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## Drivers and barriers of water intake in preschool children in a one-year longitudinal field study in Poland

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### Abstract

**Background:** Many children consume too little water and too many sugar-sweetened beverages (SSBs), with potential negative consequences for health. Sustainably increasing water intake is therefore relevant, however challenging.

**Objective:** Explore drivers of and barriers to water intake during a one-year field study aiming to increase plain water consumption using Installation Theory in Polish preschool children.

**Method:** Caregivers of children (3–6 yrs) completed questionnaires on the child's preference for water and SSBs, water drinking habit strength (Self-Report Habit Index, range 1 (low)-5 (high habit)), and barriers to drinking water, at baseline and after one year. Children were first allocated to one of three interventions: CONTROL: no intervention; INFO: online coaching sessions on water health benefits (3 weeks); INFO + W: similar coaching sessions and home water delivery (3 weeks). After 3 months, half of INFO and INFO + W subjects were exposed to an online discussion forum (3 weeks) (+ SOCIAL); the other half received no further intervention (-SOCIAL).

**Results:** 334 children (age:  $4.4 \pm 1.2$  yrs; 50% female) completed the study. At baseline, 72% attended kindergarten, among which 48% had access to water during the day. Drinking water during class was not allowed for 41%. The proportion of children who liked or loved water increased from 28% at baseline to 67% after one year. Conversely, that of children who liked or loved SSBs decreased from 58% at baseline to 45% after one year. The increase in preference for water was greater in groups who initially received INFO + W compared to CONTROL ( $p = 0.004$ ). The mean drinking water habit score increased from 2.3 at baseline to 3.0 across all groups with a larger increase in INFO + W + SOCIAL (+28%) compared to CONTROL (+16%) ( $p = 0.001$ ). At baseline, the strongest barriers to drinking water were (1) Drinking large amounts of other beverages (72%), (2) A preference for other beverages such as SSBs (71%), (3) Not being aware that they should drink more water (61%), and (4) Not being used to drinking water or water having no taste (both 55%). Most barriers strongly decreased over the course of the study with no specific effect of the interventions.

**Conclusion:** An intervention aiming to increase water in pre-school children was able to modulate the preference for water, habit to drink water, and barriers to drinking water in preschool children with unhealthy drinking habits. Providing information and facilitating access to water were the most important contributors to improving healthy hydration habits.

### Conflict of Interest

JHB, QD, IG, AV are full-time employees of Danone Research and SBM of Nutricia Research.