Cognition Animale et Psychologie Humaine

Licence de Psychologie 2ème Année – S4UE6 – UE Libre

Cognition sociale chez l'animal

1. Introduction à la cognition animale
2. Reconnaissance de soi et des congénères, Intentionnalité
3. Communication, Langage et Culture
4. Théorie de l'esprit chez le chimpanzé
5. Auto-organisation et psychoéthologie

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Psychologie Neurosciences Cognition Affectivité

UFR S.H.S Sciences de l'Homme et de la société

Université de Rouen

- Ce document est destiné aux étudiants de Psychologie qui suivent l'UE libre Cognition Animale et Psychologie Humaine à l'Université de Rouen. Il sert de support illustré au cours de V. Roy mais ne dispense en aucun cas de la présence aux enseignements.

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- Pour me contacter : **vincent.roy@univ-rouen.fr**

Bibliographie

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- Quand les singes prennent le thé – De la culture animale, Frans de Waal (BU Sciences 591.5 WAA).
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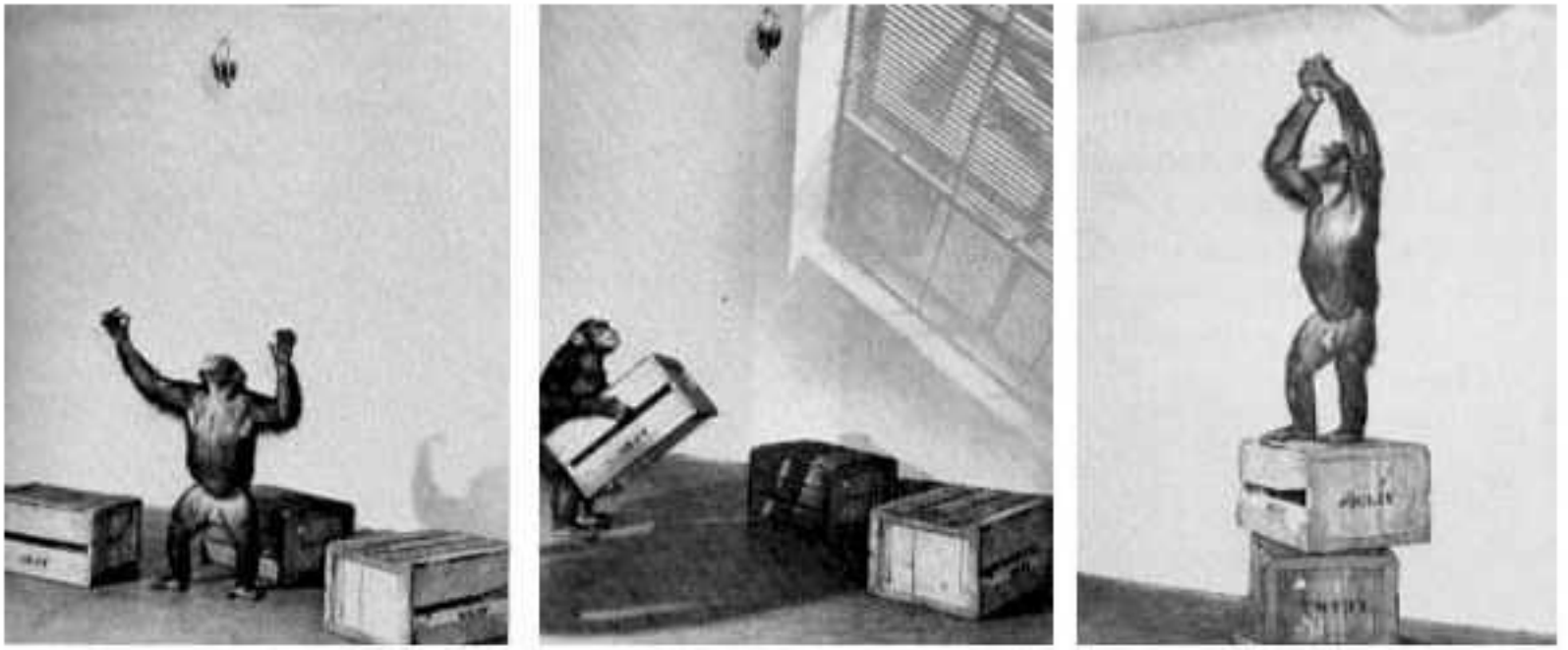
Does the chimpanzee have a theory of mind? Premack & Woodruff (1978)

- Köhler (1925) : Insight / Saut sur des objets en mouvement

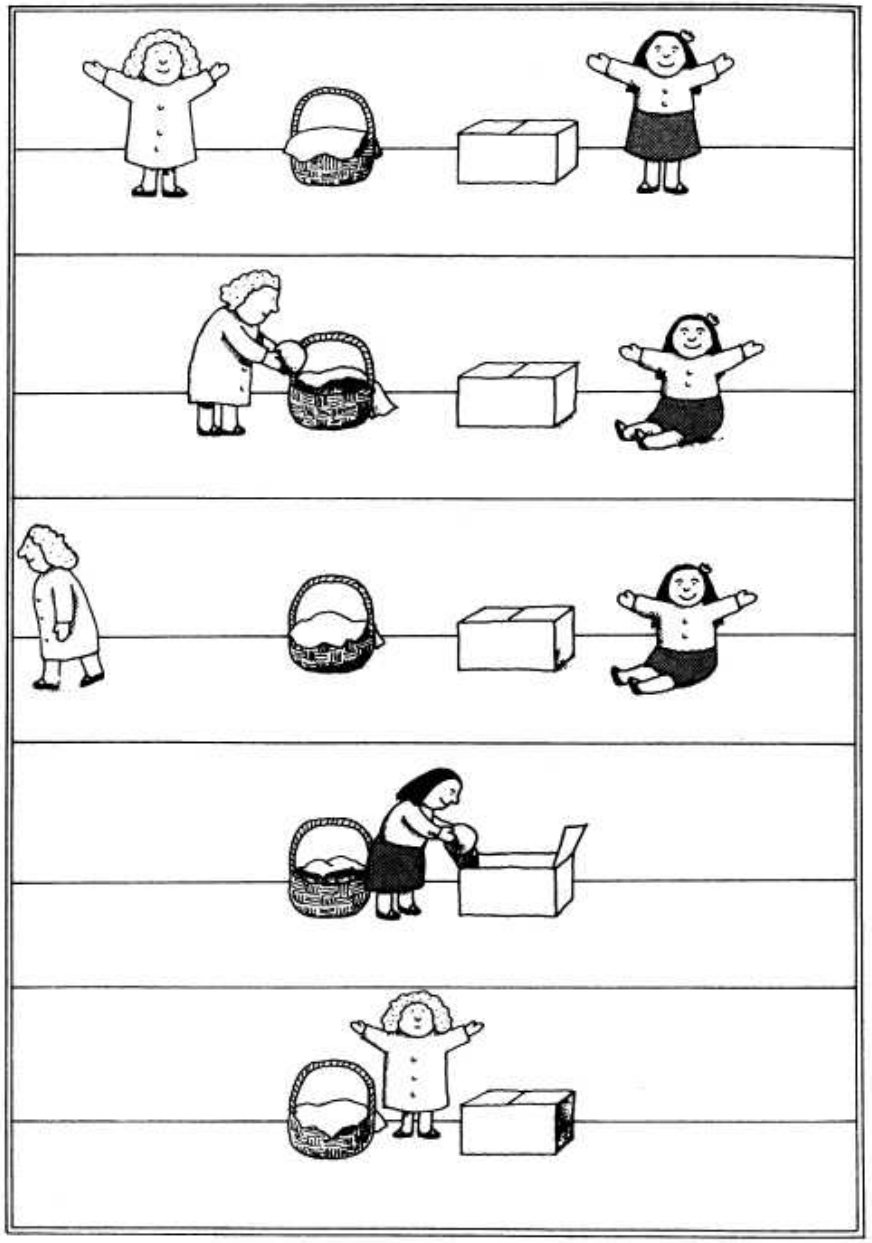


- Elisabeth (Premack, 1976) tire sur une couverture pour ramener à elle une balle
- Les chimpanzés peuvent être des « physiciens », peuvent-ils également être des « psychologues » ? Peuvent-ils savoir ce savent les autres et quels sont leurs intentions ?

Does the chimpanzee have a theory of mind? Premack & Woodruff (1978)

- Purpose / intention
  - John believes in ghosts
  - He thinks he has a fair chance of winning
  - Paul knows that I don't like roses
  - She is guessing when she says that
  - I doubt that Mary will come
  - Bill is only pretending
  - Harry doubts that Marry knows that John thinks he will win

Théorie de l'esprit



Capacité à inférer des états mentaux à autrui (intentions et buts, perception et connaissances, croyances) et à comprendre qu'ils peuvent différer des ses propres états mentaux

In the Sally-Ann task, shown in Figure 1, the following scenario is enacted either with two dolls or two real people: Sally has a basket and Anne has a box. Sally puts a marble into her basket, and then she goes out for a walk. While she is outside, naughty Anne takes the marble from the basket and puts it into her own box. Now Sally comes back from her walk and wants to play with her marble. Where will she look for the marble? The answer seems obvious to a 4 year old child: Sally will look inside her basket. Why? Because that is where Sally *thinks* it is. The marble is really in Anne's box, but Sally doesn't know this. She was not there when Anne transferred the marble. Children with autism, with a mental age of 4 years and above, had difficulty with this task. Unlike normally developing children, and unlike children with Down syndrome, they indicated that Sally would look in Anne's box.

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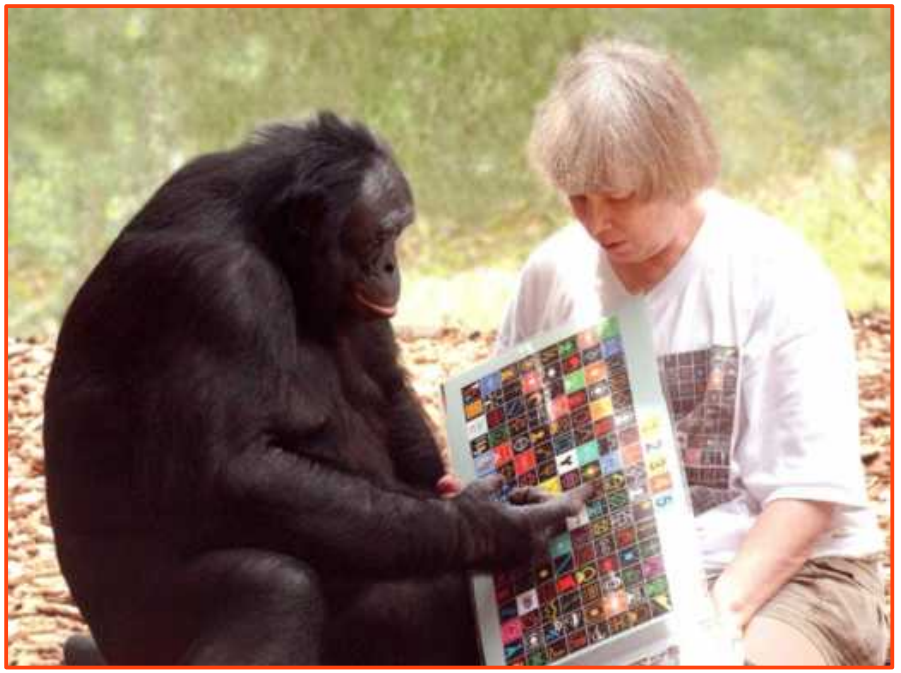
Quelles capacités chez le chimpanzé ?



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Does the chimpanzee have a theory of mind? Premack & Woodruff (1978)

- Premack & Woodruff (1978) font l'hypothèse d'une théorie de l'esprit chez le chimpanzé, pas très différente de celle chez l'homme, dans le sens où l'individu peut attribuer des états mentaux à lui même, à un congénère (même espèce ou non)

- Sarah : scénarios vidéo dans lesquels un acteur cherche à atteindre un but. Elle doit ensuite montrer la solution sur une image fixe
  - Dans la plupart des cas elle donne la bonne réponse dès les premiers essais

Trois explications à la réussite de Sarah

1. Présence sur la diapo correcte des éléments qui permettent de résoudre le problème. Cela est vite contrôlé et réfuté
2. Sarah a déjà rencontré ce problème au préalable sous une autre forme et elle généralise ses actions à la situation présente (c'était peut être le cas dans la 1ère expérience de Premack & Woodruff)
3. Possibilité d'une théorie de l'esprit : Sarah connaît le but de l'acteur (attraper les bananes) et pense qu'il connaît la solution

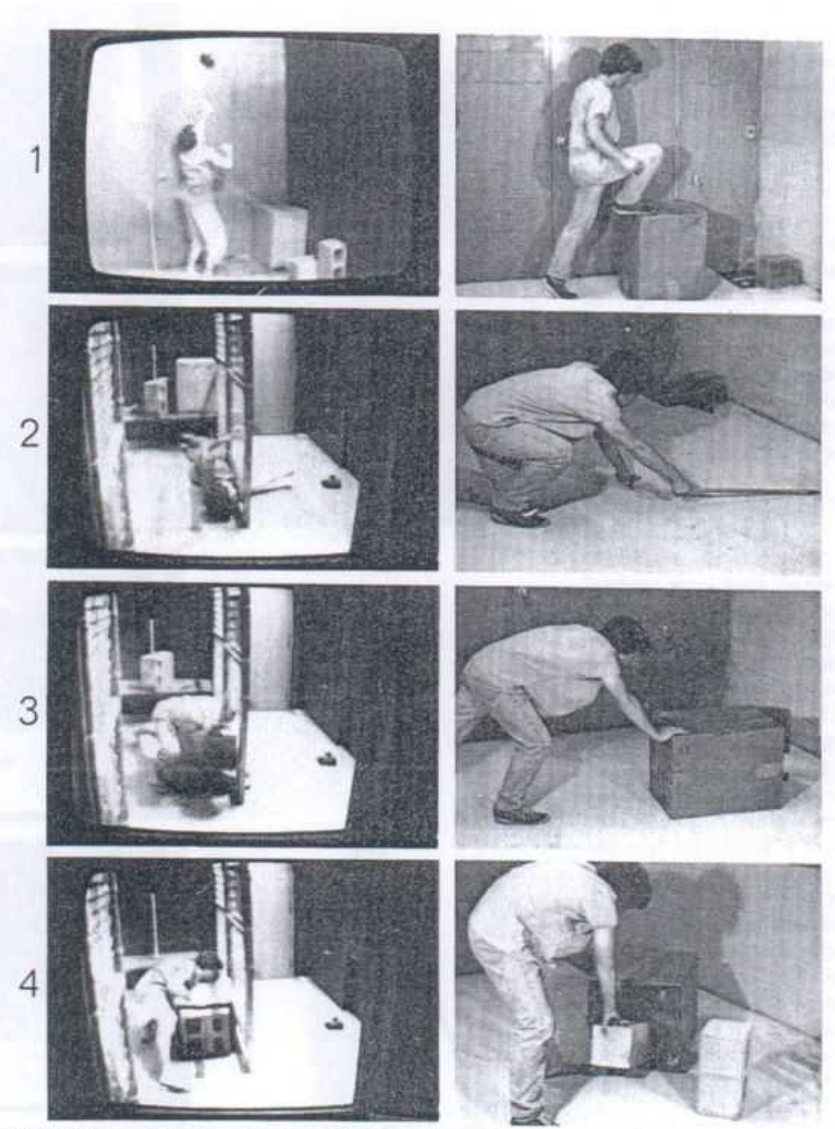

Fig. 1. Photographic reproductions of the four televised problem scenes in test 1 (left column) and of the color-photograph solutions (right column). Photographs of the television monitor in the left column were taken during the last 5 seconds of each 30-second videotaped scene. The correct means for solving each problem is portrayed in the photograph directly to the right of each problem scene. In problem 1, the trainer attempted to reach up toward bananas suspended by a rope from the ceiling; in problem 2, to reach under the wire mesh partition toward bananas on the floor; in problem 3, to reach around an intervening box toward bananas on the floor outside the cage; and in problem 4, to push aside a box filled with cement blocks, which obstructed his reach toward bananas on the floor outside the cage. In solution 1, the trainer stepped on a box; in solution 2, he reached out with a wooden rod; in solution 3, he pushed laterally on a box; and in solution 4, he lifted blocks out of a box.

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Expériences plus complexes

1. Problème pour brancher un sèche cheveux, sortir d'une cage sans la clé, utiliser un tuyau d'arrosage non branché...
2. Il y a 3 réponses possibles par scénario et Sarah trouve la solution pratiquement à 100%
3. What would the actor do in the situation?, what should he do?, what would you like to see him do?

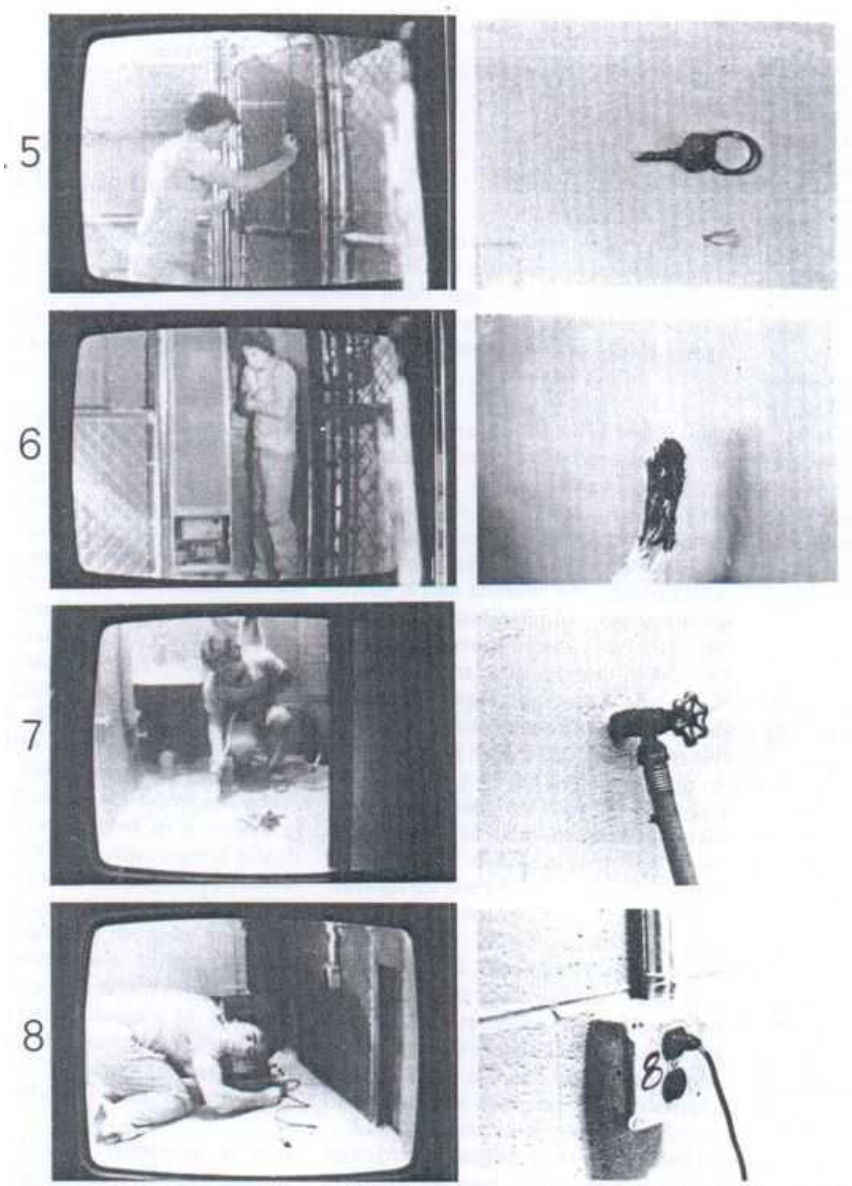

Fig. 2. Photographic reproductions of the four televised problem scenes in test 2 (left column) and of the color-photograph solutions (right column). Photographs of the television monitor in the left column were taken during the last 5 seconds of each 30-second videotaped scene. In problem 5, the trainer struggled to escape from a locked cage, alternately grasping the bars of the cage and the padlock on the door; in problem 6, he shivered, clasped his arms to his chest, and slapped the gas heater on the wall; in problem 7, he attempted to wash down a dirty floor, but the hose was not connected to the faucet; and in problem 8, he attempted to play a phonograph record, but heard no sound because the machine was not plugged in. The photographs on the right show, for solution 5, a key on a key ring; for solution 6, a torch in flames; for solution 7, a hose connected to a faucet; and for solution 8, a plug connected to a wall socket.

Critiques sur l’intentionnalité chez les primates

- Learning rules & contextual rules (Povinelli et al.)

1. LES CHIMPANZÉS REGARDENT SOUVENT ce que leurs congénères observent. Lorsqu'une expérimentatrice regarde par-dessus l'épaule d'un chimpanzé *(à gauche)*, ce dernier regarde dans la même direction *(à droite)*, sans forcément pour autant prêter quelque intention que ce soit à son vis-à-vis.

Suivi du regard d'un humain par un chimpanzé

Est ce que l'animal sait ce que peut voir l'expérimentateur ?

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Review

Does the chimpanzee have a theory of mind? 30 years later

Josep Call and Michael Tomasello

Max Planck Institute for Evolutionary Anthropology, Deutscher Platz 6, D-04103 Leipzig, Germany

Trends in Cognitive Neurosciences, 2008

- Compréhension des buts et des intentions
- Compréhension des perceptions & connaissances
- Compréhension des croyances

Compréhension des buts (goals) et des intentions d'un congénère ou d'un humain

Table 1. Studies on chimpanzees' and human infants' understanding of goals and intentions

Studies	References	
	Chimpanzees	Infants
Getting/finding food		
1. Leave earlier and beg more intensely from an E who is unwilling as opposed to unable to deliver food (behavior similar in the two cases)	[31]	[32]
2. Select the box acted on intentionally versus accidentally (behavior similar in the two cases)	[33]	[33]
3. Leave earlier when E is playing with as opposed to trying to open a box with food (behavior identical in the two cases)	[a]	
Reacting to a partner's actions		
4. Give the object that the E is trying to reach	[34,35]	[34]
5. Take the food that a competitor is trying to reach	[36]	
6. Anticipate where E is going based on potential goals available	[a]	
7. When food is stolen retaliate against thief, not against innocent receiver of stolen food	[37]	
Imitation		
8. Produce target action based on observing a failed attempt	[38,39]	[40]
9. Copy intentional actions more often than accidental actions	[38]	[41]
10. Selectively copy freely chosen acts but not those forced by circumstances	[28]	[29]

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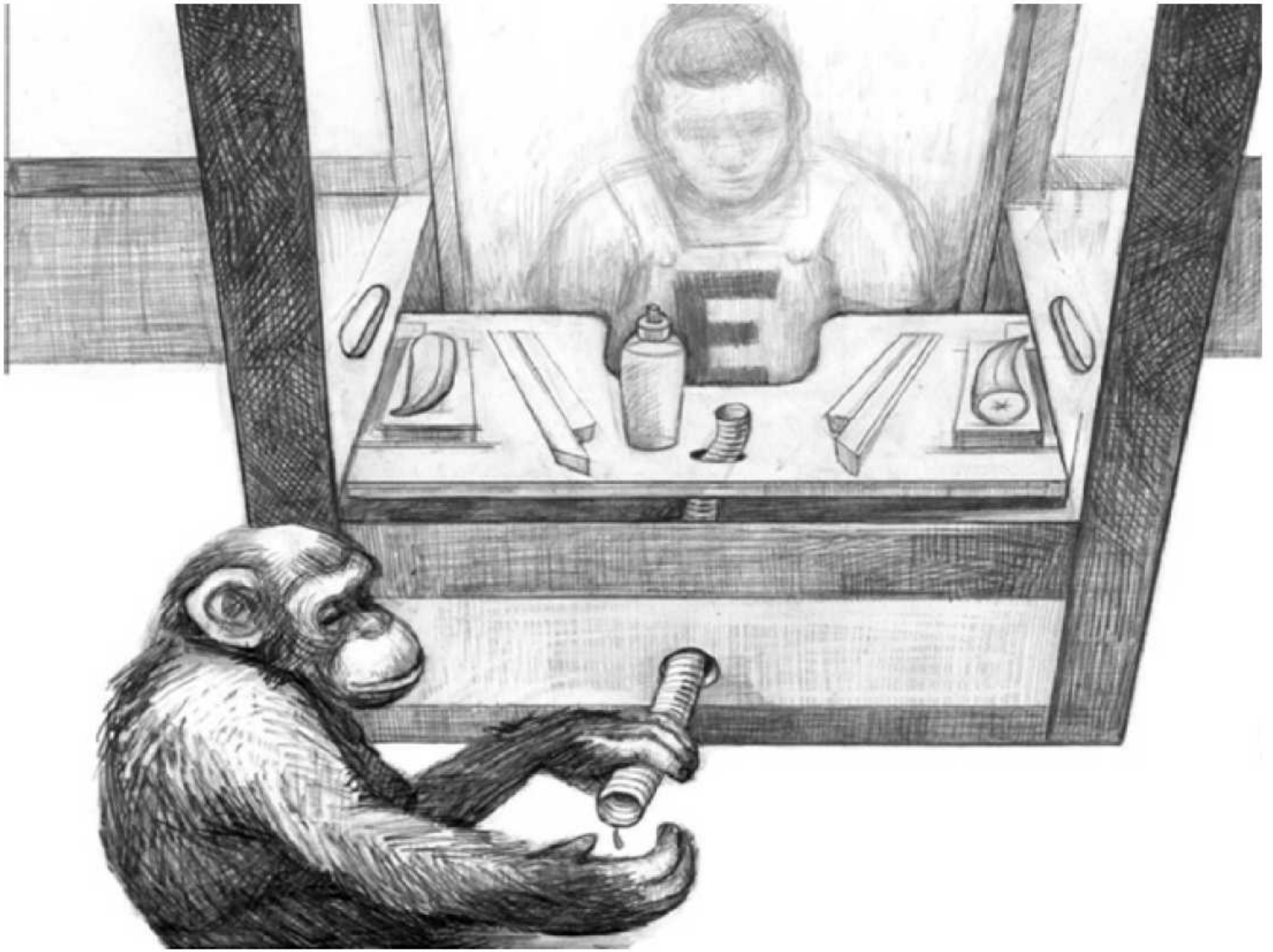
Compréhension de la perception et des connaissances d'un congénère ou d'un humain

Table 2. Studies on chimpanzees' and human infants' understanding of perception and knowledge

Studies	References	
	Chimpanzees	Infants
Gaze following		
1. Follow gaze to distant locations behind self	[42–44]	[45]
2. Follow gaze on the basis of both face and eye direction	[46]	[46,47]
3. Check back with gazer if nothing relevant at the target location	[48,49]	[50]
4. Stop looking after a few trials if nothing relevant at the target location	[51]	
5. Ignore distracting objects on the way to the target location	[52]	[53]
6. Move to the side of opaque barriers to view the target location	[42,49,52]	[54]
7. Understand that gaze stops at an opaque barrier - unless it has a window in it	[55]	[56]
Gestural communication		
8. Use visual gestures mostly when conspecifics or E are oriented to them	[6,14,57,58]	[6]
9. Position oneself to gesture in front of others	[59,60]	[61]
10. Both face and eye orientation of recipient determine gesture production	[62]	[6]
Food competition		
11. Pick the food that the E is not looking at	[26]	
12. Pick the food that a dominant individual or E cannot see because of barrier	[26,63,64]	[65]
13. Visually conceal approach to food (using barrier)	[26,27]	
14. Auditorially conceal approach to food (choosing silent door)	[27]	
15. Take food that a dominant individual did not see being hidden	[15]	[66]
16. Understand that if competitor picks first, he will have chosen the food he saw (not food he did not see) being hidden	[a]	[a]

Compréhension de la perception et des connaissances d'un congénère ou d'un humain (Hare et al. 2006)



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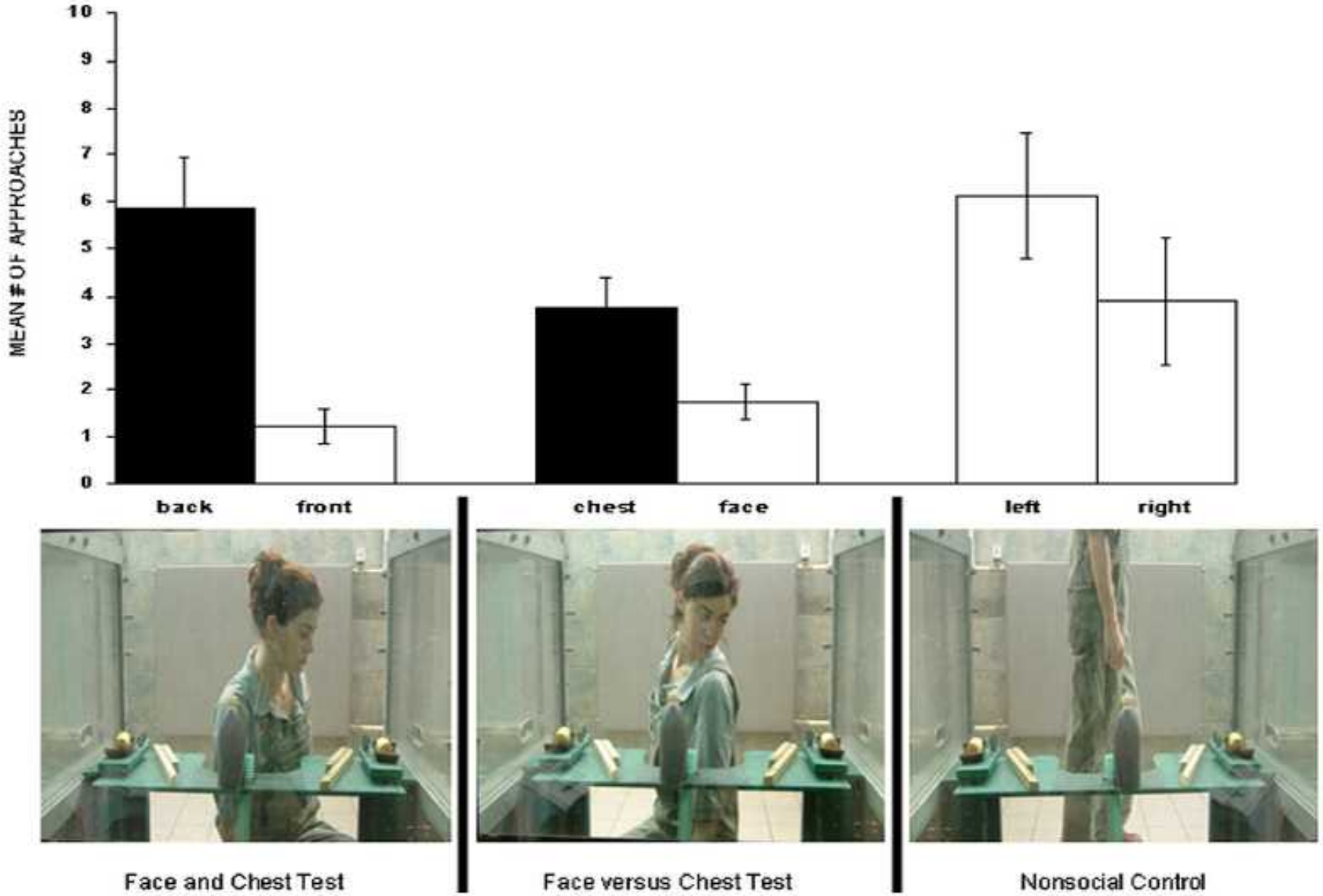

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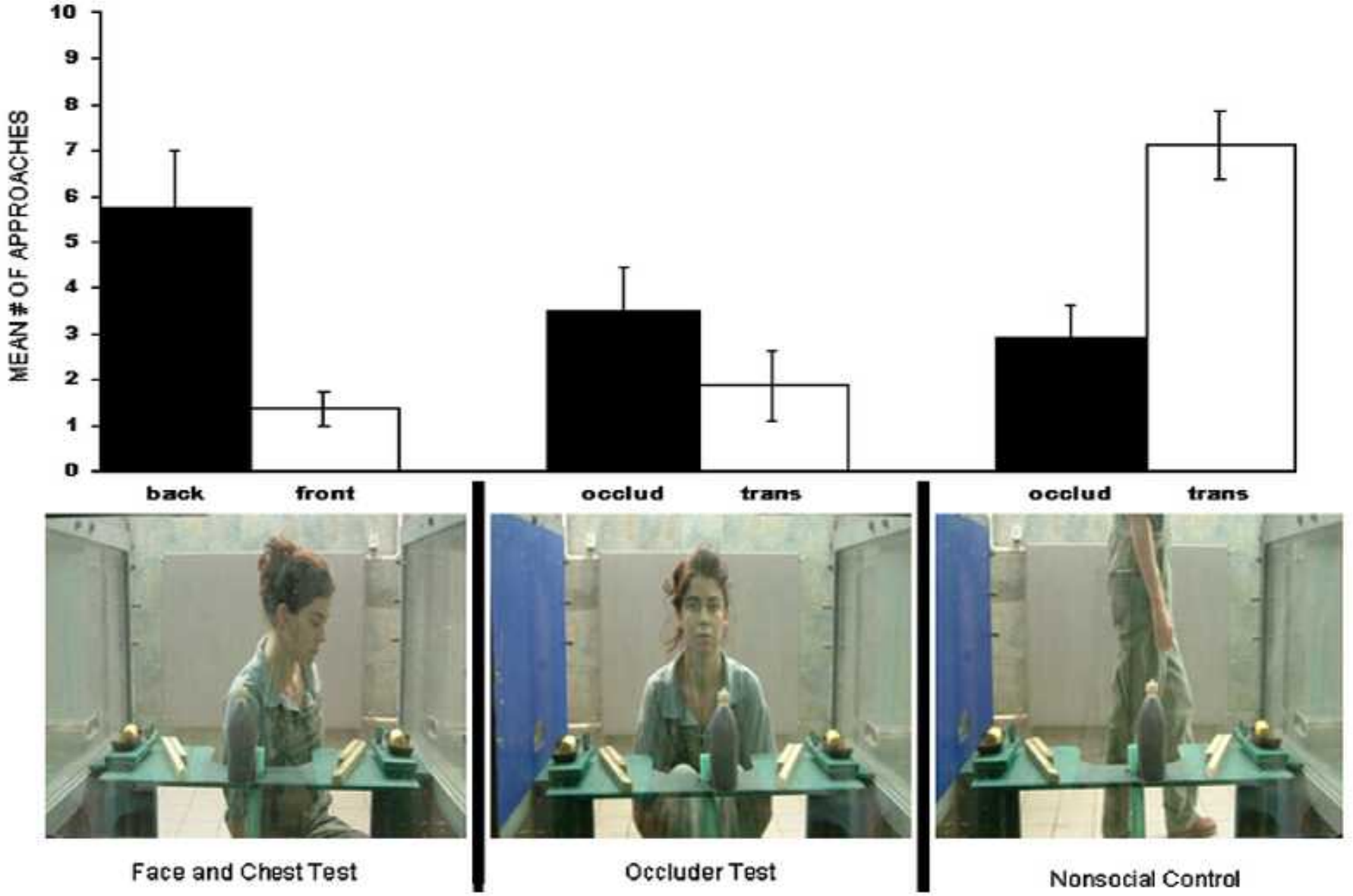

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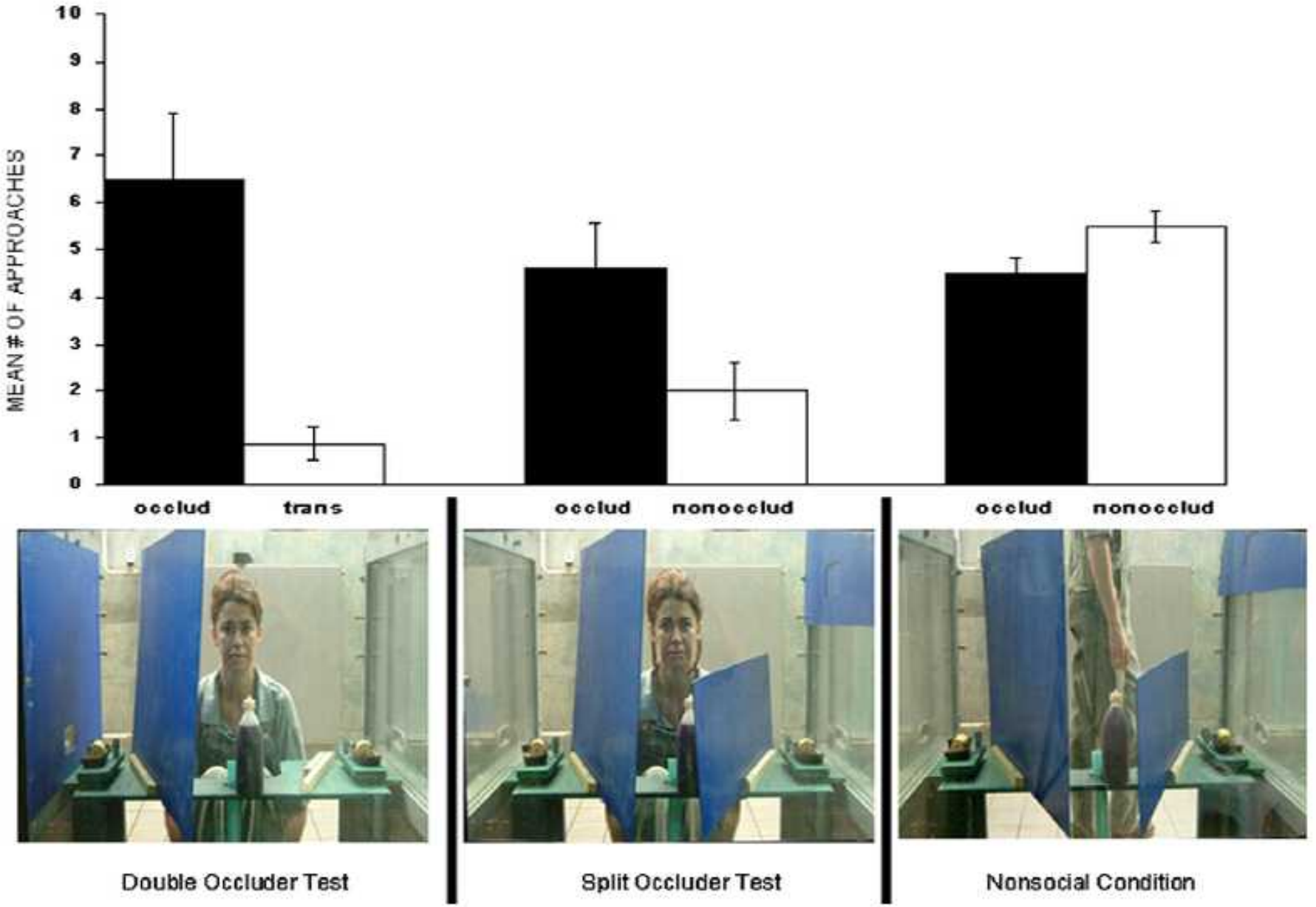

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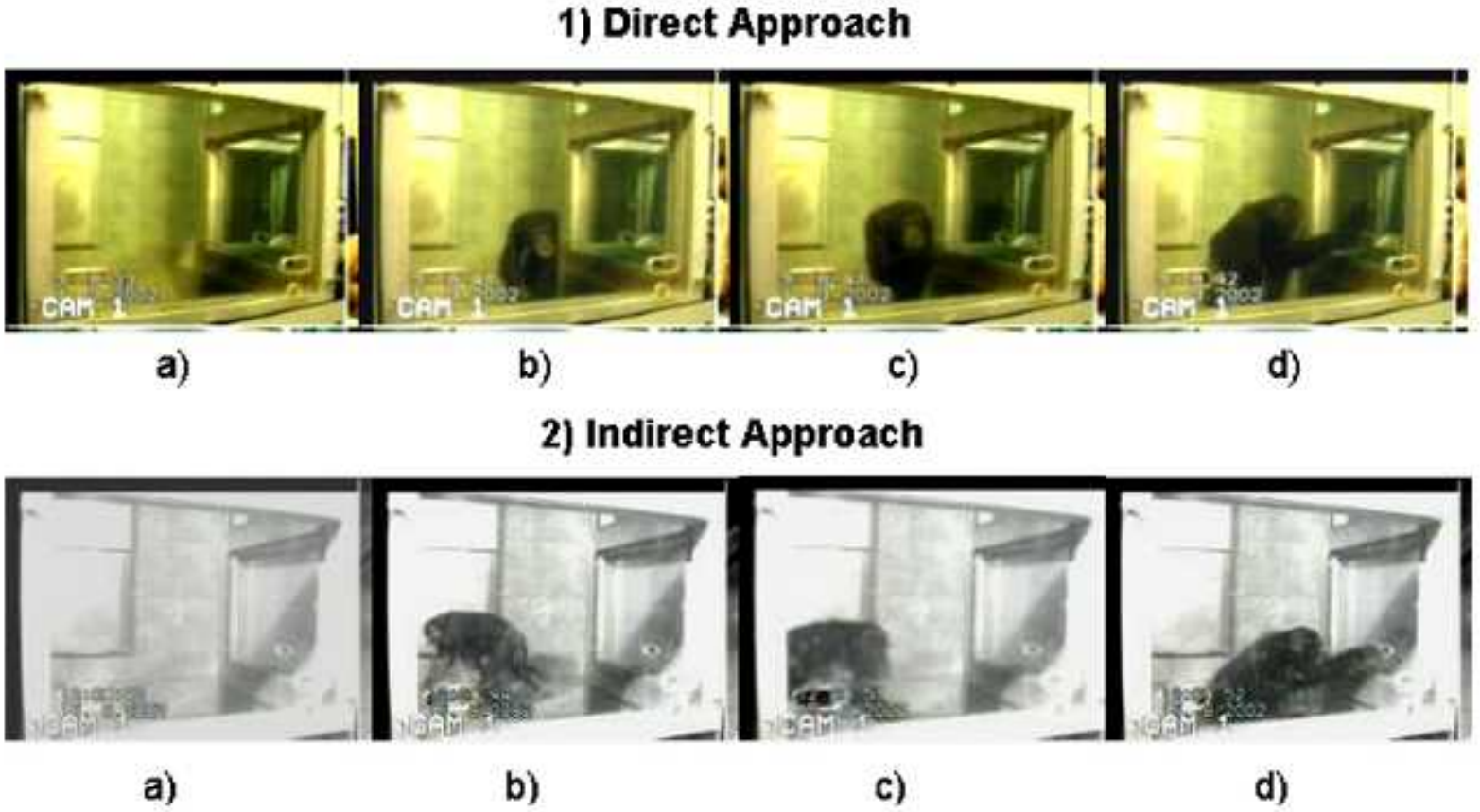

Fig. 5. An illustration of a subject's (1) direct approach and (2) indirect approach to the left of the experimenter. When approaching directly subjects: (1a) sat at the juice tube out of the camera's view, (1b) look directly around the corner of the test booth, (1c) approached directly around the corner of the test booth, (1d) and reached for the food. When approaching indirectly subjects: (2a) sat at the juice tube out of view of the camera, (2b) distanced themselves from the food and experimenter, (2c) returned out of view of the experimenter (notice occluded window), (2d) and reached for the food.

Compréhension des croyances ou des fausses croyances d'un congénère

- Un couple dominant / dominé est placé en situation de compétition. Le dominé peut voir un expérimentateur déplacer des récompenses, ce que le dominant ne voit pas. Il est pourtant incapable de se servir de cela pour inférer le comportement du dominant

- Les enfants de 5 ans (même beaucoup plus jeunes dans certains cas) réagissent correctement dans ce type de situation

- Les grand singes n'atteindraient que le stade d'une psychologie perception-but mais ne comprendraient pas réellement les croyances de l'autre (Call & Tomasello)

Compréhension des croyances ou des fausses croyances d'un congénère

- Perspective : La validité des observations en laboratoire peut être remise en question au regard d’observations de terrain (cf. chasses coopératives)

- Boesch C. (2007) What makes us human (Homo sapiens)? The challenge of cognitive cross-species comparison. J Comp Psychol. 121(3):227-40.
- Boesch C. (2008) Taking development and ecology seriously when comparing cognition: reply to Tomasello and Call (2008). J Comp Psychol. 122(4):453-5.