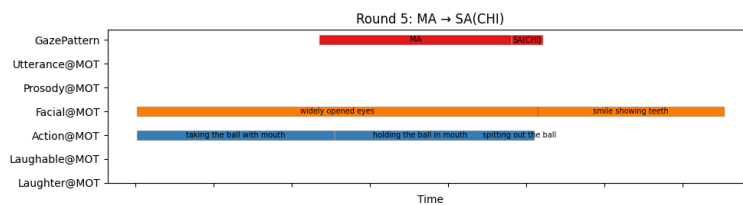
"GazePattern(SA(CHI))", 0, "GazePattern(MA)", 0



['Gaze@CHI(mom)-CONTAINS-Action@MOT(taking the ball with mouth)',
'Gaze@CHI(mom)-CONTAINS-Facial@MOT(widely opened eyes)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(into the distance)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
1],

MA → SA(CHI)

"GazePattern(MA)", 0, "GazePattern(SA(CHI))", 1



['Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
'Gaze@CHI(mom)-CONTAINS-Action@MOT(holding the ball in mouth)',
'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
'Gaze@CHI(mom)-CONTAINS-ActionTemporal@MOT(spitting out the ball-FOLLOWED_BY(holding the ball in mouth))'],

'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(ball)',
1],

SA(CHI)→MA

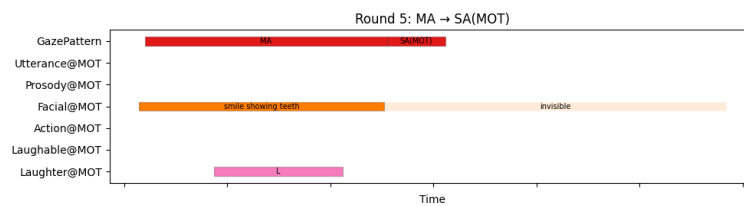
"GazePattern(SA(CHI))", 1, "GazePattern(MA)", 1

['Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(ball)',
'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
1],

['Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(ball)',
'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
1],

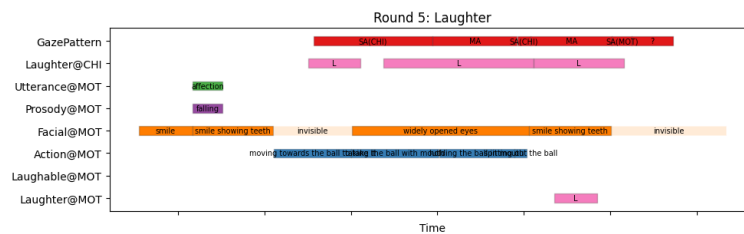
MA→SA(MOT)

"GazePattern(MA)", 1, "GazePattern(SA(MOT))", 0



['Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
'Gaze@CHI(mom)-MEETS-Gaze@CHI(floor)',
'Gaze@CHI(mom)-BEFORE-Action@CHI(looking for the ball)',
1],

Emotion Patterns



First

['Gaze@CHI(mom)-CONTAINS-Action@MOT(moving towards the ball to take it)',
'Gaze@CHI(mom)-CONTAINS-Laughter@CHI(L)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(ball)',
1],

Second

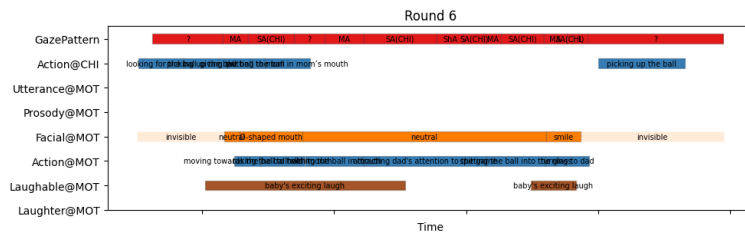
['Gaze@CHI(mom)-CONTAINS-Action@MOT(taking the ball with mouth)',
'Gaze@CHI(mom)-CONTAINS-Facial@MOT(widely opened eyes)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(into the distance)',
'Gaze@CHI(mom)-CONTAINS-Laughter@CHI(L)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
'Gaze@CHI(mom)-CONTAINS-ActionTemporal@MOT(holding the ball in mouth-FOLLOWED_BY(taking the ball with mouth)-FOLLOWS(spitting out the ball))',
'Gaze@CHI(mom)-CONTAINS-Action@MOT(holding the ball in mouth)',
1],

Third

```
[ 'Gaze@CHI(mom)-CONTAINS-Facial@MOT(smile showing teeth)',
  'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-OVERLAPS-Laughter@CHI(L)',
  'Gaze@CHI(mom)-CONTAINS-Laughter@MOT(L)',
  'Gaze@CHI(mom)-MEETS-Gaze@CHI(floor)',
  1],
```

```
[ 'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
  'Gaze@CHI(mom)-CONTAINS-Facial@MOT(smile showing teeth)',
  'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-OVERLAPS-Laughter@CHI(L)',
  'Gaze@CHI(mom)-CONTAINS-Laughter@MOT(L)',
  1],
```

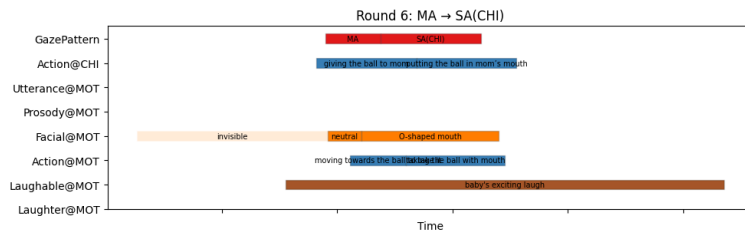
Round 6



Patterns

MA→SA(Chi)

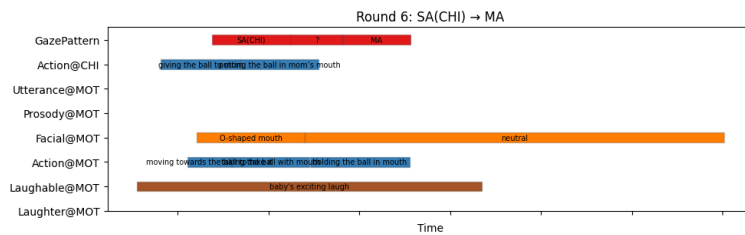
"GazePattern(MA)", 0, "GazePattern(SA(Chi))", 0



```
[ 'Gaze@CHI(mom)-CONTAINS-Action@CHI(giving the ball to mom)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(moving towards the ball to take it)',
  'Gaze@CHI(mom)-CONTAINS-ActionTemporal@MOT(moving towards the ball to take it-FOLLOWS(taking the ball with mouth))',
  'Gaze@CHI(mom)-CONTAINS-Facial@MOT(O-shaped mouth)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(ball)',
  1],
```

SA(Chi)→MA

"GazePattern(SA(Chi))", 0, "GazePattern(MA)", 1

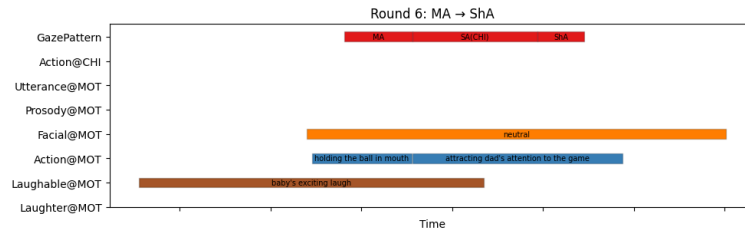


```
[ 'Gaze@CHI(mom)-CONTAINS-Action@CHI(putting the ball in mom's mouth)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(into the distance)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(holding the ball in mouth)',
```

```
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
1],
```

MA→ShA

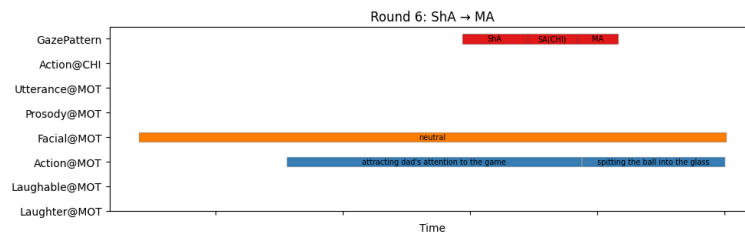
```
"GazePattern(MA)", 1, "GazePattern(ShA)", 0
```



```
['Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(dad)',
"Gaze@CHI(mom)-OVERLAPS-Action@MOT(attracting dad's attention to the game)",
'Gaze@CHI(mom)-MEETS-Gaze@CHI(dad)',
1],
```

ShA→MA

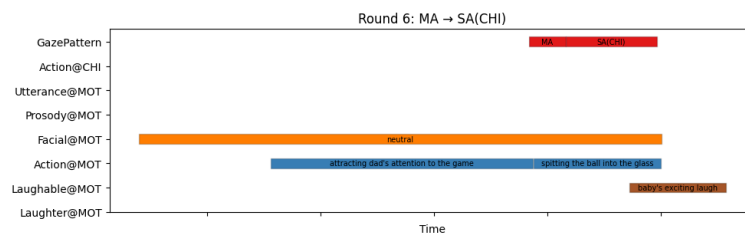
```
"GazePattern(ShA)", 0, "GazePattern(MA)", 2
```



```
['Gaze@MOT(dad)-CONTAINS-Gaze@CHI(dad)',
'Gaze@MOT(dad)-OVERLAPS-Gaze@CHI(mom)',
'Gaze@MOT(dad)-MEETS-Gaze@MOT(child)',
'Gaze@MOT(dad)-BEFORE-Action@MOT(spitting the ball into the glass)',
"Action@MOT(attracting dad's attention to the game)-CONTAINS-Gaze@CHI(dad)",
1],
```

MA→SA(CHI)

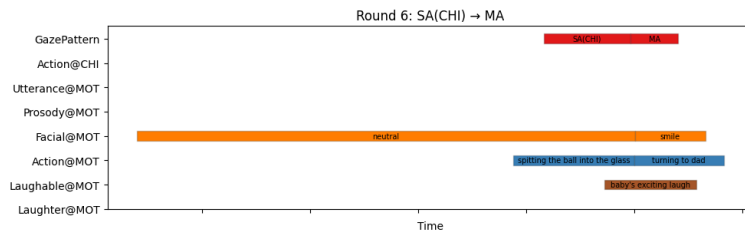
```
"GazePattern(MA)", 2, "GazePattern(SA(CHI))", 3
```



```
['Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting the ball into the glass)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(glass)',
1],
```

SA(CHI)→MA

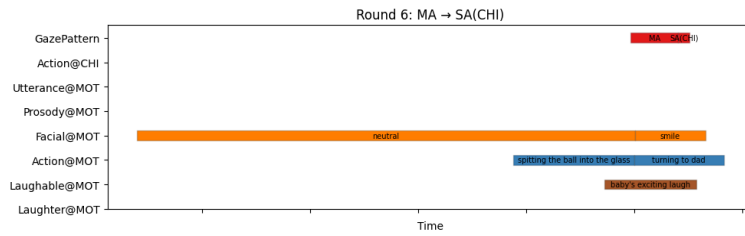
```
"GazePattern(SA(CHI))", 3, "GazePattern(MA)", 3
```



```
[ 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-OVERLAPS-Action@MOT(turning to dad)',
  'Action@MOT(spitting the ball into the glass)-CONTAINS-Gaze@MOT(glass)',
  1],
[ 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-OVERLAPS-Action@MOT(turning to dad)',
  'Gaze@CHI(mom)-OVERLAPS-Facial@MOT(smile)',
  'Action@MOT(spitting the ball into the glass)-CONTAINS-Gaze@MOT(glass)',
  1],
```

MA → SA(CHI)

"GazePattern(MA)", 3, "GazePattern(SA(CHI))", 4



```
[ 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-OVERLAPS-Action@MOT(turning to dad)',
  'Gaze@CHI(mom)-OVERLAPS-Facial@MOT(smile)',
  'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(dad)',
  1],
```

Emotion Pattern



First

```
[ 'Gaze@CHI(ball)-OVERLAPS-Laughter@CHI(L)',
  'Gaze@CHI(ball)-MEETS-Gaze@CHI(mom)',
  'Gaze@CHI(ball)-BEFORE-Gaze@MOT(child)',
  'Gaze@CHI(ball)-BEFORE-Action@MOT(moving towards the ball to take it)',
  1],
```

```
[ 'Laughter@CHI(L)-OVERLAPS-Gaze@CHI(mom)',
  'Laughter@CHI(L)-OVERLAPS-Gaze@MOT(child)',
  'Laughter@CHI(L)-CONTAINS-Facial@MOT(neutral)',
  'Laughter@CHI(L)-OVERLAPS-Action@MOT(moving towards the ball to take it)',
  'Laughter@CHI(L)-OVERLAPS-Facial@MOT(O-shaped mouth)',
  1],
```

Second

Third

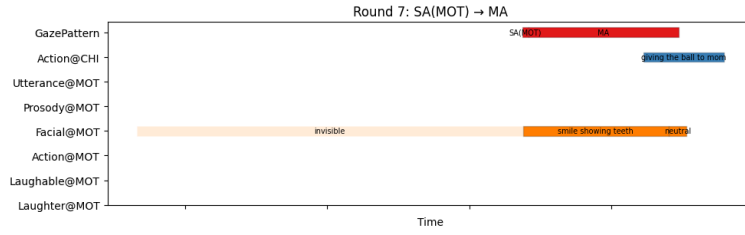
Fourth

Fifth

Round 7



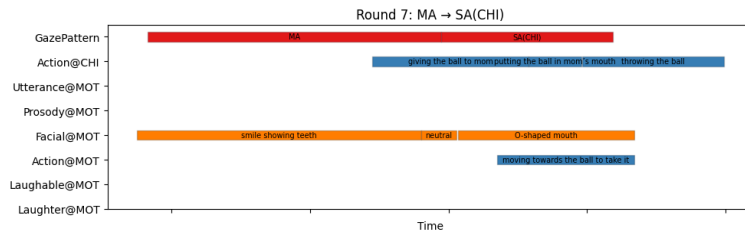
"GazePattern(SA(MOT))", 0, "GazePattern(MA)", 0



```
[ 'Gaze@CHI(ball)-OVERLAPS-Gaze@MOT(child)',
  'Gaze@CHI(ball)-OVERLAPS-Facial@MOT(smile showing teeth)',
  'Gaze@CHI(ball)-MEETS-Gaze@CHI(mom)',
  'Gaze@CHI(ball)-BEFORE-Action@CHI(giving the ball to mom)',
  1],
```

MA→SA(CHI)

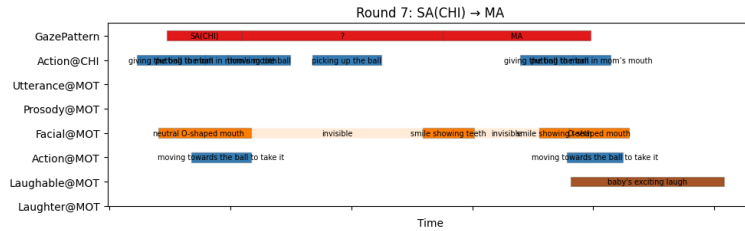
"GazePattern(MA)", 0, "GazePattern(SA(CHI))", 0



```
[ 'Gaze@MOT(child)-CONTAINS-Facial@MOT(smile showing teeth)',
  'Gaze@MOT(child)-OVERLAPS-Gaze@CHI(mom)',
  'Gaze@MOT(child)-OVERLAPS-Action@CHI(giving the ball to mom)',
  'Gaze@MOT(child)-MEETS-Gaze@MOT(ball)',
  1],
```

SA(CHI)→MA

"GazePattern(SA(CHI))", 0, "GazePattern(MA)", 1



```
[ 'Facial@MOT(invisible)-CONTAINS-Gaze@CHI(ball)',
  'Facial@MOT(invisible)-CONTAINS-Action@CHI(picking up the ball)',
  'Facial@MOT(invisible)-OVERLAPS-Gaze@CHI(mom)',
  'Facial@MOT(invisible)-MEETS-Facial@MOT(smile showing teeth)',
  'Facial@MOT(invisible)-BEFORE-Gaze@MOT(child)',
  1],
```

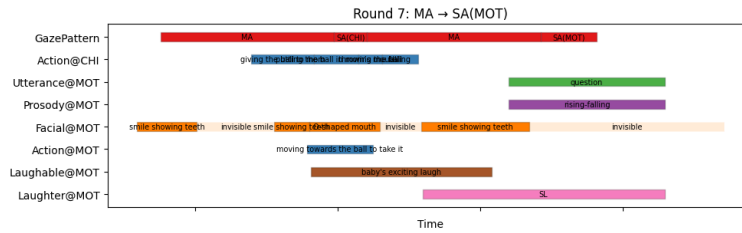
```
[ 'Gaze@CHI(mom)-CONTAINS-Action@CHI(putting the ball in mom's mouth)',
  'Gaze@CHI(mom)-OVERLAPS-Action@CHI(throwing the ball)',
  'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(invisible)',
  'Gaze@CHI(mom)-BEFORE-Gaze@CHI(ball)',
  'Gaze@CHI(mom)-BEFORE-Action@CHI(picking up the ball)',
  1],
```

```
[ 'Facial@MOT(invisible)-CONTAINS-Gaze@CHI(ball)',
  'Facial@MOT(invisible)-CONTAINS-Action@CHI(picking up the ball)',
  'Facial@MOT(invisible)-OVERLAPS-Gaze@CHI(mom)',
```

'Facial@MOT(invisible)-BEFORE-Gaze@MOT(child)',
1],

MA→SA(MOT)

"GazePattern(MA)", 1, "GazePattern(SA(MOT))", 1

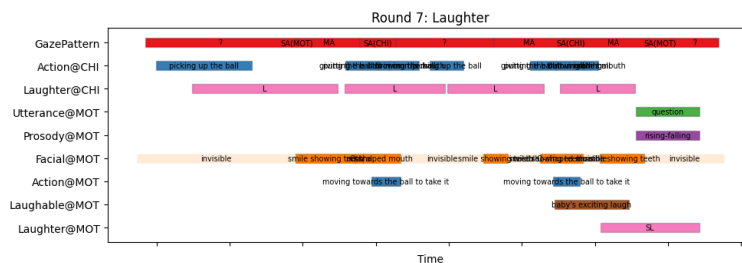


['Gaze@CHI(mom)-CONTAINS-Action@CHI(putting the ball in mom's mouth)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(ball)',
'Gaze@CHI(mom)-CONTAINS-Action@CHI(throwing the ball)',
'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
1],

['Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
'Gaze@CHI(mom)-CONTAINS-Facial@MOT(invisible)',
'Gaze@CHI(mom)-CONTAINS-Action@MOT(moving towards the ball to take it)',
'Gaze@CHI(mom)-CONTAINS-Action@CHI(putting the ball in mom's mouth)',
1],

['Gaze@CHI(mom)-MEETS-Gaze@CHI(aside)',
'Action@MOT(moving towards the ball to take it)-OVERLAPS-Action@CHI(throwing the ball)',
'Action@MOT(moving towards the ball to take it)-OVERLAPS-Gaze@MOT(child)',
1],

Emotion Patterns



First

['Action@CHI(picking up the ball)-BEFORE-Facial@MOT(smile showing teeth)',
'Laughter@CHI(L)-OVERLAPS-Gaze@MOT(child)',
'Laughter@CHI(L)-OVERLAPS-Facial@MOT(smile showing teeth)',
'Laughter@CHI(L)-OVERLAPS-Gaze@CHI(mom)',
1],

Second

['Gaze@CHI(mom)-OVERLAPS-Laughter@CHI(L)',
'Gaze@CHI(mom)-CONTAINS-Action@CHI(giving the ball to mom)',
'Gaze@CHI(mom)-CONTAINS-Facial@MOT(neutral)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(ball)',
'Gaze@CHI(mom)-CONTAINS-Action@MOT(moving towards the ball to take it)',
'Gaze@CHI(mom)-CONTAINS-Action@CHI(putting the ball in mom's mouth)',
'Gaze@CHI(mom)-OVERLAPS-Action@CHI(throwing the ball)',
1],

['Laughter@CHI(L)-CONTAINS-Action@CHI(putting the ball in mom's mouth)',
'Laughter@CHI(L)-CONTAINS-Action@CHI(throwing the ball)',

```
'Laughter@CHI(L)-CONTAINS-Laughable@CHI(baby intentionally throws away the ball)',
'Laughter@CHI(L)-OVERLAPS-Gaze@CHI(ball)',
'Laughter@CHI(L)-OVERLAPS-Action@CHI(picking up the ball)',
'Action@CHI(giving the ball to mom)-CONTAINS-Facial@MOT(neutral)',
'Action@CHI(giving the ball to mom)-OVERLAPS-Gaze@MOT(ball)',
1],
```

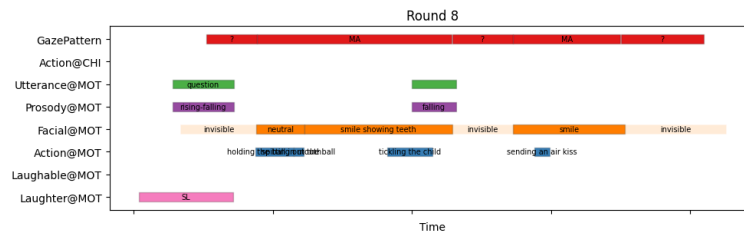
Third

```
['Action@CHI(picking up the ball)-BEFORE-Action@CHI(giving the ball to mom)',
'Action@CHI(picking up the ball)-BEFORE-Facial@MOT(smile showing teeth)',
'Laughter@CHI(L)-OVERLAPS-Gaze@CHI(mom)',
'Laughter@CHI(L)-CONTAINS-Facial@MOT(smile showing teeth)',
'Laughter@CHI(L)-OVERLAPS-Gaze@MOT(child)',
'Laughter@CHI(L)-CONTAINS-Facial@MOT(invisible)',
'Laughter@CHI(L)-OVERLAPS-Action@CHI(giving the ball to mom)',
1],
```

Forth

```
['Gaze@CHI(mom)-CONTAINS-Action@CHI(putting the ball in mom's mouth)',
'Gaze@CHI(mom)-CONTAINS-Laughter@CHI(L)',
'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(ball)',
'Gaze@CHI(mom)-CONTAINS-Action@CHI(throwing the ball)',
'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
1]
```

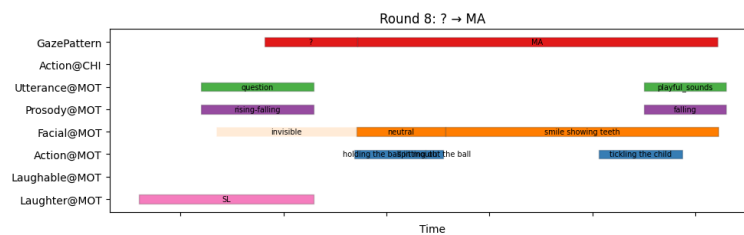
Round 8



Gaze Patterns

? → MA

"GazePattern(?)", 0, "GazePattern(MA)", 0)

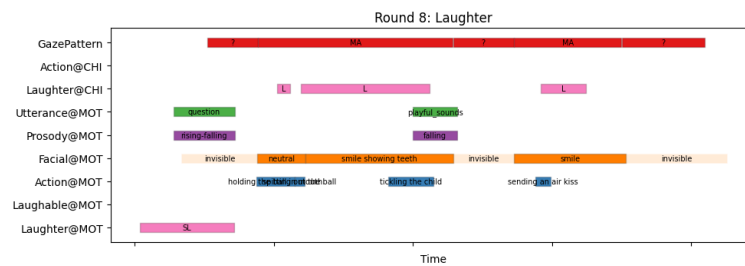


```
['Utterance@MOT(question)-OVERLAPS-Facial@MOT(invisible)',
'Utterance@MOT(question)-OVERLAPS-Gaze@CHI(aside)',
'Utterance@MOT(question)-BEFORE-Gaze@CHI(mom)',
'Utterance@MOT(question)-BEFORE-ActionTemporal@MOT(holding the ball in mouth-FOLLOWS(spitting out the ball))',
'Utterance@MOT(question)-BEFORE-Gaze@MOT(child)',
1],
```

```
['Facial@MOT(invisible)-BEFORE-Utterance@MOT(playful_sounds)',
'Gaze@CHI(aside)-MEETS-Gaze@CHI(mom)',
'Gaze@CHI(aside)-BEFORE-Action@MOT(holding the ball in mouth)',
'Gaze@CHI(aside)-BEFORE-Gaze@MOT(child)',
1]
```

MA→?

Emotion Patterns



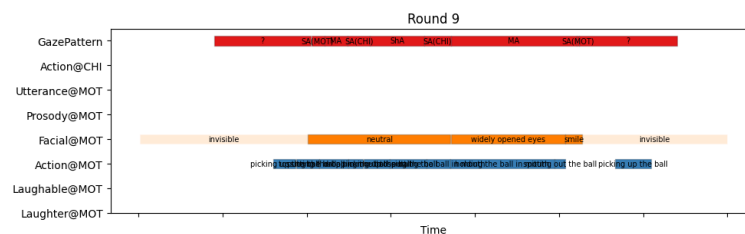
First

```
[ 'Gaze@CHI(mom)-CONTAINS-Action@MOT(holding the ball in mouth)',
  'Gaze@CHI(mom)-CONTAINS-ActionTemporal@MOT(holding the ball in mouth-FOLLOWS(spitting out the ball))',
  'Gaze@CHI(mom)-CONTAINS-Facial@MOT(neutral)',
  'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-CONTAINS-Laughter@CHI(L)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
  1]
```

Second

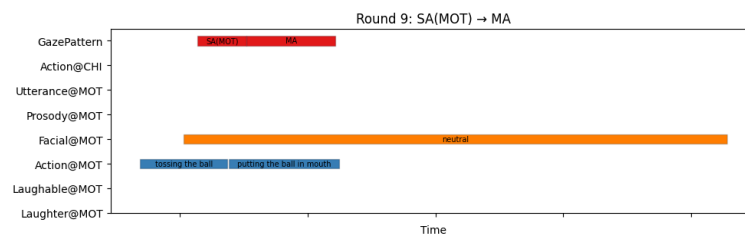
Third

Round 9



Patterns

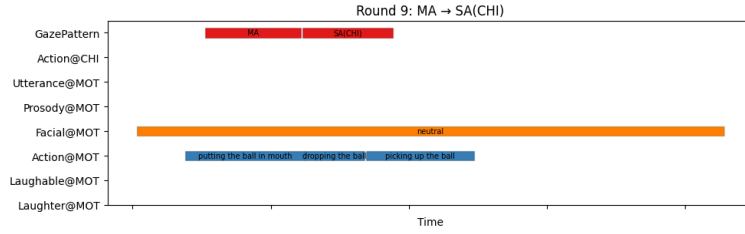
SA(MOT)→MA



```
[ 'Gaze@CHI(ball)-CONTAINS-Action@MOT(tossing the ball)',
  'Gaze@CHI(ball)-CONTAINS-ActionTemporal@MOT(tossing the ball-FOLLOWS(putting the ball in mouth))',
  'Gaze@CHI(ball)-OVERLAPS-Facial@MOT(neutral)',
  'Gaze@CHI(ball)-OVERLAPS-Gaze@MOT(child)',
  'Gaze@CHI(ball)-OVERLAPS-Action@MOT(putting the ball in mouth)',
  'Gaze@CHI(ball)-OVERLAPS-ActionTemporal@MOT(putting the ball in mouth-FOLLOWED_BY(tossing the ball))',
  'Gaze@CHI(ball)-MEETS-Gaze@CHI(mom)',
  1],
```

MA→SA(CHI)

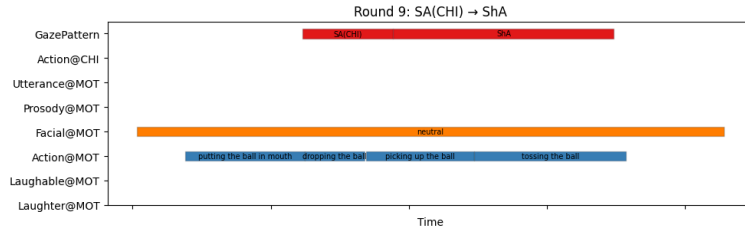
"GazePattern(MA)", 0, "GazePattern(SA(CHI))", 0



```
[ 'Gaze@CHI(ball)-CONTAINS-Action@MOT(tossing the ball)',
  'Gaze@CHI(ball)-CONTAINS-ActionTemporal@MOT(tossing the ball-FOLLOWS(putting the ball in mouth))',
  'Gaze@CHI(ball)-OVERLAPS-Gaze@MOT(child)',
  'Gaze@CHI(ball)-OVERLAPS-Action@MOT(putting the ball in mouth)',
  'Gaze@CHI(ball)-OVERLAPS-ActionTemporal@MOT(putting the ball in mouth-FOLLOWED_BY(tossing the ball))',
  'Gaze@CHI(ball)-MEETS-Gaze@CHI(mom)',
  1],
```

SA(CHI)→ShA

"GazePattern(SA(CHI))", 0, "GazePattern(ShA)", 0

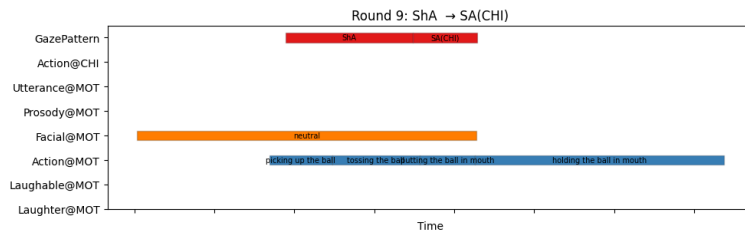


```
[ 'Action@MOT(putting the ball in mouth)-OVERLAPS-Gaze@CHI(mom)',
  'Action@MOT(putting the ball in mouth)-OVERLAPS-Gaze@MOT(ball)',
  'Action@MOT(putting the ball in mouth)-BEFORE-Action@MOT(picking up the ball)',
  'Action@MOT(putting the ball in mouth)-BEFORE-Gaze@CHI(ball)',
  1],
```

```
[ 'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(ball)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(dropping the ball)',
  'Gaze@CHI(mom)-OVERLAPS-Action@MOT(picking up the ball)',
  'Gaze@CHI(mom)-MEETS-Gaze@CHI(ball)',
  1],
```

ShA→SA(CHI)

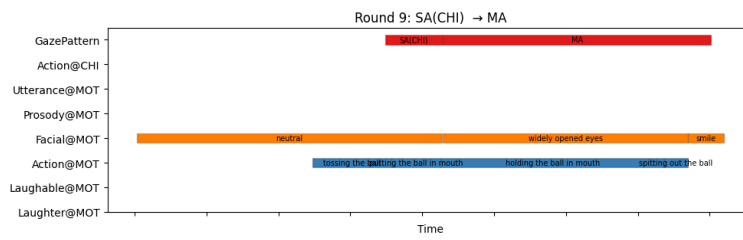
"GazePattern(ShA)", 0, "GazePattern(SA(CHI))", 1



```
[ 'Gaze@MOT(ball)-CONTAINS-Gaze@CHI(ball)',
  'Gaze@MOT(ball)-CONTAINS-Action@MOT(tossing the ball)',
  'Gaze@MOT(ball)-CONTAINS-ActionTemporal@MOT(tossing the ball-FOLLOWED_BY(picking up the ball)-FOLLOWS(putting the ball in mouth))',
  'Gaze@MOT(ball)-OVERLAPS-Gaze@CHI(mom)',
  1],
```

SA(CHI)→MA

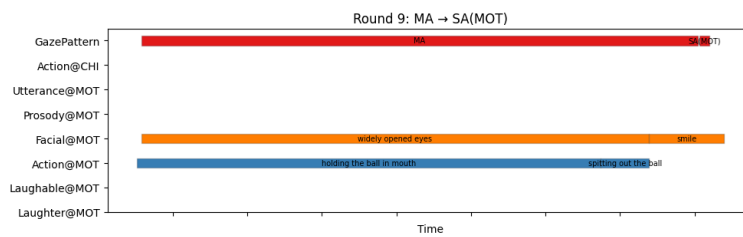
"GazePattern(SA(CHI))", 1, "GazePattern(MA)", 1



```
[ 'Gaze@CHI(mom)-CONTAINS-Action@MOT(holding the ball in mouth)',
  'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
  1],
```

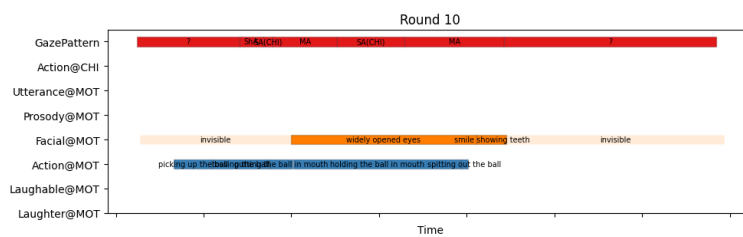
MA→SA(MOT)

"GazePattern(MA)", 1, "GazePattern(SA(MOT))", 0



```
[ 'Gaze@CHI(mom)-CONTAINS-Facial@MOT(widely opened eyes)',
  'Gaze@CHI(mom)-OVERLAPS-Gaze@MOT(child)',
  'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
  'Gaze@CHI(mom)-BEFORE-Gaze@CHI(ball)',
  1],
```

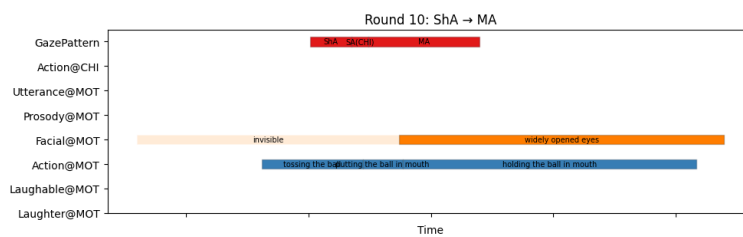
Round 10



Patterns

ShA→MA

"GazePattern(ShA)", 0, "GazePattern(MA)", 0



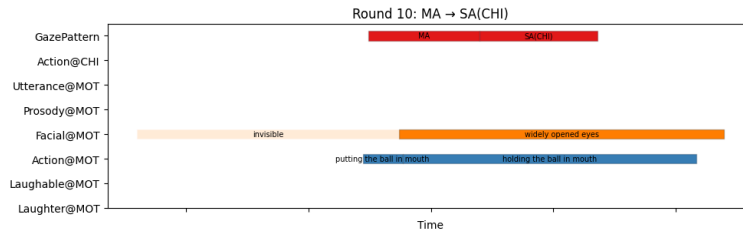
```
[ 'Gaze@CHI(ball)-OVERLAPS-Gaze@MOT(ball)',
  'Gaze@CHI(ball)-MEETS-Gaze@CHI(mom)',
```

'Gaze@CHI(ball)-BEFORE-Action@MOT(putting the ball in mouth)',
 'Gaze@CHI(ball)-BEFORE-Gaze@MOT(child)',
 1],

['Gaze@CHI(ball)-OVERLAPS-Gaze@MOT(ball)',
 'Gaze@CHI(ball)-MEETS-Gaze@CHI(mom)',
 'Gaze@CHI(ball)-BEFORE-Action@MOT(putting the ball in mouth)',
 'Gaze@CHI(ball)-BEFORE-Gaze@MOT(child)',
 1],

MA→SA(CHI)

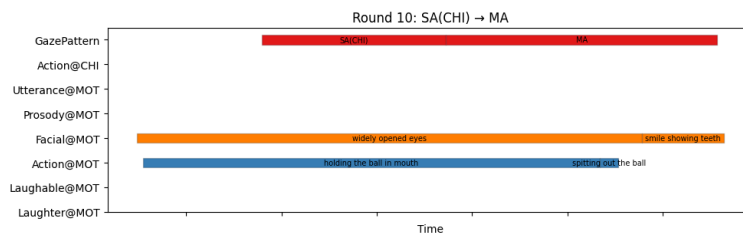
"GazePattern(MA)", 0, "GazePattern(SA(CHI))", 1



['Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
 'Gaze@CHI(mom)-CONTAINS-Facial@MOT(widely opened eyes)',
 'Gaze@CHI(mom)-CONTAINS-Action@MOT(holding the ball in mouth)',
 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(aside)',
 1],

SA(CHI)→MA

"GazePattern(SA(CHI))", 1, "GazePattern(MA)", 1



['Gaze@CHI(mom)-CONTAINS-Action@MOT(holding the ball in mouth)',
 'Gaze@CHI(mom)-CONTAINS-ActionTemporal@MOT(holding the ball in mouth-FOLLOWS(spitting out the ball))',
 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(aside)',
 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
 1],

['Gaze@CHI(mom)-CONTAINS-Gaze@MOT(aside)',
 'Gaze@CHI(mom)-CONTAINS-Gaze@MOT(child)',
 'Gaze@CHI(mom)-CONTAINS-ActionTemporal@MOT(spitting out the ball-FOLLOWED_BY(holding the ball in mouth))',
 'Gaze@CHI(mom)-CONTAINS-Action@MOT(spitting out the ball)',
 1]

Comparison

Gaze Pattern

	MA→SA(CHI)	SA(CHI)→MA	MA→SA(MOT)	SA(MOT)→MA	MA→ShA	SA(CHI)→ShA	ShA→MA	ShA→SA(MOT)	SA(CHI)→MA
1	✓	✓			✓				
2	✓✓	✓				✓			
3	✓	✓	✓	✓					
4	✓			✓		✓		✓	
5	✓	✓✓	✓						
6	✓✓	✓			✓		✓		

	MA→SA(CHI)	SA(CHI)→MA	MA→SA(MOT)	SA(MOT)→MA	MA→ShA	SA(CHI)→ShA	ShA→MA	ShA→SA(MOT)	SA(CH
7	✓	✓	✓	✓					
8									
9	✓	✓	✓	✓					✓
10	✓	✓					✓		

Most popular relations are:

MA→SA(CHI)

Usually happens in the beginning of the round when mother attracts child's attention and puts the ball in the mouth. At first, the mother and child share eye contact during mother's actions but then she either looks into the distance (being concentrated on putting the ball in the mouth) or on the floor (finding the aim for spitting out the ball) - the child continues looking at the mother's actions. This happens in round 1 and 2.

In the round 3, she takes the glass - a new aim where to spit out the ball, a surprise action for the child. While the mother is focused on the glass, the child continues looking at the mother.

In the round 4, The child's gaze overlaps with the mother's gaze and question which means that the child already expected the question that mother was previously using to attract the kid. Then, the mother looks into the distance while putting the ball in mouth.

In the round 6, the child picks up the ball and is giving it to her mother while being focused on her. While the mother shifts her attention from the child to the ball. This happens in round 7 too.

In the round 9, the child looks at the mother while she is putting the ball in her mouth and mother's gaze shifts from the child.

In the round 10, the child looks at the mother while she is holding the ball in the mouth and playfully looking at the right and at the left.

To conclude, the child keeps being engaged to mother's actions after the shift from Mutual Attention. Meanwhile, the mother is looking at the action objects, performing actions or looking away.

SA(CHI)→MA

This usually happens during the action in the middle or second part of the round when the mother is performing some actions and looks at the child who is already looking at her, meaning that the child is watching the mom while she looks somewhere else. Usually this shift appears when mother is preparing for some action (spitting out the ball) and needs to ensure the child's engagement or when she wants to see the child's reaction.

For example, in the round 3, the mother looks at the glass, spits the ball into it, and briefly overlaps with the child's gaze to see the reaction. While in the round 1 participants obtain mutual gaze when mother is putting the ball in her mouth and keep mutual gaze when mother is holding the ball in her mouth - preparation/pause for the unexpected event.

In round 6 there are two cases like this:

- similar to round 1 - obtaining MA when holding the ball;
- similar to round 6 - to view the child's reaction.

In round 7, obtains MA before because mother is looking at the child as care giver and the child is planning to make a prank.

In round 10, the mother performs playful gazes aside and then looks at the child to see the reaction and prepare for the spitting out the ball.

MA→SA(MOT)

During the round 3, the child is already aware of the sequence of the actions. She already knows that the mother will spit out the ball. The mother adds a new detail to the game - the glass. So after spitting out the ball, mom places the glass with the ball on the floor while child's gaze stays on the ball.

In round 5 after mother's action of spitting out the ball, the child starts looking for the ball. This is why the gaze switches from mother to the floor

In round 7 the mother is looking at the child because she is doing some actions (putting the ball in mother's mouth) and then her gaze switches to somewhere aside because she pranked mother - intentionally threw the ball.

In round 9 the child's gaze switches from mother to ball after mother spitted it out. However, the child switched her gaze quite late perhaps because the mother was doing funny facial expression.

Emotion Patterns

In the first two rounds, the child's laughter is triggered by a violation of object schemas. The ball is spit out, which deviates from its typical use and → an unexpected element. The mother smiles showing that the event is positive. In the second round, the mother also laughs after spitting out the ball - the shared amusement and showing that the unusual action is a funny part of the game.

By round 3, the child begins to anticipate the mother's actions. She laughs both before and after the event, suggesting an understanding of the sequence. Here again, there is a parallel laughter between mother and child.

In round 5, the child experiences a violation of social role schemas. The child learned the sequence of the game (ball → mouth → spit), so now she takes the initiating role herself by putting the ball in her own mouth. She laughs because of the new role and the novelty of becoming an active agent in the game.

In round 6, the child begins to intentionally prank the mother. Instead of placing the ball in the mother's mouth as expected, she pretends to commit to the act, only to intentionally throw the ball away at the last moment. She laughs before the action, predicting the prank, and again after executing it. A similar pattern occurs in round 7.

