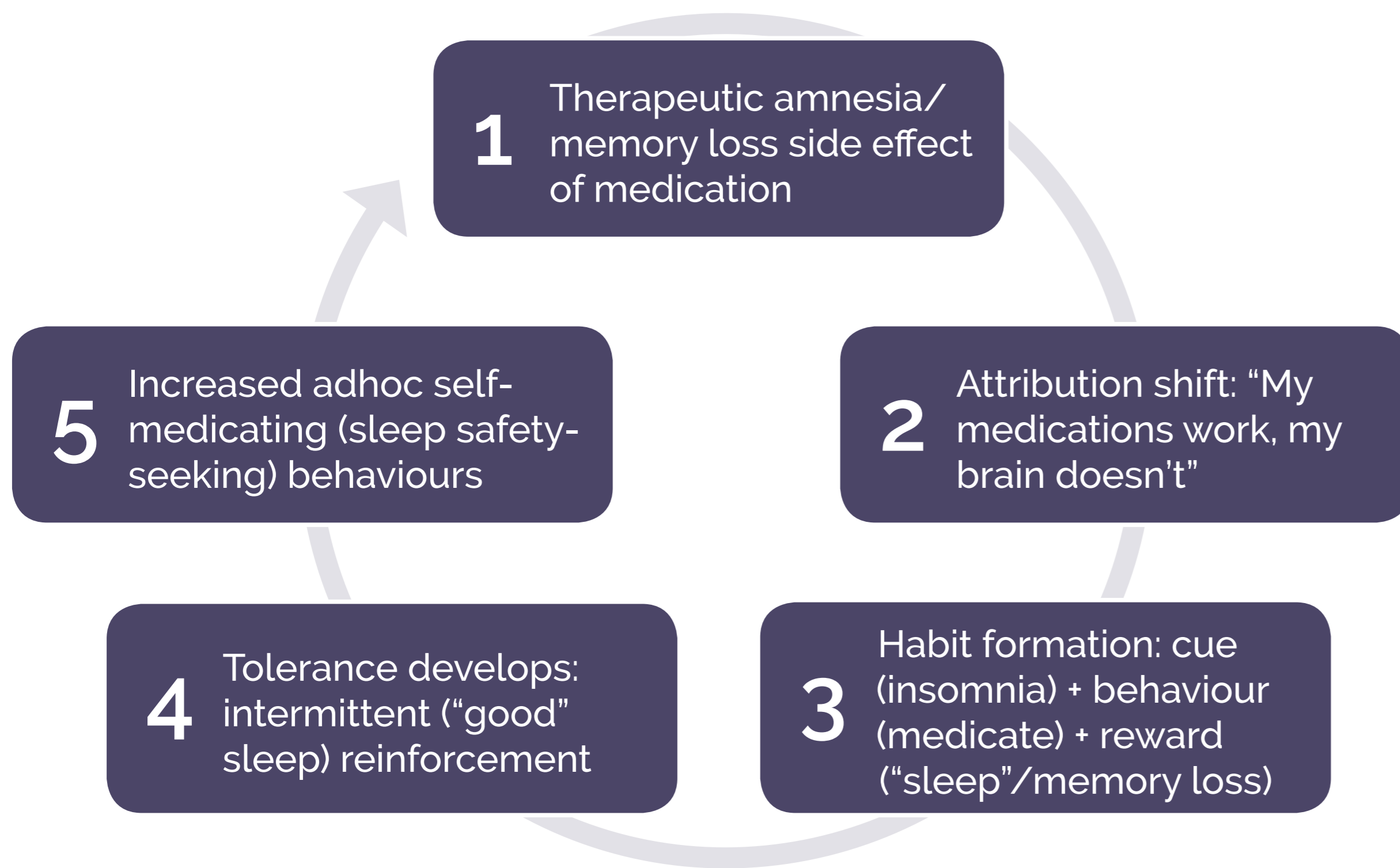
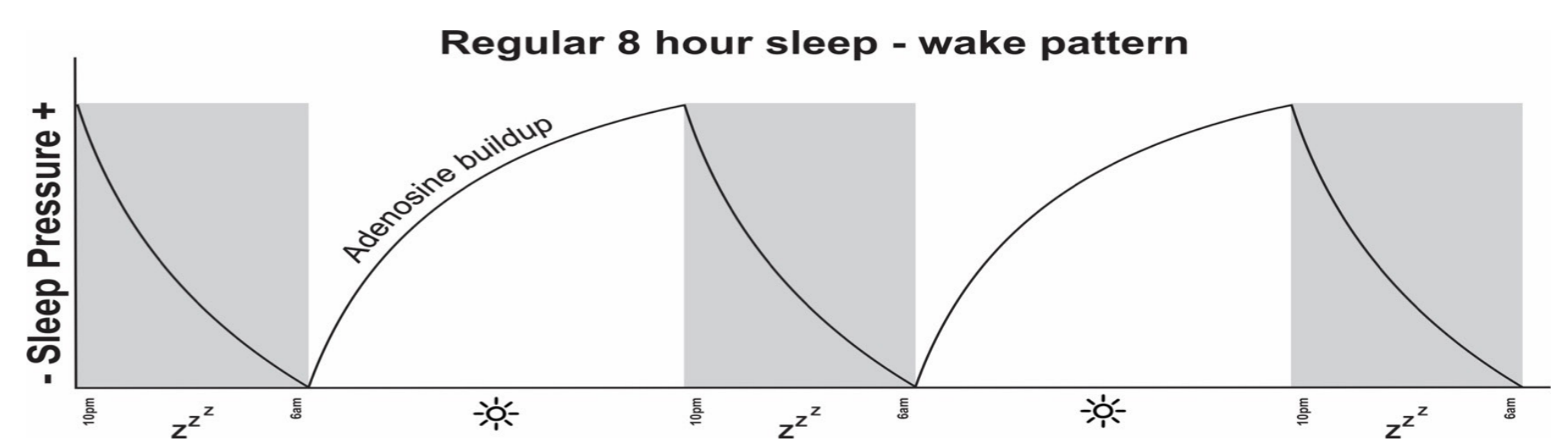
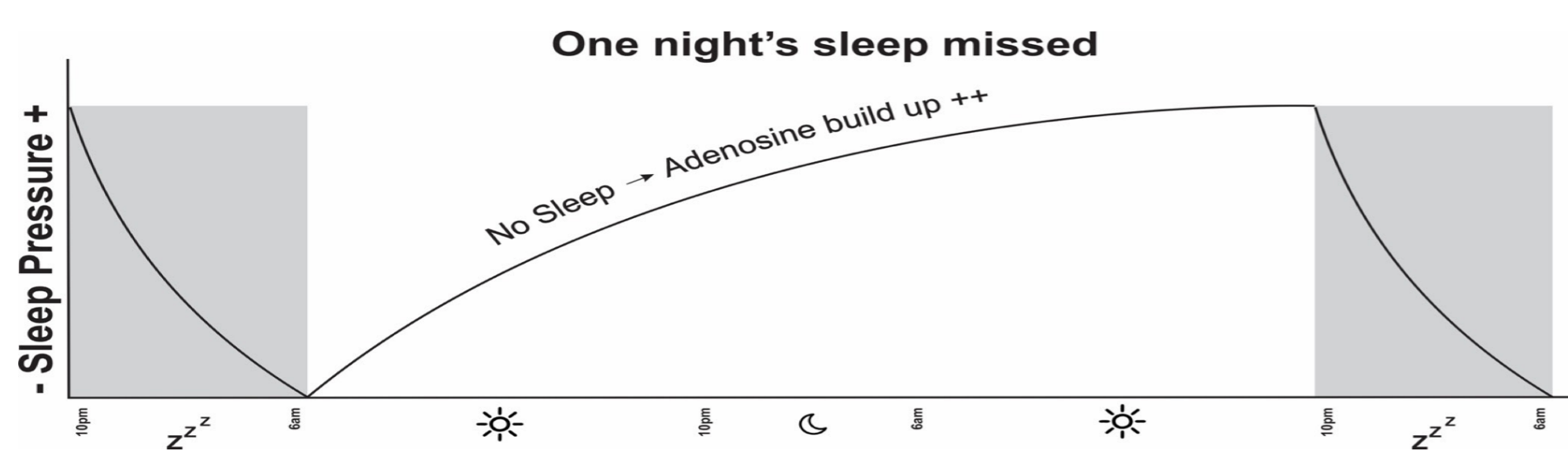


# Cognitive & behavioural mechanisms in insomnia-related unintentional sedative/hypnotic overdose



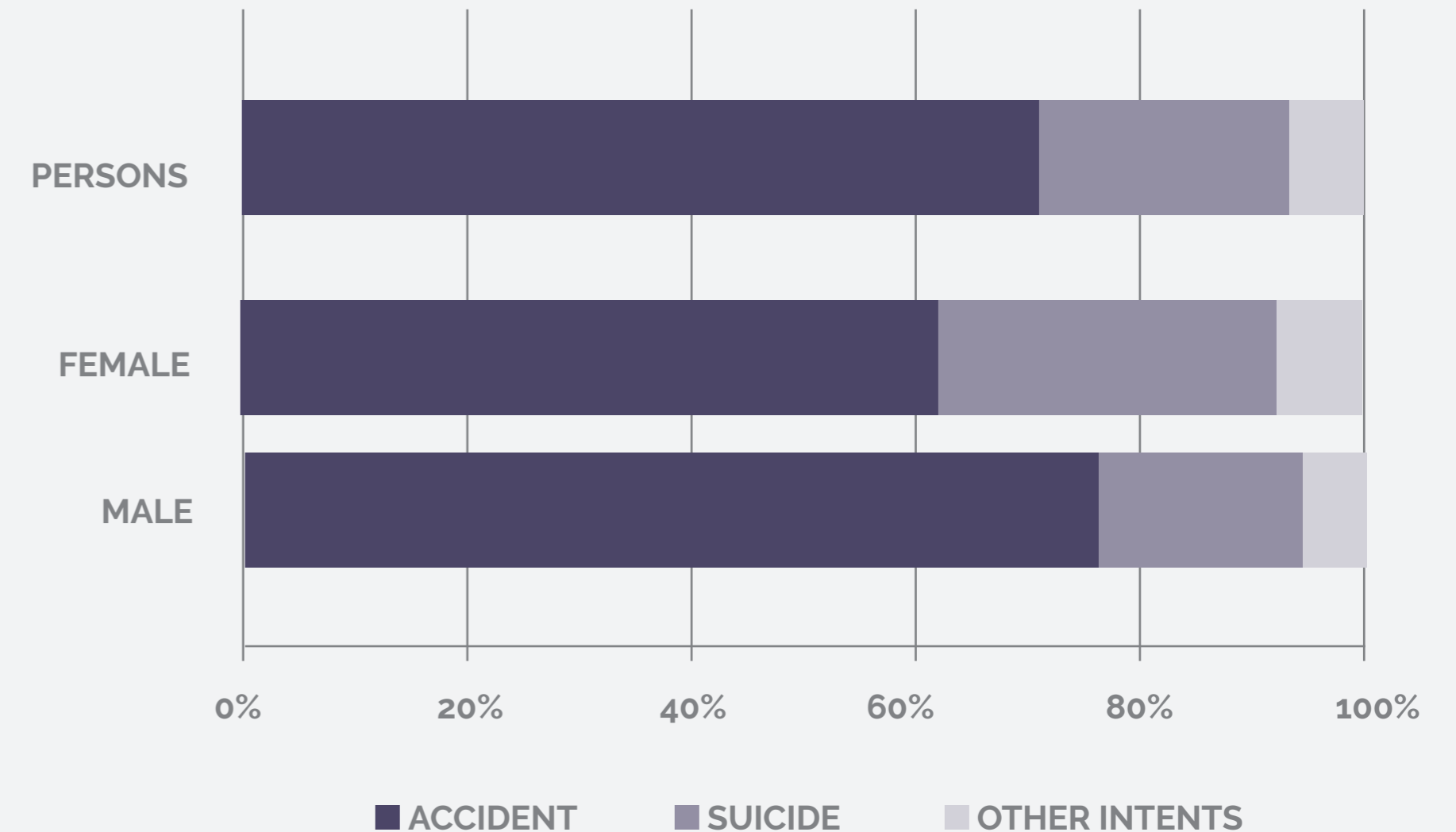
- 1. Anterograde amnesia, lowered hypervigilance, + relief (on hypnotics):** because insomnia = biased recall of waking/stage 1,2 sleep
- 2. Attribution shift:** distrust brain, rapidly trust hypnotics for sleep instead
- 3. Habit formation:** cue(sleeplessness) + action (medicate) + reward ("sleep" & amnesia)
- 4. Drug tolerance develops** + normal homeostatic drive= perceived as intermittent reinforcement of sporadic "good sleeps"
- 5. Increased ad hoc self-medicating** (safety-seeking behaviours escalated to "guarantee" sleep reward) + amnesia = o'd risk mounts



- 1. Australian Bureau of Statistics 2016 Analysis of drug deaths** by single drug type:
  - benzodiazepines were the most common substance present in either accidental or intentional drug induced deaths in 2016, being identified in 663 (36.7%) OD deaths.
  - Average 75% of deaths were accidental.
  - Benzodiazepines: for anxiety and insomnia treatment, prone to tolerance and addiction.
  - Particularly dangerous if taken with other CNS-sedating substances.
  - In over 96% of 2016's benzodiazepine-present deaths they were mixed with other sedative drugs including alcohol.
  - Apart from 1999, benzodiazepines have consistently been the most common single substance identified on toxicology.
  - In 2017: 1,612 unintentional drug-induced deaths out of 2,162 deaths. In 2002, was 903 unintentional drug-induced deaths.

#### ACCIDENTAL VS SUICIDE DRUG DEATHS: (at right)

- Proportion of acute drug deaths by sex, 2016 (a)(b)
- 2. Analysis of 20 years sedative/hypnotic prescribing in Australia** (Islam et al 2012):
    - 174,080,904 scripts were recorded in the 20 years to 2011.
    - Most-dispensed: Temazepam (35% -prescribed for insomnia, then Diazepam 23% - anxiety/insomnia)
    - Per-script DDD (WHO-defined daily doses) modest but steady increase since 1998**BEACH study prescribing data:**
    - 90% presenting with insomnia prescribed a medication (majority are benzodiazepines).
    - Temazepam is most-preferred drug in primary care (50%), then melatonin (less than 10%).
    - (BEACH: Bettering Evaluation & Care of Health)
  - 3. Likelihood of short-term sedative/hypnotic use becoming longterm dependence:**
    - Malcolm Lader, Kings College Addiction Research Centre (2011): "difficulty in preventing short term (benzodiazepine) use from extending indefinitely with the risk of dependence".
    - Contributors:
      - perception of medication "short-circuiting" insomnia habit amongst prescribing professionals, (despite medication fulfilling 'habit loop' formation essentials),
      - duration of insomnia & blurred delineation of "transient"(1-2 days), "short term" (3-4 weeks) and "chronic" insomnia (3 months+)
      - misattributions of sleep success by medication users & above cycle.
  - 4. Previous SSC Findings:**
    - 26 subjects (primary or secondary insomnia assessment) sought insomnia treatment (age range 26-71 years; 12 men 14 women):
    - 88% strongly agreed: Insomnia causes serious physical health consequences (Q3 of F2:Worry/Helplessness factor, DBAS-16);
    - Above also significant correlation with Insomnia Severity (t=2.07, p = .048)
    - 80% strongly agreed: Poor sleep will interfere with next day functioning (Q5 of F1: consequences factor)
    - 84% strongly agreed: Poor daytime energy & functioning due to poor sleep (Q12 of F1: consequences factor)
    - 61% strongly agreed: Better off taking sleeping pill to function than having poor sleep (Q6 of F4 medication); but:
    - Only 13% agreed: "medication is probably the only solution". All others unsure or disagreed



- 5. Current Question:** Can CBTi instil increased psychological flexibility and mastery, & reduce sleep medication dependence & overdose risk?
- 6. Method:**

The current LetSleepHappen/Sydney Sleep Centre research targets attribution shifts in six insomnia patients undergoing tapering schedules in an attempt to reduce safety-seeking self-medicating that increases risk of accidental overdose.

The six patients seek to reduce sleep medication, after 5-20 years dependence, with slow tapering schedules (ranging 6-18 months, over 6-10 CBTi sessions).

Short-term detox sites rarely offer CBTi to shift faulty beliefs & expectations maintaining insomnia, leading to high post-discharge relapse rates when patients suffer REM-sleep rebound and sleeplessness, reinforcing catastrophic beliefs.

Measures: DBAS-16 (Morin et al, 2007), ISI (Insomnia Severity Index) and DASS-21 (Depression, Anxiety, Stress Scale). 2-week Sleep diary. Intervention (ongoing): 6-10+ sessions over 18mths CBTi. Targeting sleep beliefs/expectations change. Data collection ongoing.