Table S1. Overview of published effects of developmental nutritional manipulation on reproduction, fitness-related and behavioral variables.

[1]Changes that were observed long after the treatment was halted (although the variable in questions was measured only once)

[2]Effect that were only observed after the animal was challenged with a stressor later in life

[3]Effects observed in the subsequent generation

No latent or diminishing effects were observed using developmental nutritional stress.

Variable	No effect	Long-term effect[1]	Only after stress challenge[2]	Transgenerational[3]
		Birdsong		
Song parameters	duration (Brumm et al., 2009); duration of song motif (Noguera et al., 2017); number of song syllables, syllable types, song amplitude (Brumm et al., 2009); number of syllables in a song motif (Noguera et al., 2017); repertoire size (Nowicki et al., 2002); syllables copied from tutor (Brumm et al., 2009)	shorter song bouts directed, ↓mean song bouts undirected (Farrell et al., 2011); shorter songs, ↓ number of song syllables, ↓song peak frequency (Spencer et al., 2003); ↓time singing, took longer to start singing after song recording, fewer song bouts, shorter song bouts (Buchanan et al., 2003); ↑song rate (Honarmand et al., 2015); ↓song complexity (Noguera et al., 2017); ↓song repertoire (Spencer et al., 2004); sang sooner (Farrell et al., 2011; Nowicki et al., 2002); ↑ duration of subsong and early plastic stages, ↓song learning accuracy (Nowicki et al., 2002; Brumm et al. 2009)		
Song preference	HQ vs. LQ conspecific song (Farrell et al., 2015b)	↓time listening to conspecific song in early food removal, ↓time on perch associated with conspecific song in early food removal, ↓time listening to conspecific song in late food restriction, ↓time on perch associated with conspecific song in late food restriction (Farrell et al., 2015b)		
Song nuclei volume	HVC/telencephalon ratio (Nowicki et al., 2002); Farrell et al., 2015b	↓HVC, RA, telencephalon, RA/telencephalon ratio (Nowicki et al., 2002); ↓HVC (Buchanan et al., 2004)		
Zenk activation	between control and early food removal overall, early treatment when played heterospecific song, early food removal vs. late food-restricted females overall (Farrell et al., 2015b)	↓activation if late food restriction overall, ↓immunoreactive cells if played conspecific song in early food removal birds, ↓activation in control but late food-restricted when compared to pure controls; ↓NCMv activation compared to control regardless of playback song in early treatment (Farrell et al., 2015b)		

Variable	No effect	Long-term effect[1]	Only after stress challenge[2]	Transgenerational[3]
		Behavior and cognition		
Emergence test	full emergence in offspring of treated birds (Ericsson et al., 2016)			↑latency until emerging in offspring of treated birds (Ericsson et al., 2016)
Tonic immobility	offspring of treated birds (Ericsson et al., 2016); offspring of treated birds (Goerlich et al., 2012)			
Open field test	activity in offspring of treated birds, latency to reinstate with social companions in offspring of treated birds (Goerlich et al., 2012); distance moved in offspring of treated birds (Ericsson et al., 2016)			↓time at the edges of the open field in offspring of the 8wk stress group, ↓latency to start moving in 8wk stress and 17wk stress (Ericsson et al., 2016)
Neophobia	Farrell et al., 2011; Kriengwatana et al., 2015; Zimmer et al., 2013	↑ escape attempts in early puberty group (Ericsson et al., 2016); ↓neophobia during sexual maturation (Noguera et al., 2015)		
Parental behavior	Krause et al., 2011			
Aggressiveness	Noguera et al., 2015			
Docility	Noguera et al., 2015			
Handling stress		↓response (Noguera et al., 2015)		
Boldness	Noguera et al., 2015			
Exploration	activity (Krause and Naguib, 2014); activity, exploration behavior (Krause and Naguib, 2015); latency to approach food, latency to feed, activity, number of huts visited, repeatability test (Krause and Naguib, 2011)	↓latency to approach food and latency to feed (Krause et al., 2009)		
Spatial foraging	Zimmer et al. 2013; latency to feed, mean number of visits throughout all trials at non-rewarding food sites prior to feeding, mean latency to leave start box (Krause et al., 2009); in juvenile nutritional treatment (Kriengwatana et al., 2015)	↓mean latency to approach food (Krause et al., 2009); ↓number of cups searched with early treatment (Kriengwatana et al., 2015)		
Learning	correct choice in offspring of treated individuals in associative learning (Goerlich et al., 2012); learning speed (Fisher et al., 2006); training duration, acquisition rate, number of days to reach criterion, and endpoint performance in auditory discrimination, duration of shaping, trials to criterion, and preservative errors in color discrimination (Farrell et al., 2016); reversal learning (Brust et al., 2014); spatial learning in juvenile-caught (Farrell et al., 2011)	↓ if strong compensatory growth response compared to control sibling (Fisher et al., 2006); ↑learning in color association, ↑learning in spatial association, ↓preservative errors in spatial assocation, ↑learning speed (Kriengwatana et al., 2015); ↓task acquisition in auditory discrimination, ↑within-trial errors in color discrimination (Farrell et al., 2016); ↑initial learning (Brust et al., 2014); ↑success in spatial learning tasks in nestling-caught, searched more cups and performed more errors in social learning (Farrell et al., 2011)		↑exploration of trees if parents LQ (Krause and Naguib, 2014); ↑offspring of treated individuals made a choice in associative learning (Goerlich et al., 2012)

Variable	No effect	Long-term effect[1]	Only after stress challenge[2]	Transgenerational[3]
Reproduction and survival				
Cheek patch development	Honarmand et al. 2010; at 35, 65, 280 dph (Krause and Naguib, 2015)	↓cheek patch growth, size at 35, and size at 50 dph (Krause and Naguib, 2015)		
Bill color		↓red (Noguera, 2017)		
Survival	Honarmand et al., 2010			
Offspring survival	Krause and Naguib, 2014		↓loss of red bill color with an enlarged brood (Noguera, 2017)	
Female mate choice	Honarmand et al., 2017; Honarmand et al., 2015	↓time with low quality males (Naguib and Nemitz, 2007)		
Male mate choice	Honarmand et al., 2017; for HQ male, no preference for HQ or LQ females (Noguera et al., 2017)	for LQ male, ↑ time with LQ females and ↑ active with LQ females (Noguera et al., 2017)		
Reproductive success	latency to egg laying, clutch size, hatching success, number of hatchlings (Honarmand et al., 2017); latency to egg laying, clutch size when LQ males paired with LQ females, clutch size when paired with HQ males regardless of treatment (Noguera et al., 2017)	↓ clutch size when LQ males paired with HQ females (Noguera et al., 2017)		

Table S2. Overview of published effects of developmental nutritional manipulation on growth and other physiological variables.

[1]Physiological changes that start to appear later in life, but which are sustained

[2]Changes due to a developmental stressor that diminish over time

[3]Changes that were observed long after the treatment was halted (although the variable in questions was measured only once)

[4]Effects observed in the subsequent generation

No effects that precipitated after a stress challenge were observed using developmental nutritional stress.

Variable	No effect	Latent effect[1]	Diminishing effect[2]	Long-term effect[3]	Transgenerational[4]
			Growth and development		
Morphology	offspring of treated individuals at 11 and 56 dph (Ericsson et al., 2016); Noguera et al., 2015; body mass in males (Schmidt et al., 2012); body mass in early treatment (Kriengwatana et al., 2013); body mass at 0, 35, and 100 dph, tarsus at 17 dph (Krause and Naguib, 2014); body mass in treated males and female offspring of treated individuals (Goerlich et al., 2012); adult body mass (Noguera, 2017); wing chord, metatarsus, exposed culmen PCA (Chin et al., 2013)	↑body mass in females (Goerlich et al., 2012); ↑ change in body mass in ER/AL, AL/LR, and ER/LR (Chin et al., 2013); ↑growth rate after treatment end (Krause and Naguib, 2011); ↑body mass after treatment ended but before adulthood (Farrell et al., 2015a)	↓body mass and tarsus (Brumm et al., 2009; Honarmand et al., 2010); ↓Wing (took much longer; Brumm et al., 2009; Honarmand et al., 2010); ↓ body mass in females (Schmidt et al., 2012); ↓ body mass (Spencer et al., 2003); ↓body mass (Krause and Naguib, 2015); body mass in late food restriction (Chin et al., 2013); ↓ body mass (Fisher et al., 2006); ↓growth rate during treatment, ↓ body mass (Krause and Naguib, 2011); ↑body mass from after treatment until adulthood (Farrell et al., 2015a)	↑body mass (Buchanan et al., 2003; Farrell et al., 2011); ↓body mass (Krause et al., 2011); ↓body mass growth (Brust et al., 2014); offspring of HL and LH lighter than offspring of HH (Honarmand et al., 2017); ↑body mass in mismatched treatments and L juvenile treatment, ↑body mass in juvenile adult body mass, ↓body mass in HL females adult body mass, ↑body mass in juvenile treatment male adult body mass (Kriengwatana et al., 2013); ↓tarsus throughout the whole experiment (Krause and Naguib, 2015); ↓body mass in ER at 13 dph, ↓body mass in ER/AL, AL/LR, and ER/LR at 23 and 33 dph, ↓body mass in ER/AL and ER/LR in adulthood (Chin et al., 2013)	↓body mass at 17 dph, ↓tarsus in LL compared to the rest at 35 dph, ↓tarsus in LQ offspring treatment at 100 dph (Krause and Naguib 2014); ↑body mass in male offspring of treated individuals (Goerlich et al. 2012); ↑body mass of 17wk stress group's offspring at hatch, 8wk stress group's offspring at 28 dph compared to 2wk stress group's offspring (Ericsson et al. 2016)
Asymmetry	directional asymmetry, fluctuating asymmetry in alula feather (Pravosudov and Kitaysky, 2006)			↑ fluctuating asymmetry in tarsus, ulna, secondary flight feather (Pravosudov and Kitaysky, 2006)	
Body composition	adult total body mass, adult lean body mass, adult fat mass (Schmidt et al., 2012)	↑lean mass (Farrell et al., 2015a)	↓fat mass (Farrell et al., 2015a)		

Body size	Schmidt et al., 2012				
Body mass loss	Krause et al., 2009				
Body fat		↑males in juvenile treatment (Kriengwatana et al., 2013)		↓ in early treatment, ↑females in juvenile treatment (Kriengwatana et al., 2013)	
Other physiological responses					
Immune response	PHA, hematocrit (Buchanan et al., 2003); humoral immune response (Kriengwatana et al., 2013)			↓ humoral immune response (Buchanan et al., 2003); ↑antimicrobial activity juvenile, ↑HL than LL and HH in antimicrobial activity (Kriengwatana et al., 2013)	
Egg mass	Noguera et al., 2017			↑ egg mass (Goerlich et al., 2012); ↑in 2wk stress group (Ericsson et al., 2016)	