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*PAN* is published twice a year in June and December. Deadline for manuscripts is one month before publication (*i.e.* the ends of May and November).

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## Playing with His Leg: A Case of Imaginary Social Play by an Adolescent Male Chimpanzee at Bossou?

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### INTRODUCTION

Human children sometimes create imaginary playmates. Together with other forms of pretense, imaginary social play is considered to be an essential part of human cognitive development. For example, it is argued that imaginary playmate fantasy occurs frequently among human children and it facilitates social development by making possible the practice of play frame negotiation<sup>1</sup>. Some authors restrict imaginary social play to *Homo sapiens*, emphasizing that the complex interactions that characterize the play with an imaginary companion constitute

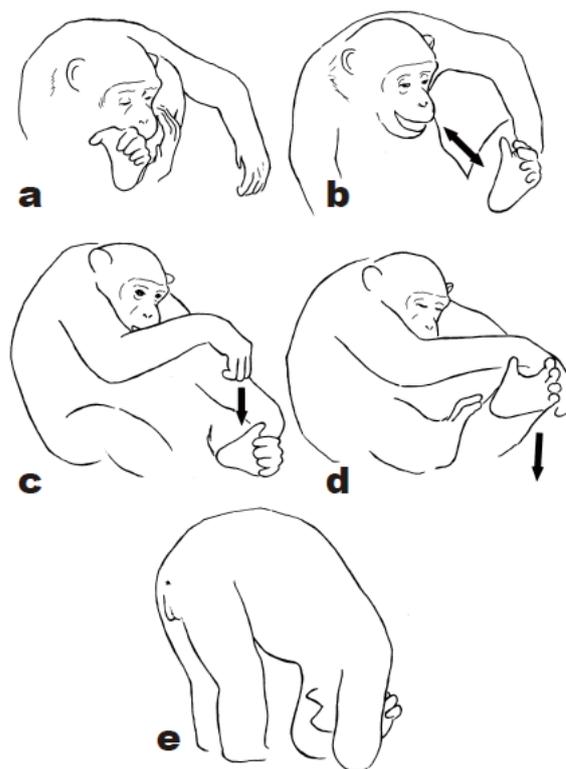
a form of pretense that is beyond nonhuman animals<sup>2</sup>. Besides “playmates,” imagination itself or pretense is an important aspect of the human mind. However, this concept is rarely the main topic of the studies on nonhuman primates (but see ref 3, 4). There are scattered reports of language-trained or encultured apes showing imaginary play or some form of pretense<sup>3,5-10</sup>. These observations were often accompanied with the use of ASL or lexigrams that could represent abstract concepts in the minds of the apes. In addition, when the imaginary play was “social” (i.e. oriented toward an imaginary companion), the direct targets of the behaviors were always human artifacts (such as dolls) whose shapes often resemble, at least to observers, something animate.

There are also some anecdotal reports of imaginary plays by the wild apes<sup>11-16</sup> such that a juvenile chimpanzee treated a log as if it were a baby. As some authors have pointed out, such examples have to be treated with caution. Great apes often handle objects for no particular purpose, and some of the cases are not necessarily evidence of imaginary play. However, two Mahale cases<sup>15,16</sup> are more convincing because the players exhibited play panting although they were engaging in solitary play. This vocalization is usually emitted when playing with a “social companion”<sup>17</sup> rather than during solitary play. In addition, some behavioral elements in these two cases (hitting, biting, mounting, aeroplane, etc.) are usually oriented to conspecifics. These two characteristics (play panting and socially oriented behaviors) may be more reliable indicators for imaginary social play. Thus far, such examples have been reported only from Mahale. In this paper, I report the first case of possible imaginary social play from Bossou, Republic of Guinea that included these two characteristics.

## OBSERVATION

On February 18, 2003, Tua (an old male) and Poni (a male born in 1993) were found together with other chimpanzees at the Gban hill in the morning. At approximately 8:20 am, the two started to move separately away from others to Gein hill across the road. At 10:55 am, Poni walked backwards with his mouth open (showing play face) to Tua. It is possible that Poni was soliciting Tua to play; however, Tua did not respond, and Poni then galloped in front of Tua. After feeding and moving for a while, at 11:14 am, Tua began to sleep in the bush. Poni continued to feed nearby. At 11:41 am, Poni’s play panting was audible from the bush where he had been feeding. I moved to a spot from where Poni was visible and started to videotape his actions. After biting the pith of the undergrowth vegetation a little, he moved a few meters away and resumed to play by himself by lying upward in the bush, holding his legs to his chest, and play panting repeatedly. At 11:45:46 am, he sat up, and with a play face, he pushed his own legs against the ground. Then after putting his face close to the legs, he began to bite his left leg (Figure 1a). He paused for a while and then resumed biting his left leg for approximately 1 min. During this, his body was vibrating due to hard play panting.

At 11:47:14 am, he paused playing and did not display a play face. After 10 s, he started observing his left leg,



**Figure 1. Examples of socially oriented behaviors by Poni during the play (all images drawn from the video footage).**

- a) Biting his left ankle while supporting it with the right hand.
- b) Moving the left foot back and forth toward the face while holding it with the left hand. It could be interpreted that the leg was trying to escape while he was trying to catch and bite it.
- c) Hitting his left leg with the right knuckle repeatedly (3–12 times).
- d) Pressing down the left leg against the ground with both hands.
- e) Raising the hips by pressing down the head in his arms. A similar posture is also observed during locomotor play; however, in this context, it could be interpreted that he was guarding himself from someone.

and after extending the left hand to hold the leg and pull it toward himself (Figure 1b), he again bit the leg for 15 s. He sat straight and began to hit the left leg with the right hand (Figure 1c) and then he pressed the leg down against the ground with both hands (Figure 1d). He then pirouetted and again pressed down the leg. He then hit the left leg with the right hand in three intermittent sequences. After stirring restlessly (presumably tickling himself) for a while, he got up and pressed his head down in his arms against the ground while raising his hips (Figure 1e). At 11:51:20 am, upon hearing the calls of other individuals some distance away, he screamed slightly and stopped playing. He approached Tua and started to groom him.

## DISCUSSION

It is notoriously difficult to define animal play<sup>18</sup> because anything peculiar or anything different from the normal behavioral categories could be described as play. The above case is considered play due to the presence of the play face and play panting, which are only seen in

the context of play. In addition, socially oriented behavioral elements such as biting, hitting, and pressing down against the ground occurred frequently. Thus, this case appears highly similar to what has been described as “imaginary social play” in Mahale chimpanzees<sup>14</sup>. However, since imagination cannot be directly observed, any proposed example of imaginary play can be criticized. For example, Call and Tomasello<sup>19</sup> were not convinced the case of imaginary ant-dipping at Gombe<sup>11</sup>, because many other interpretations are also possible. Similarly, what may look like pretense can always be interpreted as something other than pretense<sup>20</sup>. Thus, alternative explanations may be possible for Poni’s behavior. One possibility is that Poni’s behavior was abnormal. However, Poni had never shown any evidence of mental or physical illness. Another possibility is that Poni’s play was just an extension of the usual solitary play (i.e. locomotor or object play). But then we need to explain why he delivered physical stimulation to his own leg when there were many external objects that could be played with. It is unlikely that he did this only to play pant. Another difficulty with this interpretation is that play panting does not occur reflexively in response to physical stimuli. Self-tickling usually does not cause humans to laugh spontaneously even when the stimulation is similar to that arising by being tickled by others. A final possible interpretation is that this was truly a case of imaginary social play, in which Poni treated his left leg as if it were a social playmate, and directed socially oriented behaviors toward it. Since we can never obtain direct knowledge about others’ mental states, the imagination of others (whether apes or humans) cannot be proved. We cannot completely rule out alternative interpretations, but nor can imagination be ruled out completely. This case may be a rare case of imaginary play in wild great apes, and the first one to be accompanied by play panting and socially oriented behaviors in West African chimpanzees. The unique aspect of this example is that the direct target was the individual’s own body (the left leg, in particular) instead of any external object. This indicates that Poni played two different roles simultaneously—one was to bite and the other was to be bitten.

For Taylor and Carlson<sup>2</sup>, imaginary companions (IC) are unique to humans because IC of human children are often sustained for several months and usually have their own personality. Thus far, we have no evidence that the imaginary playmates of chimpanzees are sustained or have personalities; it may well be impossible to prove the personality of an imaginary playmate through observation. Thus, according to their criteria, chimpanzees would not have IC even if they were capable of imagination. However, Poni’s behavior can plausibly be interpreted as imaginary social play, in that behavioral elements that are usually directed to live social playmates were repeatedly directed to objects (including his own body and empty space). It appears premature to exclude nonhuman animals from the realm of imaginary social play.

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#### <NOTE>

### A Wild Chimpanzee Birth at Mahale

Koichiro Zamma<sup>1,3</sup>, Tetsuya Sakamaki<sup>2,3</sup> & Rashidi Shabani